Thesis

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EXCHANGE RATE PASS-THROUGH AND ECONOMIC POLICY IN NIGERIA

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ABSTRACT

The volatility displayed by floating exchange rates has revived interest in the relationship between exchange rates and traded goods prices, recently referred to as 'pass-through'. This study empirically examines the exchange rate pass-through for Nigeria. Despite the existence of a relatively large literature on pass-through, little work has so far been done on the relationship between the exchange rate and tradable goods prices for small open economies; specifically, no work yet exists on the sub-Sahara African economy and the Nigerian economy in particular. This study employs secondary data, basically, quarterly time series data from 1970q1 to 2001q4 to estimate pass-through for Nigeria using the Johansen technique and the Leontief input – output model.

Our findings revealed incomplete pass-through for Nigeria at both the aggregate and sectoral levels, which compare favourably with evidence available from small open economies most especially for Korea and Sweden. This implies that the domestic prices of traded goods in Nigeria would not reflect complete movement of the exchange rates. The evidence from this study suggests that Nigeria's major trading partners compete among themselves for an increase in market share and therefore treat movement in the exchange rate as temporary.

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DEDICATION

I dedicate this dissertation to the Almighty God, the creator and giver of life.

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CHAPTER 1

GENERAL INTRODUCTION, MOTIVATION AND THEORETICAL BACKGROUND

1.1 General Introduction and Motivation

This study empirically examines the degree to which fluctuations in the exchange rate are reflected in the domestic prices of traded goods in Nigeria. Since the adoption of the International Monetary Fund (IMF) and the World Bank (WB) adjustment programme in developing countries, many developing countries, particularly Nigeria, continue to experience exchange rate volatility.

Countries around the world display great diversity in both their production and consumption of both primary and manufactured commodities. As a result, one of the most important factors affecting the ability of domestic firms to compete with foreign firms in the domestic market is the relative price of domestic and foreign – produced goods. The effect of the exchange rate on this relative price, commonly known as 'exchange rate pass-through', has been the subject of much recent research in international trade.

The resilience of the trade balances of major trading nations in the face of wild fluctuations in exchange rates have been prominent in recent policy debates. The hypothesis of purchasing power parity (PPP), at least its loosest form, that international trade in goods should limit the fluctuations in the relative price of tradeable goods across countries, has been a central pillar of standard open macroeconomic models for many years. The hypothesis of purchasing power parity appears to give a very good account of the fluctuations in the international relative prices of gold, oil or several other traded

commodities across countries, stated in terms of a common currency, are essentially constant.

The departure from this law occurs when for a given price of a traded good, changes in domestic price are not proportional to the changes in the exchange rate. It has been argued in the literature that trade in manufactured goods are characterised by imperfect competition, therefore, pricing would no longer be at marginal cost. So, firms charge mark-up over cost to earn above normal profit. However, the mark-up charged by firms over cost depends on many factors which include the degree of substitutability between the domestic and imported goods as determined by the degree of product differentiation and the degree of market integration or segmentation (see Goldberg and Knetter, 1997).

From the survey of literature on pass-through, the author observed that most empirical studies on exchange rate pass-through focused on large open economies, most especially the United States, Japan, and the UK[1]. However, little attention has been given to the effects of the movement of exchange rates on domestic prices in small open economies. At the moment, and to the best of our knowledge, there is no study of exchange rate pass-through on sub-Saharan African countries, and particularly on Nigeria. Thus, findings from the few studies on small open economies cannot be generalized. There is need for more country specific studies to shed light on the debate and allow for more country specific policies.

Regarding methodology, few studies on exchange rate pass-through employed traditional

[1] Of course this might not be unconnected with data problem in developing countries.

ordinary least square (OLS) estimation technique but paid little or no attention to the time series properties of the data. The main objective of this study is, therefore, to fill these gaps.

We contribute to the existing literature on exchange rate pass-through in several ways. First, this study tries to redress the imbalance in country study coverage by presenting one of the first estimates of the effects of changes in the naira exchange rate on the domestic price of imports in Nigeria. Second, as mentioned above, the few studies that exist used the OLS analysis but paid little attention to the time series properties of the data, however, in this study, up-to-date econometric methods are used. Lastly, while most studies employed time series data at the aggregate level to estimate pass-through, we employed both time series data at the aggregate and sectoral level, and the input-output technique to estimate exchange rate pass-through for Nigeria.

In sum, the following questions are addressed in this thesis:

1. What is the degree of exchange rate pass-through at the aggregate and sectoral levels in Nigeria?

2. Given the reforms introduced since 1986, what is the chain reaction caused by the reforms on the inter-sectoral flow in the entire economy?

This study has been organized as follows. Chapter 2 presents a brief political and

macroeconomic history of Nigeria between 1970 and 2000. In chapter 3, we present a literature review on exchange rate pass-through on both large and small open economies and an estimate of pass-through for Nigeria using the aggregate data while in chapter 4 we employed the disaggregate data to estimate pass-through for Nigeria. Chapter 5 introduces the input-output model and the constructions of four input-output tables for Nigeria. In chapter 6, we employ the constructed input-output tables of chapter 5 to estimate exchange rate pass-through for Nigeria. Chapter 7 provides the main findings and conclusion of this thesis, policy recommendation and possible direction of future research in this area.

1.2 Theoretical Background

The theoretical approach underlying the relationship between exchange rates and prices has been articulated by Aizenman (1984, 1985), Giovannini (1985) and Dornbusch (1987). Aizenman (1984, 1985) and Giovannini (1985) investigated the price setting behaviour in the context of exchange rate movements, their focus, however, is on short-term issues of transactions costs and uncertainty rather than on the large, persistent movements in the real exchange rate. On the other hand, Dornbusch (1987) applied the industrial organisation models to explain pass-through in terms of market concentration, import penetration, and the substitutability of imported and domestic products. Thus, in this study we adopt the Dornbusch (1987) approach but with certain modifications.

Refining and extending the discussion on the relationship between the exchange rate and prices, Dornbusch treats wages as given and, therefore, investigates in a partial equilibrium setting the determinants of relative price changes of different groups of goods. The Dornbusch model assumes that the exchange rate movement and the less than fully flexible money wage interact to produce a cost shock for some firms in an industry (foreign firms in the home market and home firms abroad) and thus bring about the need for an industry-wide adjustment in prices[2].

There are two extreme models that have been extensively discussed in the literature. One assumes that the "law of one price" holds. This implies that prices of goods are

[2] Although the assumption of exogenous exchange rate movements and sticky wages is open to criticism, it is a useful hypothesis for the purpose of investigating relative price issues.

geographically arbitraged and adjusted for tariffs and transport costs, resulting in them being equalised in domestic and foreign markets. This finding requires the assumptions of product homogeneity, full information and perfect competition. Assume that P_i, P_i^* and E denote the price of good i in the home country and domestic currency, the foreign price, and the home currency price of foreign exchange respectively. Therefore, arbitrage implies that:

$$P_i = E P_i^* \tag{1.1}$$

In this form, the law of one price holds[3]. The important implication of complete spatial arbitrage, not only for commodities but for all goods, is the idea that relative national price levels in common currency are independent of exchange rate since exchange rate movements reflect divergent price trends[4].

The alternative postulation to the above model, often referred to as the Keynesian model, assumes the country's specialisation in the production of "its own" good. In this case, both domestic and foreign goods are less than fully homogenous or substitutable. This implies that wages are fixed in national currencies or are at least sticky. In this case, if we assume that P and P^* denote the national GDP deflators, the relative price of domestic and foreign goods or the real exchange rate will be given as:

[3] The law of one price has seen important application in the monetary approach to exchange rates which combines the quantity theory of money, price flexibility and the purchasing power parity (PPP) to obtain a theory of exchange rates.

[4] This is an application of the homogeneity postulate which holds when money is fully neutral.

$$\lambda = \frac{P}{E P^*} \qquad \textbf{(1.2)}$$

A situation where the mark-up of prices over the unit of labour is constant, then, this model reveals that the exchange rate movements change relative prices one-for-one[5]. Given the focus of this study, we examine two scenarios; materials and manufactured goods prices. We show that equation (1.1) is a useful model of international price relations for materials while equation (1.2) describes what happens with manufactures[6].

Materials Prices

Following Dornbusch (1987), we consider a simple model of the world market for a commodity. Here, we assume that there are two regions, the U.S. and the rest of the world. The rest of the world, in this case represents the foreign country and is denoted by an asterix, also, the world demand for commodities depends on the real price of commodities in terms of GNP deflators in the two regions and on real activity. The supply of commodities is assumed to be exogenous .i.e.;

$$S = D\left(\frac{P}{P,Y}\right) + D^*\left(\frac{P^*}{P^*,Y^*}\right) \qquad \textbf{(1.3)}$$

where

[5] Of course, exchange rate induces changes in the relative price which affect the world distribution of demand and employment.

[6] We note that the assumption of constant markup cannot be justified when domestic and foreign firms have strategic interactions in their pricing.

Y, Y^* are domestic and foreign activities respectively

p, p^* are commodity prices in home and foreign currency respectively

P, P^* national deflators respectively

If we assume that commodity prices are arbitraged, we have $P = EP^*$. Using equation (1.3) and the definition of real exchange rate, equation (1.2), $\lambda = \frac{P}{EP^*}$, therefore, solving for the real commodity price of the U.S in terms of activity, commodity supply and real exchange rate, we obtained:

$$\frac{p}{P} = J\{Y, Y^*, \lambda; S\} \qquad \textbf{(1.4)}$$

The model confirms the well-established cyclical behaviour of real commodity prices: an increase in activity raises real commodity prices. Equation (1.4) shows that a real appreciation of the U.S. dollar will lower real commodity prices in terms of the U.S deflator while raising them in terms of foreign deflators[7]. Therefore, the elasticity of the real commodity price with respect to the real exchange rate is determined by the elasticities of demand of the two regions weighted by share in commodity absorption. The implication of this model is that the elasticity should be less than one[8].

[7] For details of the effect of exchange rates on real commodity prices, see Dornbusch (1983) and Sachs and Mckibbin (1984), and Sachs (1985).
[8] With equal demand elasticities the fraction reduces to the U.S share in world commodity absorption.

Manufactured Goods

The basic assumption here is that firms in any industry have a linear technology, with labour as the only input. The unit labour costs, w and w^*, are given in home and foreign currency respectively. This assumption about costs is combined with a model of pricing to yield predictions about the behaviour of relative prices. An appreciation of the dollar, in this case, lowers foreign unit labour costs in dollars. Therefore, the market equilibrium is disturbed. This would result in adjustment in each industry, price and output. The adjustment depends on three factors which include market integration or separation; substitution between domestic and foreign variants of a product and the market organisation.

There are two models that formulate the price response to cost shocks on part of the industry. These are the Cournot model and the Dixit-Stiglitz model which are examined below[9].

1.2.1 The Cournot Model

In the Cournot model each seller assumes that other sellers defend their sales volume with the assumption of effective spatial separation between the home and foreign markets. Given that the market demand is linear in the price of the commodity, we

[9] The Cournot model assumes perfect substitution between alternative suppliers and places more emphasis on the extent of oligopoly. Also, it allows variation in mark-up response to cost shocks while the Dixit-Stiglitz (1977) model, by contrast, emphasizes imperfect substitution between alternative suppliers and its predictions are similar to the Keynesian model earlier discussed.

have[10]:

$$D = a - bp \tag{1.5}$$

There are n domestic suppliers and n^* foreign firms with respective sales of q and q^* per firm respectively. The aggregate sales of these firms, denoted as Q, have to sum to the market demand:

$$Q = nq + n^*q^* \tag{1.6}$$

We assume further that each firm would maximise profits taking the sales of other firms as given, so, profits of the domestic π_i and foreign firm π_j in the home market are defined as:

$$\pi_i = (p - w)\left[a - bp - (n-1)q - n^*q^*\right] \tag{1.7}$$

$$\pi_j = \left(\frac{p}{e - w^*}\right)\left[a - bp - nq - (n^* - 1)q^*\right] \tag{1.8}$$

where e, as earlier defined is the home currency price of foreign exchange. Therefore, the industry equilibrium price is given by:

[10] It is assumed that all non-price determinants are captured in the constant.

$$p = \left(\frac{nw+n^{*}ew^{*}}{N}\right) + \frac{a}{bN}; \qquad N \equiv n+n^{*}+1 \tag{1.9}$$

Of course, since our focus is to examine the extent to which the exchange rate movements affect the equilibrium price, then, we derive the elasticity of the equilibrium price with respect to the exchange rate, Φ, which is:

$$\Phi = \left(\frac{n^{*}}{N}\right)\left(\frac{ew^{*}}{p}\right) \tag{1.10}$$

Thus, the two determinants in equation (1.10) are the relative number of foreign firms, and the ratio of marginal cost to price of foreign suppliers. Equation (1.10) reveals that a dollar appreciation will lower price less than proportionately[11].

One interesting implication of equation (1.10) is that it fits into the 'small country' case in trade literature. The Cournot model thus explains both unchanging prices and steep price declines. The market structure (import share and concentration) is the key parameter that explains the outcome. On the other hand, and specifically for the foreign market, the elasticity of foreign price with respect to the exchange rate is:

$$\Phi^{*} = -\left(\frac{n'}{N^{*}}\right)\left(\frac{w}{ep^{*}}\right) \tag{1.11}$$

[11] The decline in the dollar price is larger the more competitive the industry. This implies that the smaller the mark-up of price over marginal cost, and the larger the share of imports in total sales.

where n is the number of domestic firms in the foreign market and N^* the total number of firms. Therefore, the implication of equation (1.11) is that with Φ^*, a negative fraction, the dollar price of exports, p^*e, has an elasticity $1+\Phi^*$ and hence must decline in response to a dollar appreciation. In the small country case export and import prices in dollars fall in the same proportion as the currency appreciates ($\Phi = 1,\ \Phi^* = -1$) so that the relative price $\frac{p}{ep^*}$ remains constant. This implies that the expected outcome in this case depends on the relative oligopolistic structure of the two markets.

1.2.2 The Dixit-Stiglitz Model

The model assumes that the representative consumer maximises utility function V with consumption of two commodities Z and X given as:

$$V = U(Z, X); \qquad X = \left(\sum X_i\right)^{\frac{1}{a}} \qquad ;0< a< 1 \qquad \textbf{(1.12)}$$

Concentrating on commodity X which denotes an index of consumption of different brands of the same goods, we assume that there are n domestic firms supplying some variant each, and n^* foreign firms doing the same. Due to the maximisation principles, we obtained the demand for each individual brand, as well as the utility based price index for commodity X as:

$$X_i = X\left(\frac{p}{p_i}\right)^c \; ; \; c = \frac{1}{1-a} \tag{1.13}$$

$$p = \left\{\left(\frac{\sum p_i^{\,h} + \sum p_j^{\,h}}{n + n^*}\right)\right\}^{\frac{1}{h}} ; h = -\frac{a}{1-a} \tag{1.14}$$

From equation (1.14), p_i represents the price of a brand produced in the home country while p_j denotes the price of an imported brand. With our focus on the response of prices to cost shocks the individual perfectly competitive firm faces a demand curve (equation 1.13) with the relative prices of its product $\frac{p_i}{p}$ as the determinant. Thus, the firm assumes it is sufficiently small so that its own price change leaves the industry price, p unchanged. Therefore, the representative firm's profits are:

$$\pi_i = (p_i - w)X_i \tag{1.15}$$

Maximisation yields the familiar constant mark-up pricing equation:

$$p_i = \alpha w; \qquad \alpha = \frac{1}{1 - \frac{1}{c}} \tag{1.16}$$

where α depends inversely on the elasticity of substitution among variants. Since the industry structure is symmetric, each domestic firm will follow the same pricing rule with an equal mark-up.

Interestingly, if we assume that the markets are separated, foreign firms in the domestic market will face the same form of demand curve as the home firms and hence follow the same pricing rule, with the same mark-up but with foreign wages in dollars, ew^*, as the base of their pricing.

$$p_j = \alpha e w^* \tag{1.17}$$

The strong prediction from equations (1.16) and (1.17) implies that the relative price of domestic and foreign variants in the home market depends just on relative unit labour costs in a common currency:

$$\frac{p_i}{p_j} = \frac{w}{ew^*} \tag{1.18}$$

The industry price is calculated but revealed that the relative price of a domestic variant in terms of the industry price index $\frac{p_i}{p}$ is just a function of the relative wage. The elasticity of the relative price will be;

$$\frac{n^* Z}{n + n^* Z}; \qquad Z = \left(\frac{w}{ew^*}\right)^{\frac{1}{h}} \tag{1.19}$$

In fact, if wages are initially equal between countries, therefore, the effect of an exchange

rate change on the industry price and on the relative price depends on the fraction of firms that has wages fixed in foreign currency and hence experiences a reduction on their costs in dollar when the dollar appreciates.

Given the wages in home and foreign currency, the Dixit-Stiglitz model provides strong prediction about the impact of dollar appreciation: The prices of imported variants fall in proportion to the decline of dollar unit labour costs of foreign firms and the prices of domestic variants would remain unchanged. Exporting firms at home, although they have to compete in foreign markets, still follow their mark-up pricing on dollar wages. So, a change in the dollar does not affect their dollar export price[12].

[12] Of course, it does affect their sales and profits. Therefore, dollar appreciation will raise their foreign price in the same proportion and hence raise their relative price in the foreign market.

CHAPTER 2

POLITICAL AND MACROECONOMIC DEVELOPMENT IN NIGERIA 1970 - 2000

2.1 Introduction

At independence, Nigeria was basically an agrarian society, with agriculture accounting for at least 65 percent of gross domestic product (GDP) and was 68 percent of total export in 1960. The contribution of the agricultural sector to GDP, however, has declined markedly since early 1970, reaching an all time low level of 23 percent in 1980. The oil boom of the early 1970s, which replaced agriculture as a major income earner, had a pervasive effect on the growth and development of the economy. Oil suddenly became the dominant sector of the economy, accounting for 57.6 percent of total export and 10 percent of GDP in 1970. Between 1972 and 1974, the revenue from oil increased fivefold, contributing about 80 percent of the total revenue[13].

Nigeria's new wealth substantially affected the scope and content of investment, production and consumption patterns, the government's approach to economic management, and the policies and programmes implemented. The government invested heavily, with the assistance of the former Soviet Union, Germany, and Britain, in steel, rail construction and oil refineries. With Soviet assistance, steel mills were constructed at Ajaokuta in Kwara State and Oshogbo in Osun State. Also, oil refineries were established in Port Harcourt (in Eastern Nigeria), Kaduna (in Northern Nigeria), Warri (in the Niger Delta region) and Lagos (in Southern Nigeria – the former federal capital of Nigeria) while rail lines were laid to link Northern and Southern Nigeria with the hope of facilitating transportation of exports goods to sea ports.

[13] For further information, see Olalokun, Fajana, Tomori and Ukpong (1987)

The dwindling contribution of the agricultural sector was recognised by the government and in the second national development plan (SNDP), which was implemented between 1970 and 1974, monetary policies were designed to reverse this negative trend. The main objectives of the SNDP included the maintenance of confidence in the Nigerian currency through measures to stabilise domestic wages and prices, support for increasing levels of agricultural and industrial output, effective arrangements for supplementing current government revenue and for providing development finance. The government launched large-scale irrigation projects in the states of Borno, Kano, Sokoto, Bauchi and Kwara to boost agricultural output. Other agriculture related programmes included, 'Operation Feed the Nation' and 'Green Revolution'[14]

Due to the inflow of foreign exchange, as a result of persistent increase in the price of oil, government expenditure doubled between 1973 and 1975. The growth in oil revenue was largely absorbed by public sector spending, particularly on transportation and social services. Specifically, transport facilities, especially roads and ports, were expanded as well as educational opportunities[15]. However, we observed that many of the public projects were undertaken without the requisite analysis of their long-term financial viability and the efficiency with which such projects were implemented in the past. The growth strategy fed by public expenditure, which was pursued during the 1970s, had little regard for the absorptive capacity of the economy.

[14] Operation Feed the Nation (1976) and Green Revolution (1977) were lunched as part of the general programme to promote agricultural output and increase food supply..
[15] The period witnessed the establishment of federal universities – and colleges of education in Nigeria.

This development altered the prevailing pattern of relative prices and wages and changed the underlying structure of the economy. High wages and price increases secured the resources needed to accommodate the demand in non-traded goods, but they depressed the non-oil traded goods sectors. Nigeria borrowed during this period to finance the resource gap of ₦ 302.1 million (about 15.3 percent of the total planned expenditure of ₦ 2 billion) in SNDP. Economic problems started to manifest in 1978, but the second oil boom in 1979 lent confidence that oil revenue would in fact be a sound basis for planning and sustaining public sector consumption and investment[16]. The second oil revenue boom coincided with a return to civilian government (the second republic). Though the objectives of the third national development plan (TNDP) which was designed to curb inflation and correct the maladjustment (structural defects) in the economy over the period 1975 to 1980 were not realised.

However, industrialisation, which had been growing slowly after World War II and through the civil war period[17], boomed in the 1970s, despite many infrastructural constraints. Growth particularly occurred in the production and assembly of consumer goods, including vehicle assembly lines and the manufacture of soap and other detergents, soft drinks, pharmaceuticals, beer, paints, and building materials. Furthermore, there was extensive investment in infrastructure from 1975 to 1980, and the number of parastatals--jointly government and privately owned companies--proliferated. The Nigerian Enterprises Promotion Decrees of 1972 and 1977 further encouraged the growth of an indigenous middle class.

[16] For details see Federal Ministry of Industries (1989).
[17] Civil war started in Nigeria in 1967 and ended in 1970.

Overall, GDP recorded an average growth of 5.6, 13.8 and 4.2 percent between 1960 and 1965, 1966 and 1970, and 1971 and 1980 respectively[18]. In 1981 however, oil prices fell precipitously. Thus, adverse terms of trade variation led to extra ordinary fluctuations in real income. The oil earnings could not generate enough revenue to keep pace with public expenditure, thus, the government was forced to run budget deficits.

The government financed its fiscal deficits by borrowing, depleting external reserves, and going into arrears in external commitments. Unfortunately for Nigeria, the world real interest rates turned positive when its terms of trade started to deteriorate. The foreign exchange from oil was used to increase the supply of tradeables. Nevertheless, the import demands were greater than what oil earnings could accommodate, hence, since additional debt could only be contracted at variable interest rates and at shorter maturities, credit conditions became less favourable.

As a result of the increase in oil revenue during the oil boom period, the naira exchange rate was allowed to appreciate against the trading partners' currencies. The appreciation of the naira deteriorated the international competitiveness of agricultural produce. Furthermore, in the non-traded goods sector, wages were inflated to keep pace with those offered in the construction and services sectors[19].

External disequilibria, huge balance of payments deficits, and the depletion of external

[18] For details see Moser (1995).
[19] This happened most especially in the private sector.

reserves to a level that could hardly finance one month's imports persisted throughout 1982. These problems, coupled with the reluctance of the country's trading partners to extend further trade credit, forced the government to enact the Economic Stabilisation Act. The measures put in place to improve the external position included tightening of import controls, the imposition of exchange restrictions on current international transactions, increase in tariffs and imposition of quotas, and the introduction of advance import deposit scheme. Other measures include ceilings on total Central Bank of Nigeria (CBN) foreign exchange disbursements and a total ban on contraction of new external loans.

In spite of the above austerity measures, the Nigerian economy reached a crisis point in June 1984, when world oil prices declined markedly by 45 percent from their 1980 level. In 1983, GDP recorded a negative growth rate of 6.7 percent, the external current account deficit grew to 6 percent of GDP and the budget deficit/GDP ratio reached 13 percent. In all, external and fiscal imbalance emerged. Also, Nigeria's indebtedness impeded its access to foreign capital and short-term trade arrears mounted to the point at which foreign banks held-back to confirming letters of credit. Given the country's unwillingness to devalue the naira (the local currency), creditors refused to roll over short-term debt, or to provide fresh capital.

Unfortunately, the above problems formed the objectives of the third national development plan (TNDP), between 1981 and 1985, which aimed to promote the expansion of productive capacity and to contain inflation. However, these objectives,

though desirable, were not achieved due to inconsistent domestic policy measures and external shocks[20]. There was excessive liquidity in the economy due to the monetisation of oil money and the budget deficit, financed by borrowing from the CBN, thus leading to increased inflationary pressure on the economy.

The decline in public expenditure due to austerity measures affected adversely the construction and service sectors. Production and employment also declined sharply, specifically manufacturing and services, and other sectors of the economy. Capacity utilisation declined and plant closures were widespread as access of the import dependent industrial sector to imported inputs was sharply curtailed. The decline in imports was accompanied by a significant rise in the domestic price levels, with the inflation rate reaching 40 percent in 1984[21].

Therefore, given the fact that the distortions in the economy were severe and varied, external pressure mounted on the government. During this period, the exchange rate was overvalued, budget deficits experienced in the earlier years were still prevalent and import controls were very stringent. The government could not reach agreement with the external creditors, the International Monetary Fund (IMF) and the World Bank on several issues, including the devaluation of the naira and import liberalisation. It was during this deadlock that Babangida's government seized power in August 27, 1985.

In an attempt to correct the structural, internal and external imbalance in the Nigerian

[20] See Kayode (1987).
[21] The average inflation rate in Nigeria before this period was 12.46 percent.

economy, the Babangida administration introduced the structural adjustment programme (SAP) in June 1986. The adjustment programme emphasised reliance on market forces and deregulation of the economy. The main objectives of the SAP were to restructure and diversify the productive base of the economy so as to reduce dependency on the oil sector and imports; achieve fiscal balance and balance of payments viability over the medium term; and promote non-inflationary economic growth. The key policies designed to achieve these objectives were[22]:

- the tightening of financial policies through reduction of the fiscal deficit;
- the adoption of a market determined exchange rate;
- the liberalisation of external trade and payment system;
- the decontrol of interest rates;
- the rationalisation and restructuring of public expenditure and
- the rationalisation of the tariff structure and the overall lowering of tariffs.

To complement the policies above, the government introduced incentive measures in its 1986 and 1987 budgets as a means to promoting output in the agricultural sector; these included the Duty Drawback Scheme, the Export Expansion Grant Fund, the Export Development Fund, Duty Suspension Scheme, the Pioneer Status, and Currency Retention Scheme. Some specialised institutions, such as the Nigerian Export-Import Bank (NEXIM) and the Nigerian Export Processing Zone (NEPZ), were also established.

Although significant progress was made in the liberalisation of the economy, specifically, through the reform of the exchange rate and the trade system and the freeing of prices,

[22] See Federal Republic Of Nigeria (1986).

macroeconomic policy failed to bring inflation under control. In 1988, the Federal Government expenditure increased by more than 30 percent, and the budget deficit was 14.4 percent of GDP. Though an attempt was made in 1989 to reduce government spending by imposing strict measures, a series of demonstrations and riots, in opposition to SAP, prompted the government to make extra-budgetary spending. Thus, fiscal discipline broke down from 1987 through 1991. Also, coupled with these was the stop-and-go monetary policy, which proved to be expansionary.

The annual average growth of broad money which was 11 percent between 1981 and 1986, its rate of growth tripled between 1987 and 1991. By postponing government spending, including debt services, the government was able to reduce budget deficit to 7 percent in 1994 and by 1996 reported a surplus of 1.6 percent of GDP[23]. However the deficit reduction and ensuing surplus came about primarily through austerity –foregoing government projects and infrastructure maintenance – aided by stronger than expected oil revenue in 1997. In the long run, the inability of the government to maintain critical infrastructure, especially the crude oil refineries, further disrupted the economy and slowed Nigeria's growth. At the same time, the cap placed on debt service payment led to a dramatic increase in arrears and severely strained relations with the creditors.

The Military regime successfully transferred power to a democratically elected government in May 1999 (third republic). Since then, the administration of President Olusegun Obasanjo has been making serious efforts to revamp the agricultural and industrial sectors and to attract foreign investment. The Bank of Industry was established

[23] Moser (1995).

and the Nigerian export-import bank was restructured[24]. Coupled with these is the establishment of the Nigerian Investment Promotion Council, charged with the responsibility to promoting investment and attract foreign investment into Nigeria. Also, effort is being made to improve infrastructural facilities such the power supply, communication and transportation system. Presently, the communication sector has been privatised, while other sectors are in the pipeline to give room for private investors.

A cursory look at the Nigerian economy reveals that some of the factors responsible for the present inflationary pressure include 'wholesale' depreciation of the naira on the foreign exchange market, which increased the naira price of imported goods, persistent budget deficits, huge importation of raw materials, capital and manufactured goods. Others include, interest rate deregulation, removal of subsidies on petroleum products and fertiliser, and increase in the growth of money supply, Onoh (1990).

Next, we provide a brief review of some economic policy measures implemented in Nigeria. Specifically, attention is focused on macroeconomic variables, which might not be unconnected with data problem.

2.2 A Brief Review of Nigeria's Economic Policy

An appropriate monetary and fiscal regime provides the anchor for low and sustainable inflation and macroeconomic stability, which is crucial for a well functioning economy. Thus, in Nigeria, the interplay of monetary-fiscal policy actions and interventions has

[24] This might not be unconnected with the economic programme of the government.

become a notable mechanism by which successive governments often attempt to achieve specific macroeconomic goals of the various sectors of the economy. The translation of these measures into concrete achievements depends on the strength and consistency of the regimes, which unfortunately has not been achieved in most sub-Saharan Africa countries, particularly in Nigeria.

Typically, the key instruments of monetary management in Nigeria are the interest rate and exchange rates. Of course, the achievement of an optimal interest rates and exchange rate regime by itself may not be adequate guarantee for the best macroeconomic outcome for Nigeria. Experience has shown that good fiscal and structural policies are also essential for the sustenance of a well functioning economy.

2.2.1 The Exchange Rate Policy

The exchange rate is the price at which one currency trades for another. The exchange rate did not become a policy instrument in Nigeria until the late 1980s. Like many other developing countries, the exchange rate was pegged against the British pound sterling and subsequently to the US dollar as part of global exchange rate management under the Bretton Woods system[25].

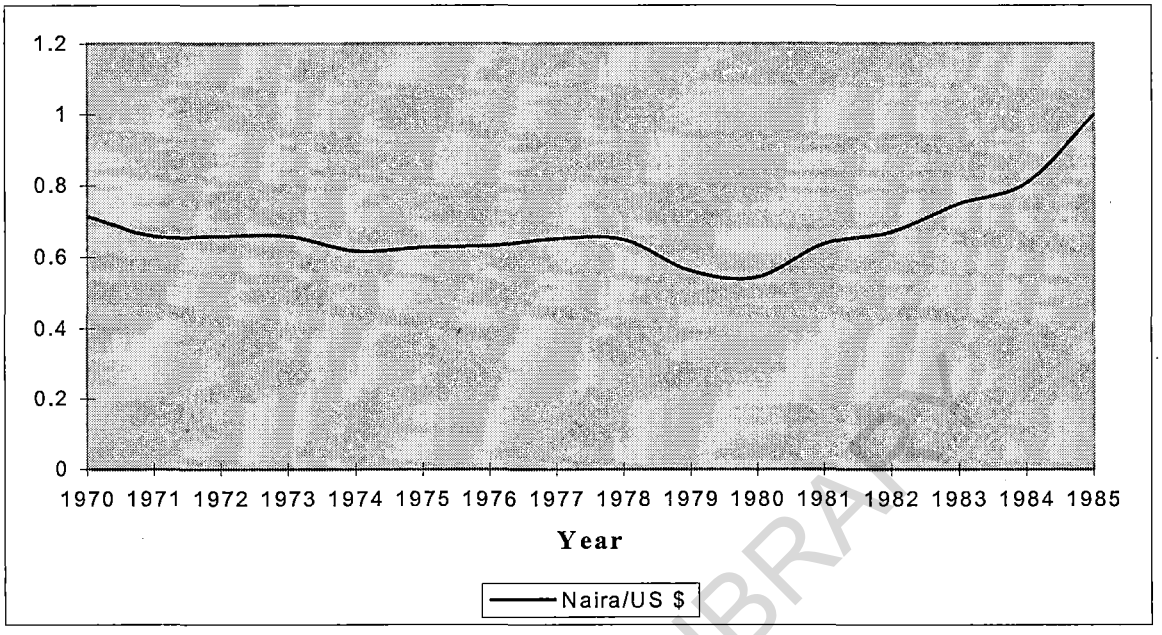
In 1960, the Nigerian pound was fixed at par with the British pound sterling. This defined its US dollar value as US $ 2.80. In 1973, the government replaced the Nigerian pound with the naira, and its par value was set at half the British pound sterling, while the

[25] See Obadan (1993) for details.

naira exchange rate with the US dollar was set at US $ 1.52 to the naira (figure 2.1). A month after this, the US dollar was devalued by 10 percent, and the Nigerian government followed suit with a 10 percent matching devaluation, thereby maintaining the existing naira/dollar rate. The major anchor currencies, the US dollar and the British pound sterling, weakened considerably in 1973. The sustained weaknesses of these currencies brought into sharp focus the problem inherent in the method of determining the exchange rate of the naira. It was realised that a fixed relationship between the naira and any currency would not be sustained if Nigeria chose to respond independently to economic changes in the light of its own objectives and peculiar circumstances.

Therefore, the rigid relationship between the US dollar and the naira was terminated in April 1974 and the government pursued an independent exchange rate policy. The policy embarked upon was a progressive appreciation of the naira against the dollar and the British pound sterling, which coincided with the first oil boom. The idea was to let the naira exchange rate reflect the balance of payments positions, which had improved considerably as a result of the oil boom. The policy would also reflect the rate of domestic inflation and changes in the values of the currencies of Nigeria's major trading partners.

Figure 2.1: Naira Exchange Rate in the Foreign Exchange Market 1970 - 1985



This policy, which led to a gradual appreciation of the naira, continued until late 1976 when a policy reversal was effected to reflect changed fortunes in the country's economic scene, i.e. falling external reserves consequent upon misfortunes in the oil sector. The authorities believed at this point that relatively stable exchange rates might be best achieved through the use of a currency basket. Consequently, between 1978 and 1985, a policy to base the exchange rate on a basket of currencies, most especially currencies of Nigeria's major trading partners was adopted. Specifically, starting from 1978, the naira was tied to a basket of currencies of major trading partners with which the country has the largest import trade[26]. The Central Bank of Nigeria (CBN) believed this approach

[26] These countries are; United States, United Kingdom, Japan, France, Germany, the Netherlands, and Switzerland.

had the advantage of minimising exchange rate fluctuations over time, especially in the prices of imports, reflecting developments in international exchange markets and economies of the country's major trading partners.

However, the results obtained from this method of exchange rate management, when the domestic economy experienced a severe strain, intensified speculation as to whether the value of the naira was too high for the economy to sustain. Also, the precipitous decline in the terms of trade between 1980 and 1985 convinced the government that exchange rate reform was unavoidable, Iyoha (1996).

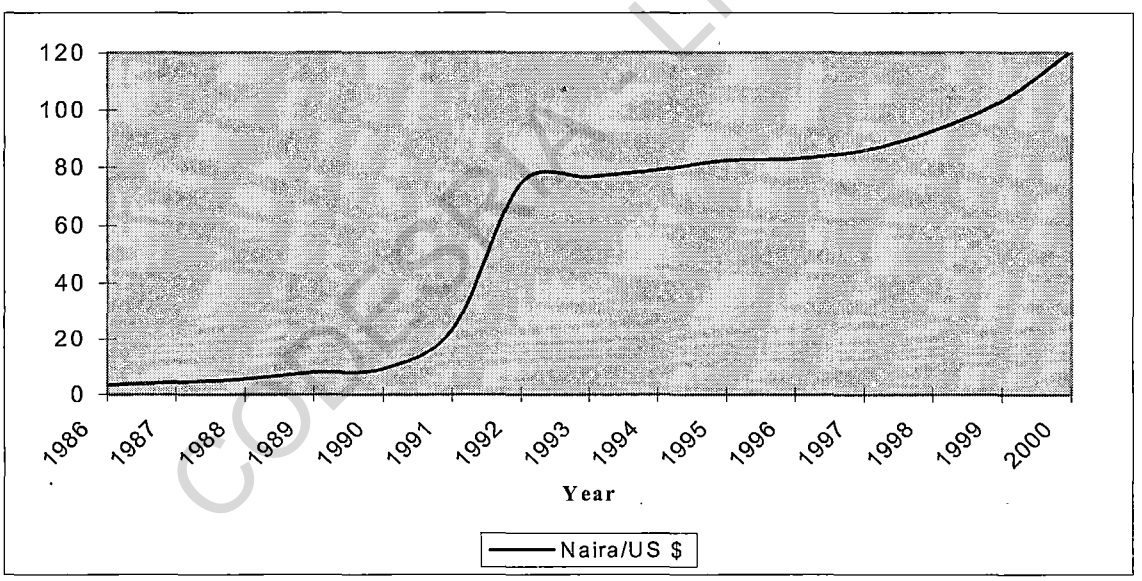
With the introduction of SAP, the role of the exchange rate as an economic policy instrument to induce required structural adjustment was emphasised, and the naira exchange rate was liberalised. During this period, the objective of the exchange rate policy was derived from the overall objective of macroeconomic management, which is to achieve internal and external balance in the medium run.

One of the first SAP measures to be implemented was the introduction of the second –tier foreign exchange market (SFEM), an instrumental for the market determination of a realistic exchange rate for naira. According to the CBN's (1994) review of SAP policies:

'such a realistic exchange rate is expected to eliminate the distortions in all sectors of the economy, reduce imports, stimulate exports and pave the way to economic reliance and stimulate growth'(page 22 - 25)

The introduction of SFEM in the last quarter of 1986 resulted immediately in a sharp depreciation of the naira against the major convertible currencies (figure 2.2). However, due to imperfection and operational problems, which hampered the attainment of a stable exchange rate, the inter-bank foreign exchange market (IFEM) was introduced in 1989.

Figure 2.2: Naira Exchange Rate in the Foreign Exchange Market 1986 - 2000



From virtual parity with the US dollar in 1985 (figure 2.1), the naira exchange rate depreciated to ₦ 4.62 to the US dollar in 1986 at the inception of SFEM, and by the end of 1989, exceeded ₦ 7.76 to the US dollar, a change of almost 65.6 percent (figure 2.2). During the same period, inflation leapt from barely 5.0 percent to almost 41.0 percent. In

1995, the exchange rate was ₦ 82 and continued to depreciate (figure 2.2). The demand pressure and the consequent depreciation of the naira exchange rate under IFEM can be attributed to expansionary fiscal policy and the resultant persistent excess liquidity in the banking system, a sticky supply structure in the economy generally, and the foreign exchange market in particular. Others include, capital flight, speculative activities of market players, non-transparency of some of the authorised dealers, as well as low domestic output and high import dependency. Overall, it is not the quantum of foreign exchange demanded that is worrisome per se, it is the utilisation of the foreign exchange which has been largely inefficient and not supportive of the productive activities in the real sector. The available evidence reveals that over 80 percent of foreign exchange demand is being utilised for the importation of manufactured goods.

2.2.2 Interest Rate Management

The interest rate is the price paid by borrowers for the use of credit and the return to lenders for parting with liquidity. The primary role of the interest rate is to help in the mobilisation and efficient allocation of financial resources. The interest rate is crucial in financial intermediation, which involves transferring funds from surplus units in an economy to deficits units. Apart from its allocative function, the interest rate constitutes a major tool for monetary management.

The main objectives of the interest rate policy in Nigeria include the moderation of inflation, reduction of pressure on the balance of payments, achieving exchange rate

stability, stimulation of increased financial savings and investment and the promotion of macroeconomic and financial sector stability.

The interest rate plays a very critical role in the transmission mechanism of monetary policy. In fact, when the CBN raises its key policy interest rate, it sets in motion a series of chain reactions which start in the financial markets, work through changes in savings, investments, production and employment and terminate with an effect on the domestic price level and the exchange rate.

Generally, the behaviour of interest rates in an economy is influenced by a number of factors which include market forces of supply (savings) and demand (investment); inflation, government's fiscal deficit operations, and market expectations.

The management of interest rates in Nigeria historically involved direct and indirect approaches. The 1969 Banking Decree gave the CBN the power not only to control but also to determine and prescribe minimum and maximum interest rates chargeable by banks. Thus, by March 1970, the CBN directed all commercial banks to link their interest rates with the Minimum Rediscounting Rate (MRR)[27]. The minimum and maximum rates on advances and loans during this period were set at 2.5 and 7.5 percent respectively. The CBN has constantly used the power vested in it by prescribing yearly interest rates on various types of financial assets and loan instruments of the banking institution in Nigeria. The interest rate in Nigeria before the introduction of SAP did not reflect true scarcity, opportunity cost or shadow price of capital (figure 2.3). The

[27] The MRR is the rate at which the CBN discount bills from the banks in Nigeria.

rationing process created, given the lid placed on interest rates, has not resulted in the selection of the best investment projects because the banks relied on non-economic considerations, such as collateral, than on the profitability of the project to be financed.

A number of reasons can be advanced for the administratively low, static interest rate before SAP. As highlighted by Ajilima and Agba (1988), between 1970 and 1985 the major reasons for administering interest rates were due to the desire of the government to stimulate investment, promote the orderly growth of financial markets, reduce inflation, and lessen the burden of domestic debt service. During this period, the MRR, which is the normal anchor of CBN's interest policy, did not play any significant role in influencing the cost and availability of credit. Also, the policy of low and stable interest rates, regardless of economic circumstances, seemed to follow the postulate that a low interest rate would stimulate high levels of investment.

Figure 2.3: Real Rate of Interest on over 12 months Time and Savings Deposits 1970- 1985

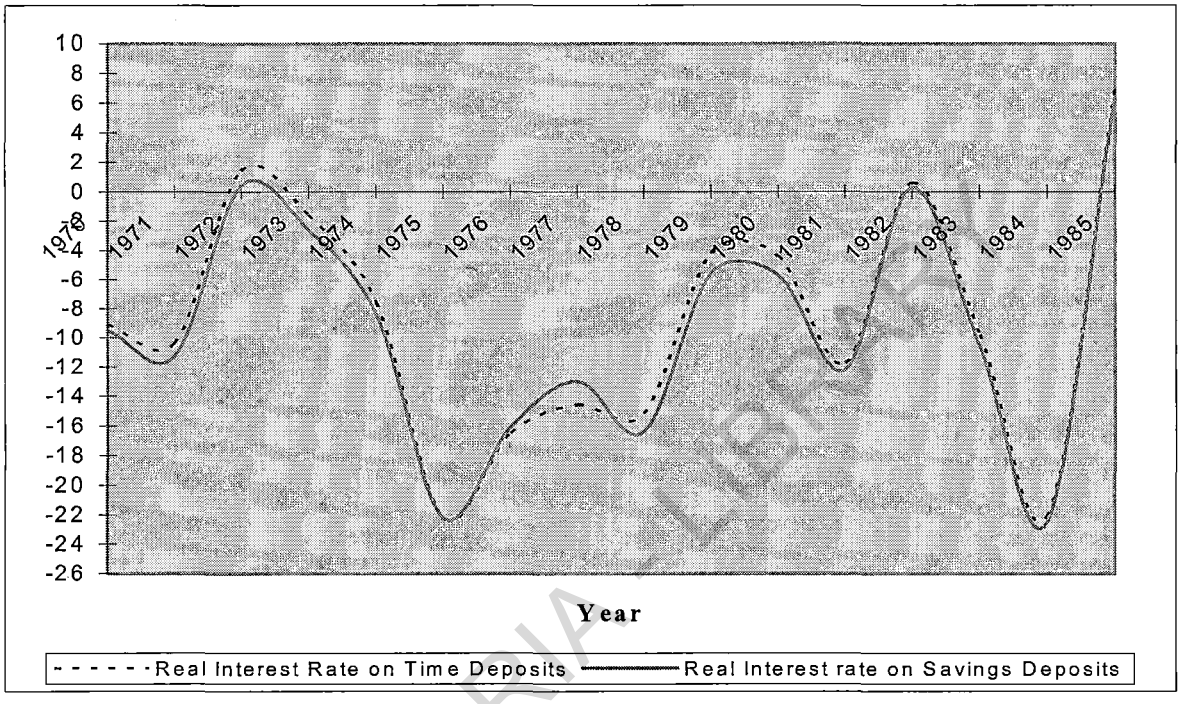


Figure 2.3, reveals the real rate of return on time and savings deposits with commercial banks between 1970 and 1985. The real rate of return on time deposits was negative for the entire period except in 1972, 1982 and 1985. Though it was positive for those three years, it was still very low. This is equally true for the real rate of return on deposits. The positive rates of interest were 0.4, 0.3 and 6.4 percent for years 1972, 1982 and 1985 respectively. It is therefore clear that the distortions in the Nigeria's interest rate policy lead to financial repression through negative real interest rates and this posed important macroeconomic questions concerning the economy's ability to accumulate financial assets in real terms, the volume of national savings and domestic investment, the

efficiency of investment and the allocation of resources[28].

With the introduction of SAP, and in line with the general framework of deregulating the economy to enhance competition and efficient allocation of resources, the monetary authorities adopted a market based interest rate in 1987[29]. The liberalisation of bank deposit and lending rates, which took effect from August 1, 1987, had an impact on interest rate developments. The commercial banks followed the CBN's rediscounting rate in adjusting their rates. This was particularly evident toward the end of 1987, when the CBN lowered its discounting rate and the banks followed suit in the face of accelerating inflation. Due to pressure from the private sector, the CBN re-introduced controls in 1989 by imposing a maximum spread between lending and deposit rates and imposing a maximum lending rate. The resulting increase in real lending rates to more than 20 percent evoked strong pressure from the private sector, specifically, manufacturing sector and interest rate controls were re-imposed in 1991.

The maximum lending and minimum deposit rates were fixed at 21 percent and 13.5 percent, respectively. As inflation accelerated, real interest rates began to fall eventually, turning negative in 1992. Interest rate ceilings were lifted in mid 1992 and banks were advised to look at the CBN discount rate when setting interest rates. Specifically, in the 1992 budget, the President made it clear that the formal lifting of the ceilings did 'not imply that banks could indiscriminately raise their interest rates and that banks should adhere strictly to the market signals as monitored and transmitted to them by the CBN'.

[28] For the debate on liberalization and financial repression see Mackinnon and Shaw (1973).
[29] Federal Government Budget (1988).

Therefore, since 1993 controls on interest rates were removed but the CBN continue to influence the interest rates through its intervention at the discount window, especially through the minimum rediscounting rate which has been fluctuating between 13.5 percent and 18.5 percent. The rate on commercial banks' savings deposits averaged 5.7 percent, while the maximum lending rates averaged 25.6 percent between 1993 and 2000. The spread between commercial banks' savings deposits and maximum lending rates has not been stable over time though it has been reducing with the observed moderation in the rate of inflation, all deposit rates, except savings rates remained positive in real terms.

2.2.3 The External Trade Policy

International trade ensures foreign exchange earnings for future growth and hence a potential force for survival in the presence of dramatic changes in the character of capital flows. Therefore, the trade strategy embarked upon by a nation becomes important because a country's trade policy may well determine the rate of growth, industrialisation and the possibility of redressing balance of payments disequilibrium whenever it exists.

Trade policy analysis, generally, can be broadly classified into two categories; namely, inward-orientation, with emphasis on import substitution industrialisation strategy, and the outward-orientation strategy that focuses on export promotion. Nigeria, for a long time, pursued economic development via the import substitution industrialisation strategy. The main thrust of trade policy in the 1960s and 1970s was on revenue

generation and protection of domestic industries[30].

Nigeria trades worldwide with about 100 countries, but the composition of trade by country has changed since the colonial period. During the colonial era, Britain was Nigeria's dominant trading partner. In 1955, 70 percent of Nigeria's exports went to Britain and 47 percent of its imports were from Britain. However, by 1976 Britain's share of Nigerian exports and imports dropped to 38 percent and 32 percent respectively. In the 1970s, the United States gradually replaced Britain as Nigeria's main trading partner. Thus, in the 1980s the United States was Nigeria's main customer, buying more than 36 percent of its exports (primarily petroleum products); Britain was Nigeria's leading vendor, selling more than 14 percent of its imports.

In the early 1990s, Nigeria had a number of major European Union (EU) members as trading partners, including Germany, France, Italy, Spain, and the Netherlands. Nigeria also has an active trade relationship with some countries in Asia, notably Korea, China, and Japan. Trade with African countries, mainly neighbouring countries within the Economic Community of West Africa (ECOWAS was created in 1975), comprised only 3 to 4 percent of total trade.

2.2.3.1 The Structure of Exports and Imports

In examining the structure of exports and imports in Nigeria, to enhance our analysis, it is important we use the oil versus non-oil dichotomy. Exports are extremely skewed

[30] Olowononi, (1995).

towards oil while imports are skewed towards non-oil items. Though before the advent of petroleum, the non-oil export sector, which was dominated by agriculture played significant roles in the Nigerian economy. It was also the major contributor to Nigeria's GDP and an important source of foreign exchange. The non-oil imports, which included raw materials, manufactured goods, and machinery and transport equipment has constituted 82 percent of total imports since 1987. Thus, overall, during the period 1987 to 2000, the share of non-oil imports in total imports is increasing.

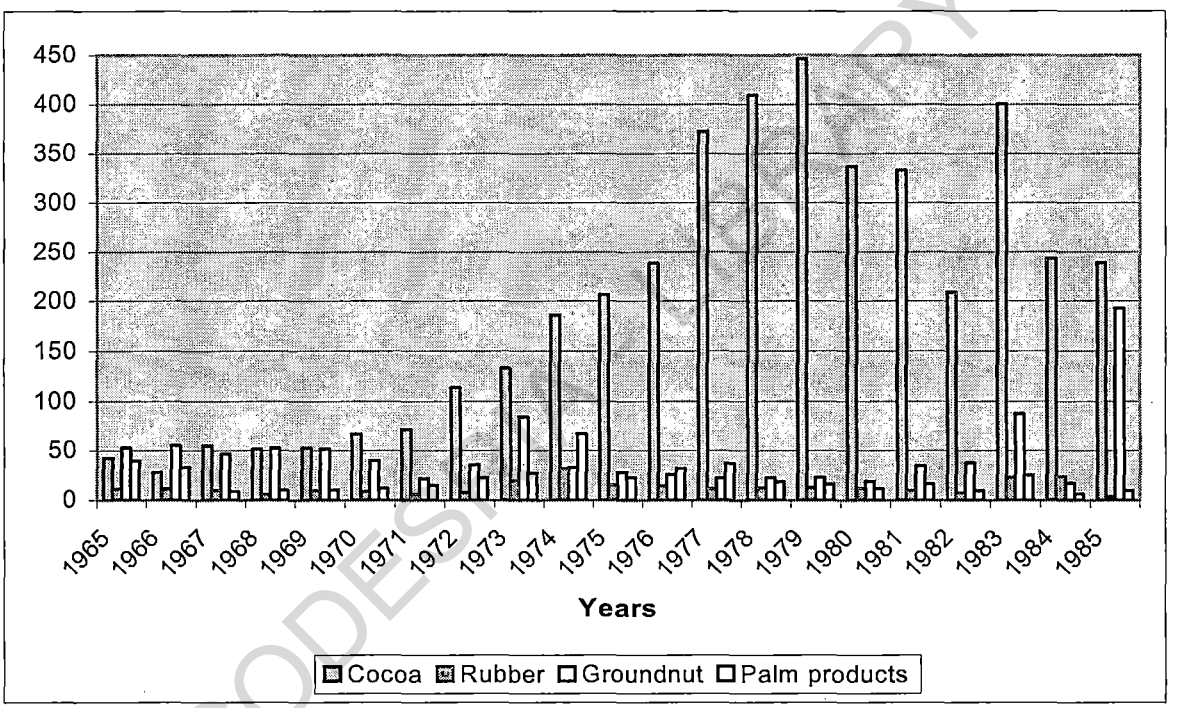
2.2.3.1A Exports

As mentioned earlier, prior to the oil boom of the 1970s, agriculture was the mainstay of Nigeria's economy; it was the major contributor to Nigeria's GDP, a source of employment, and the primary source of foreign exchange. The bulk of the nation's foreign exchange earnings at that time accrued from the sale of cash crops such as cocoa, groundnuts, rubber, cotton, palm produce and solid minerals (bauxite, coal, and tin). Seven Commodity Boards were established to co-ordinate export activities[31]. The Boards were charged with the responsibility of setting producer prices for the country's major agricultural crops. Until the late 1960s Nigeria was a world-leading exporter of palm

[31] The Boards are; the Cocoa Board (responsible for cocoa, coffee and tea), the Groundnut Board (responsible for groundnuts, soya beans, benniseed, peanuts and ginger), the Cotton Board (responsible for cotton), the Palm Produce Board (responsible for palm oil, palm kernel and copra), the Rubber Board (responsible for rubber and timber), the Grain Board (responsible for corn, millet, maize, wheat, rice and beans), and the Root Crops Broad (responsible for yams and cassava).

produce, ranking third after Ghana and the Ivory Coast in the exports of Cocoa. The country equally exported substantial quantities of rubber, groundnuts and timber, see figure 2.4. During this period, the non-oil exports constituted 74.2 percent of the total export earnings.

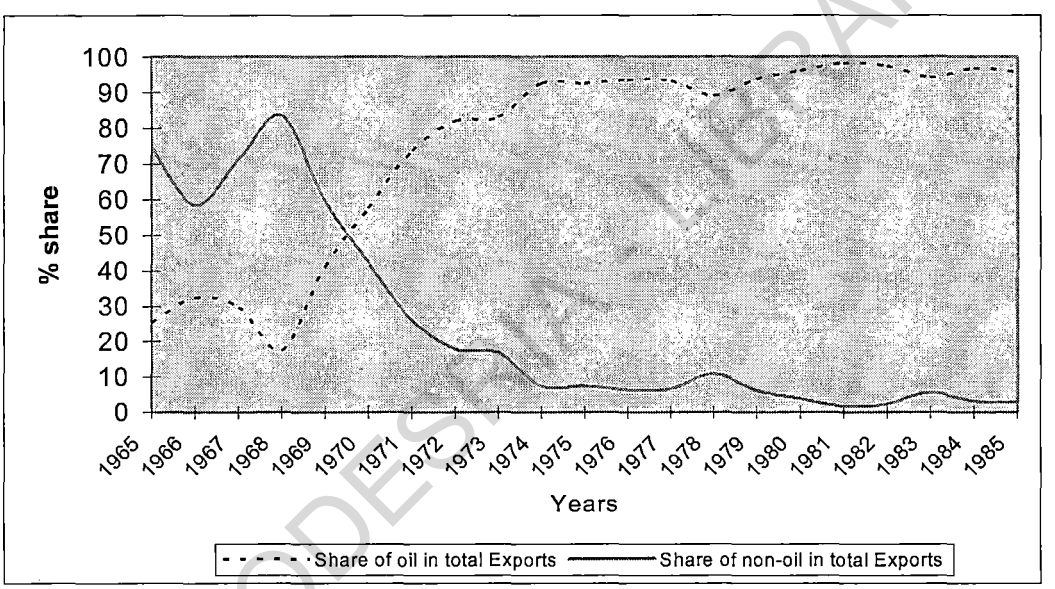
Figure 2.4: Nigeria's Major Agricultural Exports (millions of naira) 1965 - 1985



However, this dominant position which the agricultural sector occupied in terms of exports and contribution to GDP began to decline slowly but steadily following the expansion of the petroleum sector, see figure 2.5. In fact, the emergence of crude oil production and exports radically changed the structure of the economy in early 1970s. The oil sector took over, as the leading sector of the economy and, overtime, the non-oil

sector, became less competitive. The huge foreign exchange earnings from crude oil exports gave a fillip to massive importation of goods, including food, to the extent that the terms of trade turned against agriculture. Though Nigeria's total exports earning in 1970 were ₦855.40 million, the oil exports contributed 57.6 percent while non-oil exports contributed 42.6 percent. The contribution of the oil sector has since been on the increase as depicted in the graph below.

Figure 2.5: The Structure of Nigeria's Exports 1965 - 1985



The problem with agriculture was worsened by inappropriate pricing policies by the commodity boards; domestic policies also constituted a disincentive for farmers, dearth of farm labour caused by rural urban migration and infrastructure inadequacy in the rural areas. These resulted in a shortage of rural labour force, while at the same time increasing rapidly the population of urban dwellers that have to be fed by the rural people. Thus, staple food prices skyrocketed.

2.2.3.1B The Recent Export Promotion Policy Measures and Institutional Support

One of the corner stones of SAP is to restructure and diversify the productive base of the economy in order to reduce dependence on the oil sector. As a way of liberalising the export sector, the exchange control decree was abrogated and the agricultural marketing boards, hitherto charged with the marketing of the country's export produce, were dissolved. To encourage exporters further, the government formulated and adopted a comprehensive export incentive legislation known as the Export Incentive and Miscellaneous Provision Decree No 18 of 1986. The government declared its political and financial commitment to this policy as it was seen as a cardinal necessity for the successful implementation of SAP. Therefore, to ensure the effectiveness of the export promotion policy measures on the economy, the government provided institutional support for general and specific purposes by restructuring the existing Nigerian Export Promotion Council, established the Nigerian Export - Import Bank (which commenced operation in 1990) and the Nigeria Export Processing Zone Authority (which commenced operation in 1992). The export incentives introduced included, the Duty Drawback Scheme, the Export Expansion Grant Fund, the Export Development Fund, Duty Suspension Scheme, the Pioneer Status, and Currency Retention Scheme.

The export incentives may be categorised into two main groups. These are those that are meant to encourage new exporters and those aimed at gearing up the current exporters

towards increased output.

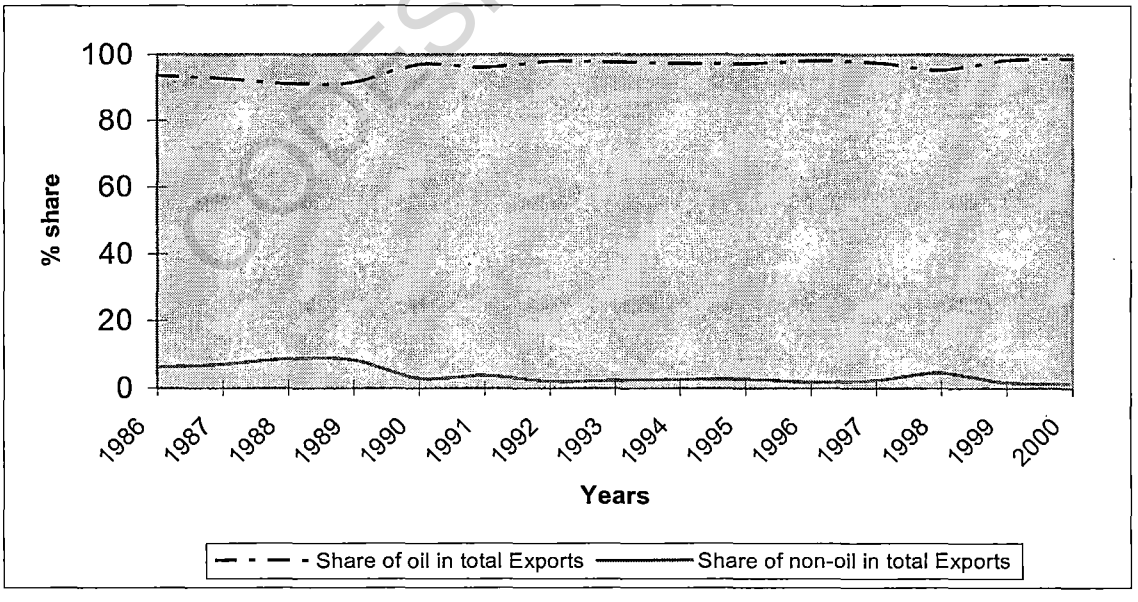
The first category includes the abolition of export licensing and export taxes on non-oil exports, the scrapping of Commodity Boards which now enables exporters to have direct access to the final market for their products. The Boards were dissolved, giving way for private sector export merchants to take their place. The private exporters have since 1986 become directly involved in the exportation of the scheduled commodities, which were formerly monopolised by the Boards to the total exclusion of the private businessmen. Also, the establishment of the Nigerian Export Credit Guarantee and Insurance Scheme has helped potential exporters with insufficient funds to finance the export of their products. The Export Adjustment Fund Scheme serves as a supplementary export subsidy to compensate new exporters that are envisaging high production cost arising from infrastructural deficiencies and other problems. The currency retention scheme enables exporters to retain 100 per cent of export proceeds in a domiciliary account operated in any of the authorised banks in Nigeria. The exporter is free to sell the currency through the bank for the purpose of converting it to naira. This is a complete reversal of what happened before September 1986 when an exporter had to surrender all foreign exchange earned through exportation to the CBN.

The second group consists of incentives which serve as a means of assisting the non-oil exports. Such incentives include Export Expansion Grant Fund (EEGF), which provides cash inducement for exporters with increased output beyond a specific level, the duty drawback scheme helps provide refund of duties on raw materials imported and also

exempts products destined for exports from excise duty. The Export Development Fund is a special fund provided by the government, which aims at giving financial assistance to exporting companies to cover part of their expenses. Also, the Industrial Development Act of 1971 was amended to confer on any manufacturing exporter who exports, at least 50 per cent of his annual turnover, the pioneer status.

With these measures and institutional framework put in place, there was a slight improvement in the contribution of non-oil exports to total exports between 1986 and 1989 (figure 2.6). Its contribution to total exports increased from 6.2 per cent in 1986 to 8.3 per cent in 1989. This improvement was not only due to the above incentives but also due to the depreciation of the naira. However, this is not significant given the performance of the sector before the advent of oil.

Figure 2.6: The Structure of Nigeria's Exports 1985 - 2000



As a result of the Gulf War, the contribution of oil exports in total exports once again increased peaking at 97.03 percent in 1991. In 1992, oil contributed ₦ 201,383.9 million as against ₦ 116,856.5 million in 1991. The non-oil contribution nose-dived to 2.06 per cent in 1992 and later increased to 2.69 per cent in 1995[32]. It reached the highest peak of ₦ 1,286,247.5 million in 1996. The main factor responsible for the increment in export earnings was the sharp depreciation in the value of naira.

The limited effectiveness of SAP export promotion efforts led to an increase in funding for the Duty Drawback Suspension Scheme and provision of a new manufacturing- in - bond scheme (to encourage importers of raw materials to produce exportable products) in the 1991 budget. In November, an export-processing zone was established in the South - Eastern part of Nigeria. The government provided domestic and foreign firms export incentives, such as exemption from all duties, levies, taxes and foreign exchange restrictions.

With the introduction of the SAP, there is no doubt from the foregoing that a lot has been done in terms of provision of incentives in order to boost the export of non-oil commodities in Nigeria though there is still room for improvement. The government made frantic efforts to revive the non-oil export sector by putting in place a mix of export promotion measures aimed at reversing the sector's adverse terms of trade. However, these measures notwithstanding, the performance of the non-oil export sector has

[32] Anyanwu (1992).

remained dismal[33], as crude oil continues to dominate Nigeria's export.

The contribution of the non-oil exports sector to the aggregate revenue and foreign exchange earnings of the country has remained far below its potential, despite efforts made by government to revamp the sector. Some of the problems constraining the performance of the sector include - inefficient implementation of export incentives and support programmes, inadequate and decaying infrastructure especially in rural areas, funding/financing constrains, rigidity in trade procedures, inadequate capitalisation of the Nigerian export-import bank (NEXIM), policy inconsistencies and political instability.

2.2.3.1C Imports

Since independence, Nigeria relied on imports for manufactured goods, capital goods, chemicals, and raw materials. Though the absolute import level is important, of greater significant from the point of view of economic development is the structure or composition of imports. There has been greater concern about the structure of Nigeria's imports recently. The concern centred on the increasing share of food and manufactured goods in total imports. The structure of imports would have been of less concern if industrial raw materials, machinery and other capital equipment account for a greater proportion of total imports. In the early 1960s and towards the end of the 1970s, the bulk of Nigeria's imports were from the United Kingdom. Recently, though the trade pattern has changed slightly towards the United States, a few countries in Asia, including

[33] This may be due to long gestation period especially for tree crops. For example cocoa and other cash crops, the gestation period is about eight years or more.

Japan, China and Korea, some countries in Europe and some neighbouring African countries.

The value of imports increased from ₦ 550.2 million in 1965 to ₦ 756.4 million in 1970. The import of machinery and transport equipment, which is an important element of capital formation increased from ₦ 184.8 million in 1965 to ₦ 282.6 million in 1970. In 1965, it formed 33.6 percent of total value of imports while in 1970 its proportion in total increased to 37.4 percent. The increased proportion is in line with Nigeria's aspiration for industrial development. Of considerable interest is the increased level of imported food. Food imports rose from ₦ 46 million in 1965 to ₦ 57.6 million in 1970 and ₦ 88 million in 1971, the percentage increase being 20.1 percent between 1965 and 1970 and 34.5 percent between 1970 and 1971. The rapid growth in imports in 1971 also contains a substantial price component. There has been little slackening of cost inflation in industrial countries. The United Kingdom, a major supplier of Nigeria's imports witnessed an average increase of about 9 percent in export unit values during the year. Also, it seems that hedging by foreign exporters during the international monetary crisis contributed to high import price levels.

The value of imports in 1973 was ₦ 1,808 million compared to ₦ 1,286 million for 1972. Thus, the growth rate between these two years was 28.9 percent. This compares with a decline of 8.9 percent in imports recorded in 1972 (Anyanwu, 1992). However, since the growth of exports in 1973 was twice the rate of import growth, Nigeria enjoyed a comfortable visible trade surplus during the year. It should be emphasised that the size of

the trade surplus does not and cannot be taken as indicating the country's overall foreign exchange position, since considerable deficits are usually recorded on invisible trade. In terms of percentage share, capital goods imports accounted for 63.3 percent of total imports in 1973 as against 61.2 percent in 1972.

However, this performance still falls far short of the achievements in 1970 and 1971, when due to special requirements for capital replacement after the war, the share of imported capital goods were 70.5 and 67.1 percent of total imports respectively. The share of machinery and transport equipment increased consistently from 1969 through 1983 (figure 2.7). This is expected because of the desire of the government to develop the industrial sector of the economy.

In 1977 and 1978, and in contrast with exports, the value of imports increased from ₦ 7,091.7 to ₦ 8,368.7, representing an increase of 18 percent in absolute terms. Though, in absolute term, the imports value for 1978 was very high, the rate of increase was just half of the rate recorded for the previous year. The relative decline in the rate of increase was due to import control measures introduced in the budget that year (figure 2.8). Though the decline was welcome, it must be emphasised that the growth rate of imports was still very high, especially when it is realised that total imports exceeded total exports by as much as ₦ 1,826 million.

Figure 2.7: The Structural of Nigeria's Imports 1965 – 1985 (million naira)

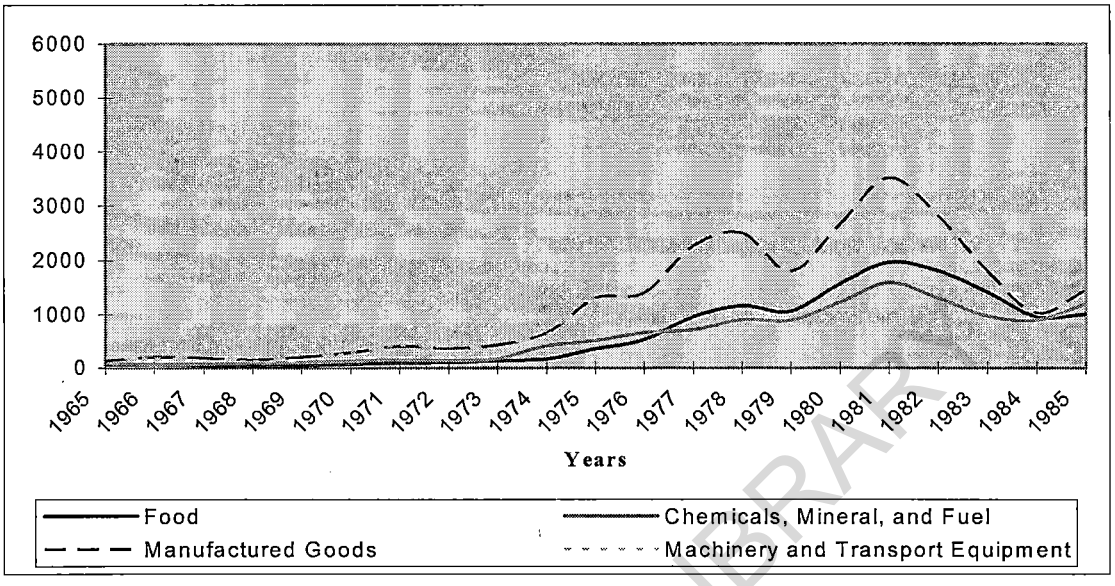
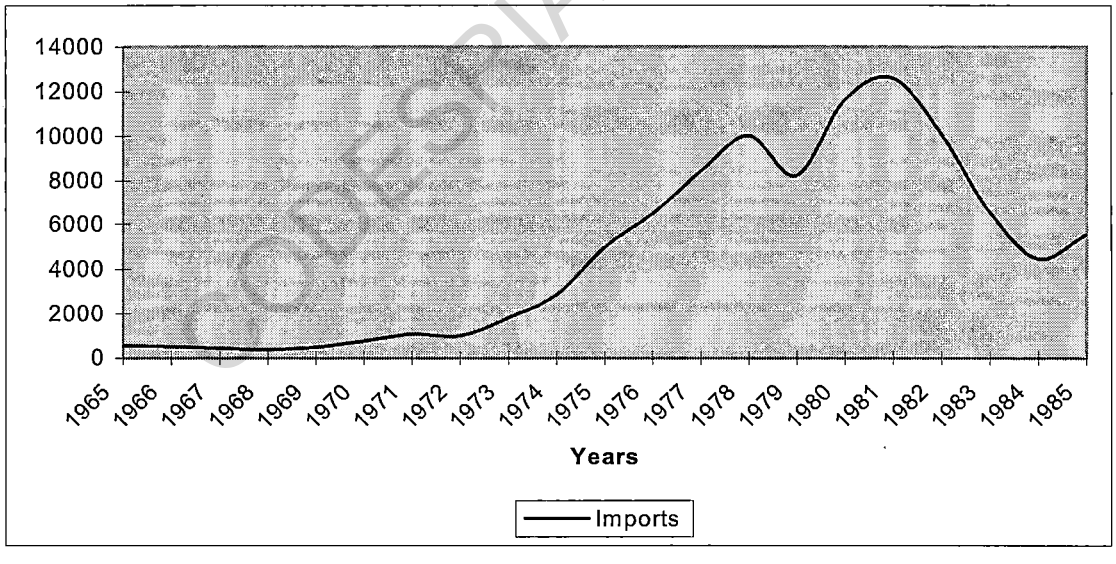


Figure 2.8: Total Imports 1965 – 1985 (million naira)



Between 1982 and 1985, the austerity measures dampened the growth rate of imports (figure 2.8). Imports were reduced from ₦ 9,031 million in 1982 to ₦ 6,376 million in

1983. This represents a decrease of 29.4 percent. The value of food imports fell from ₦ 1,427 million to about ₦ 896 million. The fall in food imports reflected the impact of increased domestic production and the fiscal measures, which were aimed at discouraging food import and thereby shaping the consumption pattern in favour of locally produced goods. The value of import of raw materials fell from ₦ 2,136.4 million to ₦ 1,841.5 million within the same period. The local manufacturing industries depend to a large extent on the import of raw materials. The import substitution policy, exchange rate policy and the approved user scheme tended to encourage industries dependent on imported raw materials rather than those based on local resources. With the introduction of austerity measures, policy measures were designed to place emphasis on the use of local raw materials in order to promote resource-based industries and thereby discourage excessive importation of raw materials to conserve foreign exchange[34].

With the introduction of SAP, Nigeria abolished all import licensing requirements and liberalised imports in 1986. The composition of imported goods changed rapidly in favour of food and manufactured goods (figure 2.9). Thus, from ₦15.7 billion in 1987, imports increased by about a factor of two in 1989. Thus, the growth rate of imports, which averaged 2.5 percent annually in the 1960s, climbed to an annual average of 33 percent after liberalisation.

[34] We note that this could be detrimental for the manufacturing sector.

Figure 2.9: The Structure of Nigeria's Imports 1986 - 2000

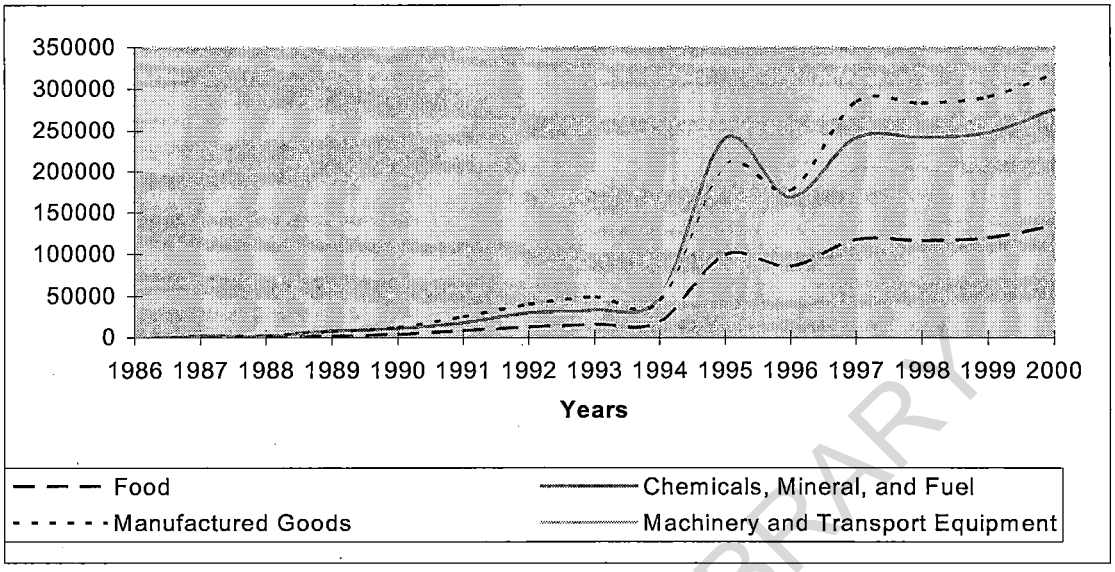
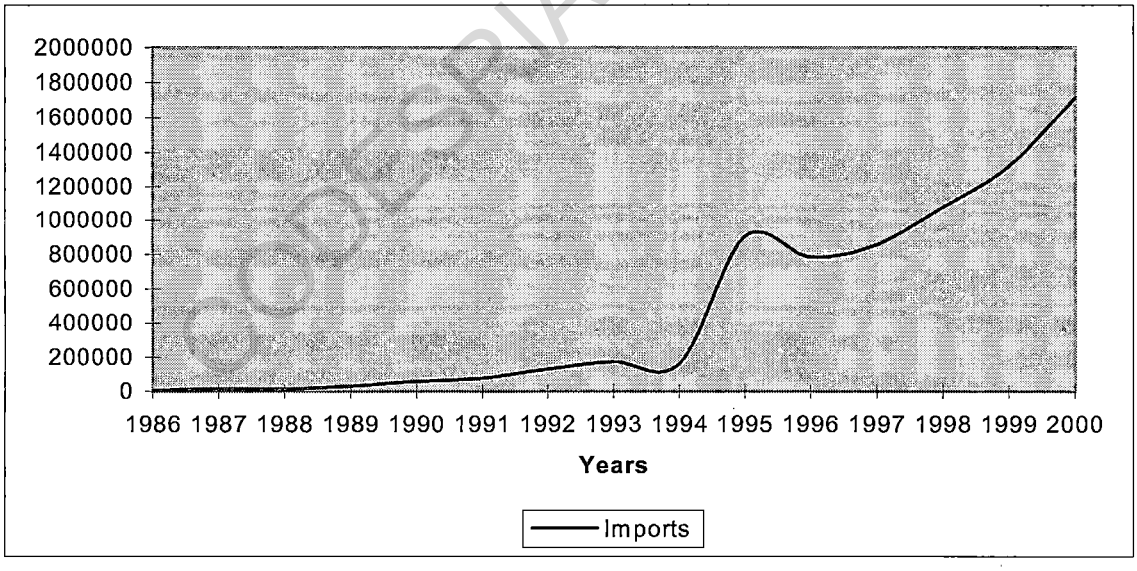


Figure 2.10: Total Imports 1986 – 2000 (million naira)



Imports have followed a positive trend, increasing after 1996, see figure 2.10. The breakdown of imports revealed that the importation of manufactured goods continues to

rank highest followed by machinery and transport equipment, chemicals, minerals and fuel (figure 2.9). Given the composition of imports over time, specifically since the beginning of SAP, what is more worrisome is the fact that manufactured goods still constitute the bulk of imported goods into Nigeria.

2.2.4 The Balance of Payments

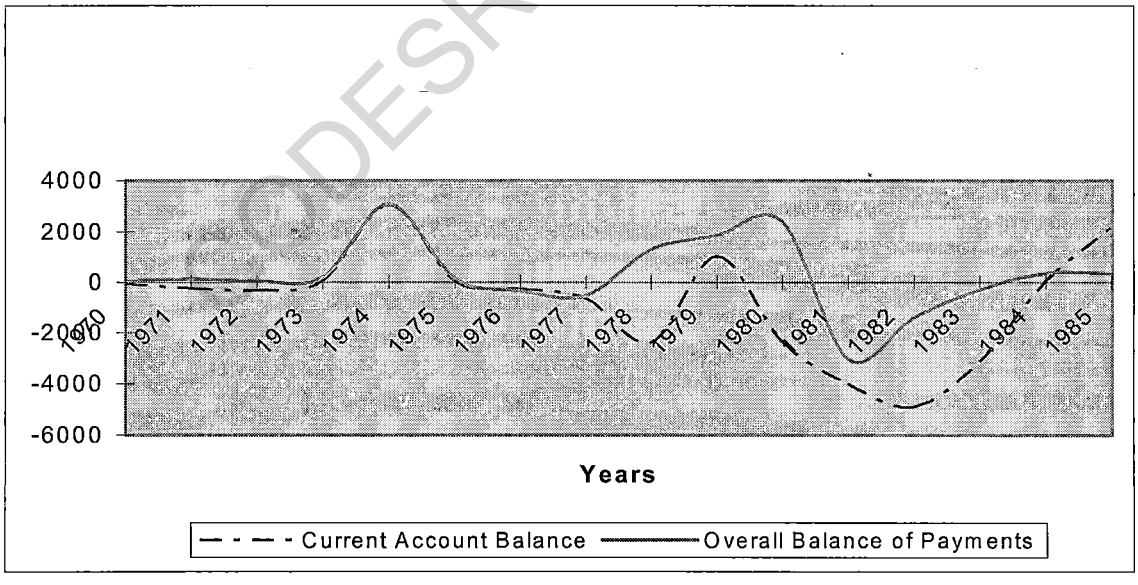
The balance of payments is a summary record of all the international economic and financial transactions of a given country during a specified period of time, usually a year. It is a statistical statement which summaries the transactions of a country which create payment obligations to foreigners and the transactions, which provide the means of settling these obligations. In its broadest sense, it is often used to measure a country's performance as regards international trade, during a given year.

The Nigerian current account balance and balance of payments have shown remarkable variations over the years. The current account balance was consistently in deficit between 1960 and 1970. The deficit was huge because of the payments for shipping, insurance and other services, and also because of the repatriation of profits and dividends by foreign companies operating in Nigeria. Also, the period 1971 to 1983 marked a new turn in the evolution of the current account balance, Nigeria experienced current account surpluses in 1974, 1975, 1979 and 1980 (figure 2.11). These reflected the substantial increases in crude oil prices and stringent exchange controls over the same period. The current account balance ranged from a deficit of approximately US $ 4 billion in 1978 to

a surplus of about US $ 5.1 billion surplus in 1980.

On the other hand, the overall balance of payments between 1970 and 1983 surpluses existed with the exception of 1976, 1977, 1981, 1982 and 1983 (figure 2.11). The huge balance of payments deficit in 1981 marked the beginning of the oil glut. Both the current account balance and overall balance of payments were in deficit in 1981 and 1982. The government introduced the Economic Stabilisation Act in an attempt to curb and reverse the negative trend in these accounts. The austerity measures emphasised reductions in aggregate absorption, without much focus on structural changes. Therefore, both current account and balance of payments turned positive between 1984 and 1985. However, because of the inherent problem with the economy, SAP was adopted in 1986.

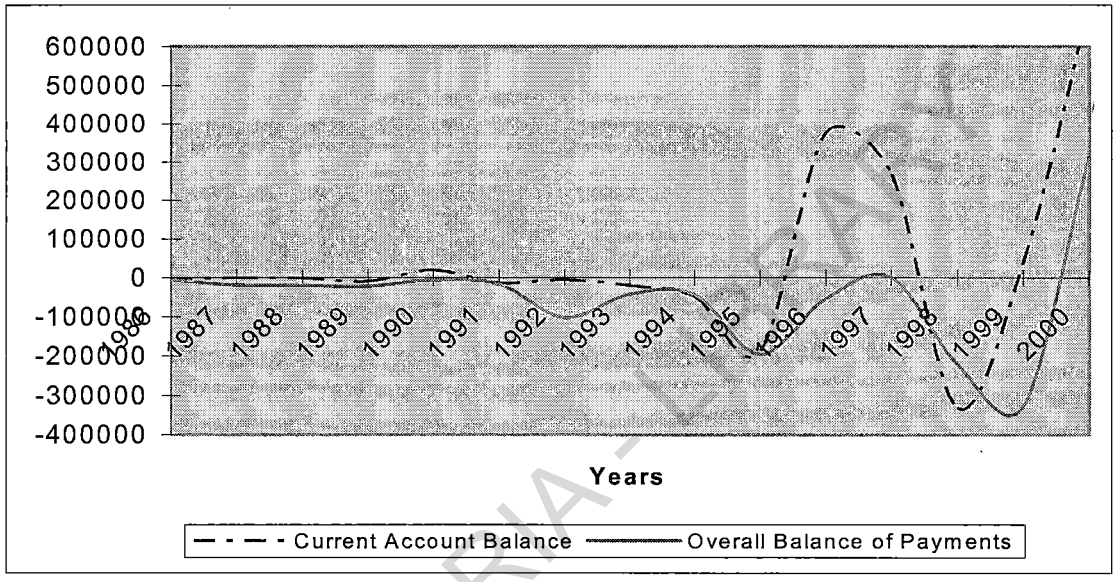
Figure 2.11: The Current Account and the Balance of Payment 1970 - 1985



One of the important objectives of SAP was to improve the balance of payments.

However, the chronic current account and overall balance of payments deficits during SAP were a major source of concern. During the period of 1986 to 1990, the current account balance maintained a negative trend, with the exception of 1990.

Figure 2.12: The Current Account and the Balance of Payment 1986 - 2000



A cursory examination of figure 2.12 shows that except for 1990 (when the Persian Gulf War took place and crude oil skyrocketed to US $40 per barrel, which provided a large windfall to Nigeria), the current account was in deficit during the entire period between 1991 and 1995 but with the exception of 1990. In 1994, the current account deficit reached a staggering amount of 48.6 billion. The overall balance of payments, which incorporates both the current account balance and the capital account balance, was in deficit every year from 1988 to 1996. The deficits in the overall balance of payments seem to have worsened in the 1990s, reaching a peak of ₦101 billion in 1992. Though the current account was negative in 1995, from 1996 to 1997, the current account

balances were positive due to improvements in oil prices. The behaviour of the Nigerian current account appears to have been sensitive to developments in the world market, even after the introduction of the economic reforms.

According to the CBN (1996):

> 'The persistent pressure on Nigeria's balance of payments may be attributable to a number of factors, namely, fluctuations in crude oil prices, unimpressive performance of non-oil exports, low level of foreign direct investment and high debt service payments. The persistent pressure on balance of payments over the years may be attributable to macroeconomic instability as reflected in high rate of inflation, huge deficit financing, as well as misalignment of the exchange and interest rates'.

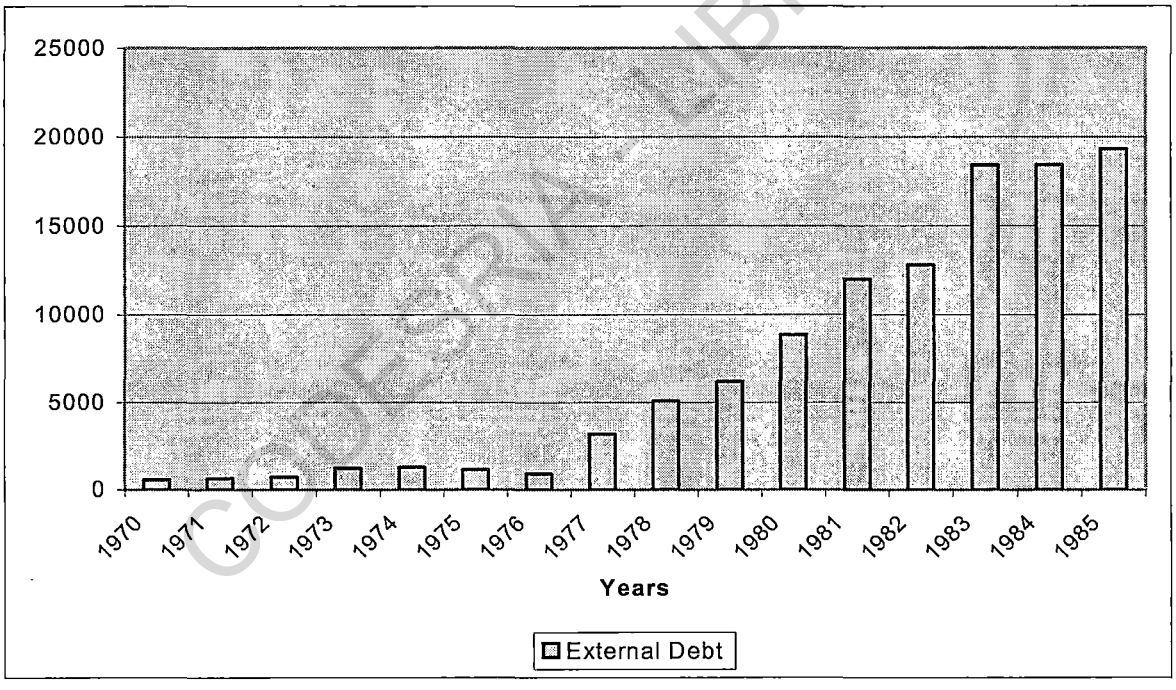
2.2.5 External Debt

Most developing countries are facing debt problems arising from both internal and external loans incurred in the past. Over the years the rate of inflow of external loans has reduced but the burden of servicing loans contracted in the past is increasing.

In the 1950s there was little need for borrowing from abroad in Nigeria. However, in the late 1960s, the situation, with regard to public debt and external loans, changed due to the depletion of foreign reserves built up during those hay days of agricultural exports. Thus a high demand for borrowing emerged. An important factor, which contributed to the increased level of public debt during the late 1970s, was the financing of the civil war and the reconstruction effort of the government.

Nigeria's total external debt amounted to US $5.4 billion in 1980. As a result of the collapse of the world crude oil prices and the overvalued exchange rate, which encouraged excessive importation, the external debt increased steadily throughout the 1980s. Figure 2.13 shows Nigeria's external debt between 1970 and 1985. In 1982, Nigeria's external debt was $12.8 billion, the total external debt stood at US $ 14.6 billion and US $ 19.8 billion in 1985 and 1986 respectively.

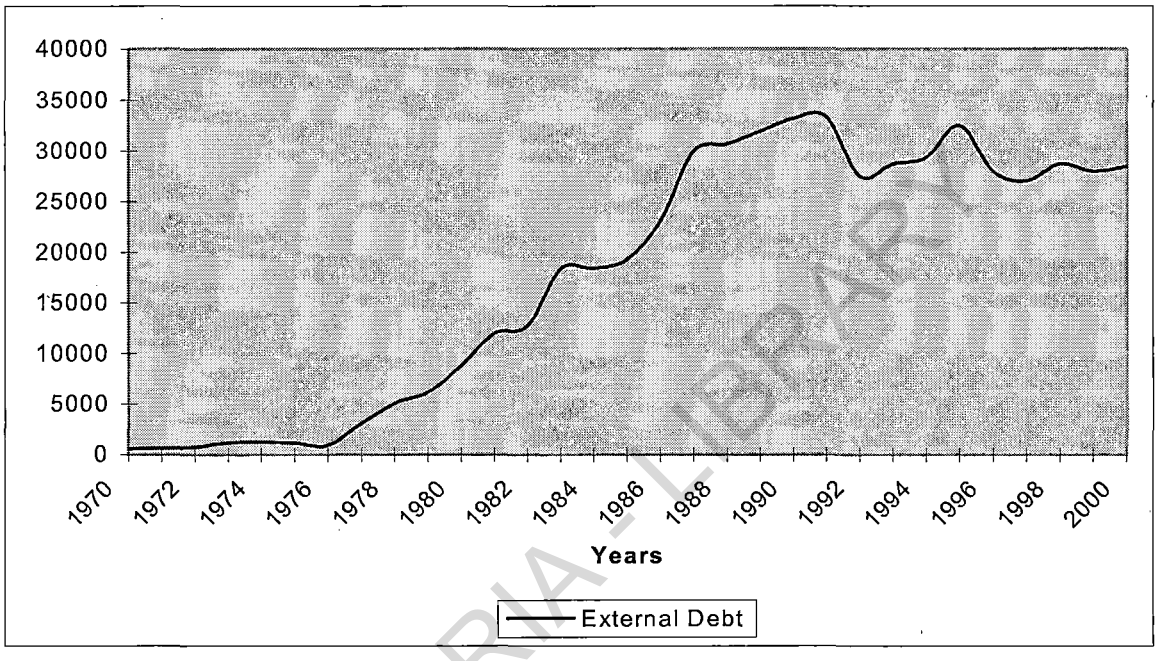
Figure 2.13: Nigeria's External Debt 1970 – 1985 (million US $)



The reluctance to devalue the naira between 1981 and 1984, when inflation was more than 20 percent per year, discouraged foreign direct investment, spurred substantial capital flight, and encouraged firms to build up large inventories of imports (often with

over-invoicing and concomitant foreign deposits) or under-pricing exports (with the difference placed on deposit abroad).

Figure 2.14: Nigeria' External Debt (million US $) 1970 - 2000

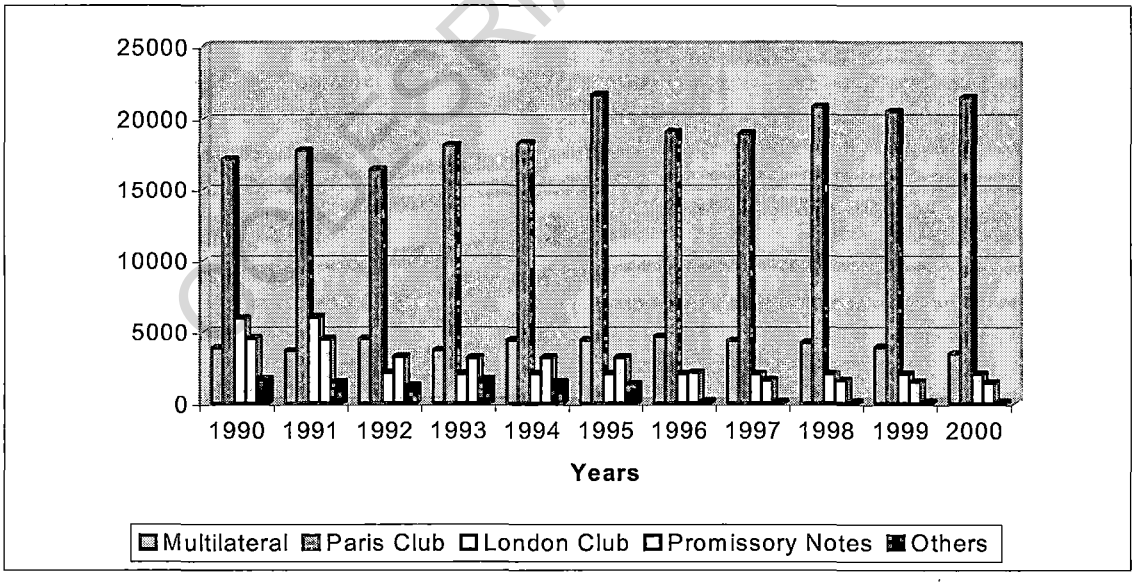


Among the developing countries, Nigeria had the eleventh largest external public debt in 1989 and the largest among sub-Saharan countries (Fajana, 1996). Nigeria's debt increased through a series of borrowing which unfortunately was used to finance white-elephant projects. Thus, Nigeria's debt stood at US $ 33 billion in 1989 (figure 2.14). Despite debts rescheduling in the 1980s and early 1990s, Nigeria's debt overhang continues to dampen investment and adjustment. Without concessional funds, rescheduling only postponed an external crisis.

With the adoption of SAP, the external debt build-up was expected to slow down and be

reversed however, did not occur. Nigeria's external debt in fact continued to increase, peaking at US $ 33.4 billion in 1994. In 1993, Nigeria's per capita external debt amounted to US $ 300, which was roughly equal to annual per capita income, World Bank (1994). Also, despite the imposition in 1994 of an embargo on contracting new debt as well as the low level of disbursements from existing commitments and the debt conversions and buyback, the outstanding stock of external debt has failed to decline rapidly. Though it fell slightly, total external debt outstanding amounted to US $29.4 billion in 1996. The failure of SAP to improve the external debt situation is attributable to several factors including the drying up of external finance, largely due to political instability, rising interest rates and macroeconomic policy mistakes.

Figure 2.15: Composition of Nigeria's External Debt (in US $) 1990 - 2000



Over the last several years, the government serviced only part of its external debt. Interest not paid and interest accruing on unpaid debt service became a new debt. At the

end of 1998, the stock of debts disbursed and outstanding stood at an estimated US $28.8 billion, and of this US $ 17.7 billion represented arrears, almost entirely to Paris Club creditors (figure 2.15). Accompanying the escalating external debt has been a crushing debt-service burden. The huge debt and onerous debt service burden has tended to retard economic growth and complicate macroeconomic policy making. The critical nature of the problem has inevitably made external debt management a major component of macroeconomic policy management in the external sector. Using frequent debt rescheduling, Nigeria has managed to keep the debt-service ratio (ratio of debt to exports) at an average of 25 percent between 1996 and 2001. Though this is too high and far above the theoretical optimum of 10 percent, this high debt-service ratio is a serious drain on the country[35].

Thus, given the analysis above, both domestic and external factors are in fact responsible for Nigeria's debt crisis. The external factors include oil price shocks, a decline in terms of trade, global recession, and the liberal lending policies of international commercial banks (when the loans were contracted), and rising interest rates. On the other hand, the domestic factors range from inappropriate macroeconomic policies, which include the overvaluing of exchange rate, the accumulation of large fiscal deficit, excessive monetary expansion, poor trade policies, and investment on white elephant projects.

2.2.6 Inflation

Inflation refers to the persistent rate of increase in general price levels. In Nigeria, the

[35] For further details on Nigeria's external debt, see Fajana (1993).

rate of inflation has increased steadily and markedly since independence. The average inflationary rate between 1960, when Nigeria became independence, and 1966 was 5.01 percent per year. During the period following independence, specifically 1965 to 1970, Nigeria's rate of inflation was almost equal to that of its trading partners, averaging 10 percent annually. In the ensuing decade, between 1975 and 1985, the respective inflation diverged dramatically, as Nigeria's average annual inflation rate nearly doubled to 18 percent, while that of the trading partners reduced significantly. The high rate of inflation, which Nigeria has been experiencing since 1970s, has its origin in the economic measures and controls that were enacted during the civil war.

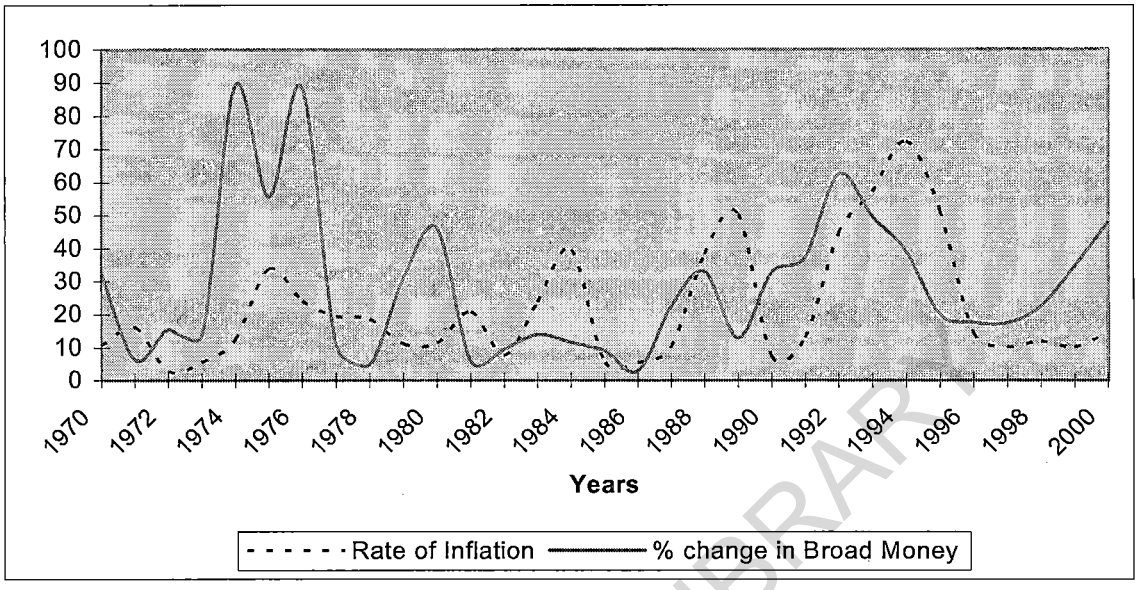
The monetary control measures, which were applied at various times by the CBN can be placed into three categorise: quantitative tools, cost tools and directional tools (Nwankwo 1980). The quantitative tools include special deposits, stabilisation securities, cash reserve requirements and variable liquid assets and liquidity ratios. The cost tools are discount rates and other interest changes, while the directional tools are guidelines. Though the CBN was empowered to apply any of these tools for monetary stability, actions were not always taken in a timely and systematic fashion.

We observe that aggregate demand rose strongly as the money supply climbed from 18 percent in 1973 to about 70 percent in 1976. The broader measure of money supply, M2, grew to an all time high of 67 percent in 1974, which was due to increased salaries in the public sector during this period. Therefore, amidst serious supply bottlenecks in the economy, prices of goods soared, especially in the non-traded goods sector (figure 2.16).

The CBN never used any of these tools at its disposal in spite of high rate of inflation in the economy until 1976, eight years after it had been empowered to do so. Its action in 1976 was prompted by the excess liquidity of the commercial banks, which had further aggravated monetary instability in the economy.

It is generally agreed that changes in the money stock impact on prices in the short run. Excessive monetary growth stimulates aggregate spending and consequently output expansion, provided there spare capacity. Indeed, in the period since 1970, the highest average rates of growth in money stock were recorded in the period 1974 to 1977 and 1987 to 1988. These two periods have also recorded the highest average rates of inflation. The growth of the money stock averaged 55 percent in the period 1974 to 1977 and 30.3 percent during 1977 to 1988, while the inflation rate average 21.0 and 24.3 percent respectively. Similarly, the slowdown in the average rate of growth of money in the period 1978 to 1980 to 25 percent was accompanied by a deceleration in the average inflation rate to 12.8 percent (figure 2.16). The government effort at bringing inflation under control proved very difficult. The off–again, on-again tightening of financial policies is reflected in substantial fluctuations in the inflation rate which rose from an annual average of 19 percent between 1981 and 1985 to 20 percent between 1986 and 1990.

Figure 2.16: Money Growth and Inflation in Nigeria 1970 - 2000



With the introduction of the SAP, the government embarked on a tight fiscal and monetary stance, which helped to curtail the initial impact of substantial trade and price liberalisation on inflation. Consequently, inflation fell to 5.4 percent in 1986, and 10.2 percent in 1987 (figure 2.16). However, by early 1988 financial policies became increasing expansionary, leading to build-up of domestic liquidity and inflationary pressures. The overall fiscal deficit was more than doubled in one year, 12 percent of GDP in 1987, and increased further to 14 percent in 1988. The broad money growth surged from 3 percent in 1986 to 23 percent in 1987 and 43 percent in 1988. As a result, inflation increased to 38.2 percent in 1988. Inflation has been increasing, averaging about 50 percent between 1992 and 1994, compared to an average of 23 percent in the 1980s and reaching an all time high of 72.4 percent at the end of 1994, before falling to 51.6 percent in 1995 (figure 2.16). Although there have been further declines in 1996, the figures still remain in double digits.

Our observation reveals that inconsistent monetary and fiscal policy, and the continued depreciation of naira at the IFEM, continues to aggravate inflationary pressure in Nigeria. This is because increased budget deficits and the money supply, with supply rigidity, exert pressure on domestic prices. Also, domestic industries depend primarily on imported inputs, whose costs have risen via the naira exchange rate depreciation, and given the poor performance of the manufacturing industries, importation of manufactured goods has been on the increase since the liberation of imports.

In addition, the continued depreciation of the naira has encouraged the smuggling of goods to neighbouring countries (especially foodstuffs), leading to local scarcity and higher prices. These trends continued between 1985 and 1990, as Nigeria's annual average inflation rose to 24 percent. Overall, the period 1986 to 1995 represents a time of greater inflationary pressure in Nigeria. Although the inflation rate was very low between 1996 and 1998, it is still in double digits due to budget deficit, depreciation of the naira exchange rate, and an expansionary monetary policy.

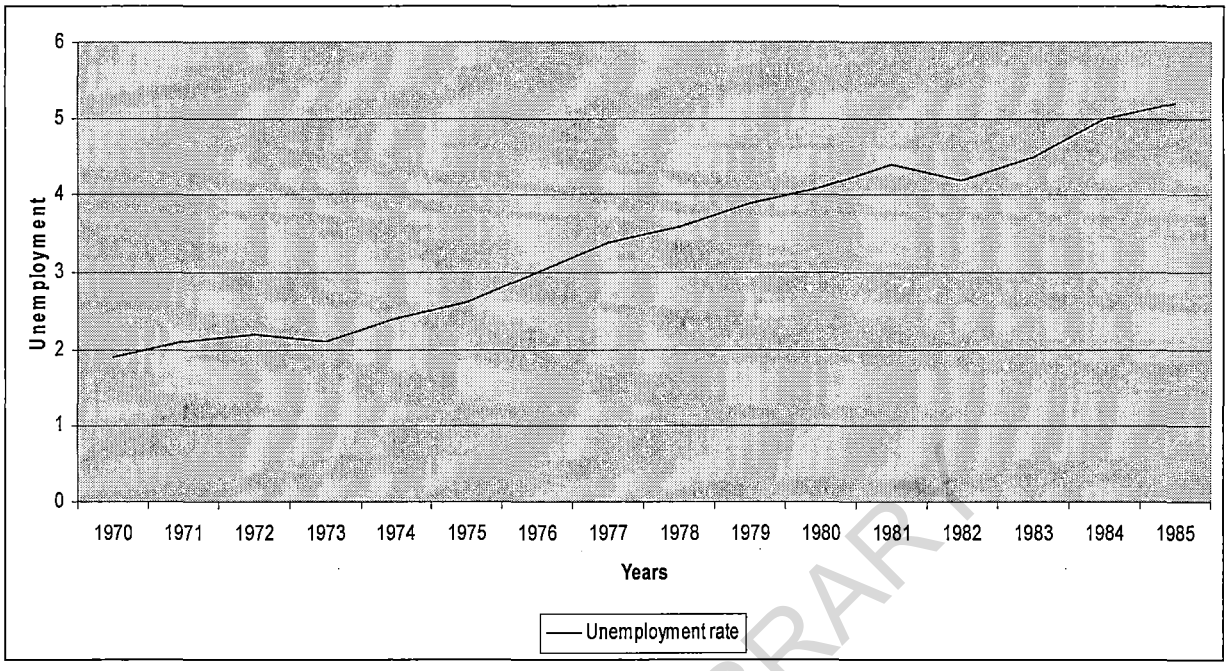
2.2.7 Unemployment

The Nigerian economy faces several challenges that could upset its development potential if not well managed. One of these is the 'proverbial poverty in the midst of plenty'. The twin brother is unemployment. These are apart from the numerous socio-political problems, which are threatening the rapid growth and development of the economy.

Aside from internal and external imbalances, and inflation, unemployment is another intractable problem facing Nigeria since independence. In the 1960s and 1970s, the school leavers' unemployment problem was the dominant concern. The average national unemployment rate between 1970 and 1980 was 3.13 (the level of unemployment is the 60s was 1.5 percent). During this decade, 1980 recorded the highest rate of unemployment of 4.1, followed by 1979 with 3.9, and 1978 with 3.6. Figure 2.17 below revealed a continuous upward trend in the unemployment rate in Nigeria throughout this decade.

In the 1980s, unemployment continued to rise as the country experienced diverse economic difficulties. Over time, the school leavers' unemployment problem of the 1960s and 1970s has climbed up the education ladder with graduate unemployment emerging as an important problem in the 1980s and 1990s. The national unemployment rate, estimated by the federal office of statistics (FOS) as 5.2 percent of the labour force in 1985, increased to 5.4 percent in 1986 and 5.9 percent in 1987, and has continued to increase.

Figure 2.17: The Unemployment Rate in Nigeria 1970 - 1985



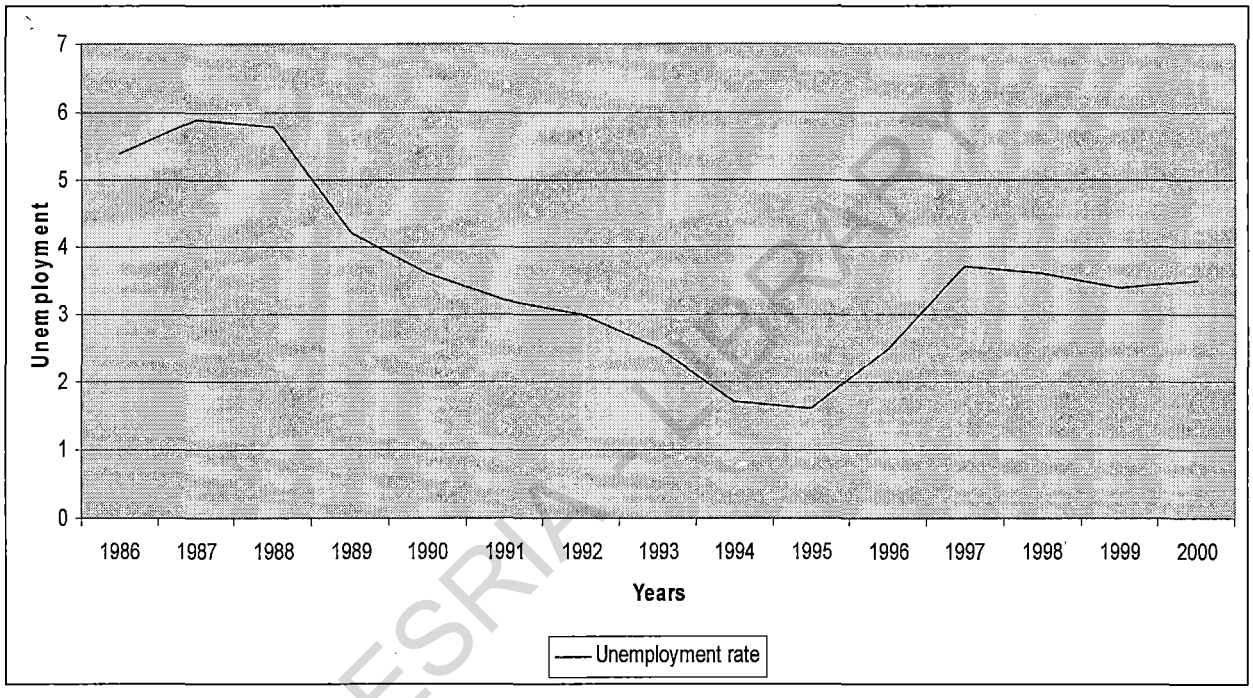
Specifically, the average national unemployment between 1980 and 1990 was 5.23. This amounted to an increase of 40 percent when compared with the unemployment rate immediately before this decade. As revealed in Figure 2.18 below, the continuous upward trend in the rate of unemployment in Nigeria (i.e. between 1985 and early 1990) might not be unconnected with the adjustment programme.

The national open unemployment is aggravated by underemployment in rural and urban informal sectors. Also, a large numbers of farm workers, who have gone to urban areas in search of higher wages, remained in the cities even when they failed to find jobs. Unfortunately, formal sector employment declined when SAP was implemented because it triggered retrenchments in both the public and private sector.

However, from 1990, and as a result of the promotion of small scale enterprises, Nigeria has continued to witness improvement in graduate employment. Specifically,

unemployment rate declined from 5.9 in 1987 to 1.7 in 1994. Given the period under consideration, Nigeria witnessed the lowest unemployment rate in 1995 in relation to other African economies (see figure 2.18), from the figure – a cursory observation revealed that from 1996, the rate of unemployment in Nigeria follow an upward trend.

Figure 2.18: The Unemployment Rate in Nigeria 1970 - 2000



The average national unemployment rate between 1990 and 2000 is 3.23 percent which is far lower than all the previous decades. The unemployment rate for the period between 1990 and 2000 on average compare favourably with the 2 to 3 percent unemployment rates in developed economies with social welfare schemes.

Generally, unemployment is higher in the urban areas while underemployment rate is higher in the rural areas. Most of the unemployed are in the age bracket of 15 to 34 years (55 percent) and 25 to 44 years (30.5 percent), implying that 85 percent of the

unemployed are able-bodied youths, so, here lies the ticking time bomb.

2.3 A Brief Analysis of the Performance of the Nigerian Economy

During the first decade of independence (1960-69) the Nigerian economy growth rate averaged 4.8% per annum despite the civil war. The early 1970s post war reconstruction and the oil boom witnessed real growth rates of GDP averaging about 10.2 % per annum over the 1970-75 periods. The growth momentum was, however, lost in the second half of the decade with growth rates declining to 2.2% per annum between 1975 and 1979. Figure 2.17 revealed the real GDP growth between 1980 and 2000.

The contribution of the agriculture to GDP fell from 48.8% in 1970 to 22% in 1980, while that of crude oil and mining rose from 10% to 26.8% in the same period, but peaking at 31.6% in 1975. Accompanying fall agriculture's relative share in GDP, the share of manufacturing rose from 7.2% in 1970 to 8.4% in 1980. It increased further to 11.4 percent in 1981, and declined to 10.0 percent in 1988, while trade and finance sectors rose from 13% to 15% between 1970 and 1980.

It is important to note that while the manufacturing sector's contribution to GDP increased rapidly during the 1970s, tariff manipulations encouraged the expansion of assembly activities, which depend on imported inputs. The manufacturing sector produced a range of goods that include milled grain, vegetable oil, meat products, dairy products, refined sugar, soft drinks, beer, cigarettes, textiles, footwear, wood, and paper products. Others include soap, paint, pharmaceutical goods, ceramics,

chemical products, tires, tubes, plastics, cement, glass, bricks, tiles, metal goods, agricultural machinery, household electrical appliances, radios, motor vehicles, and jewellery. The Nigerian Enterprises Promotion Decree of 1972, which was amended in 1977 and 1981, imposed limitations on foreign ownership of shares in various industries, and therefore, shifted the manufacturing sector from foreign majority ownership in the 1960s to indigenous majority ownership in the mid-1970s and late 1980s.

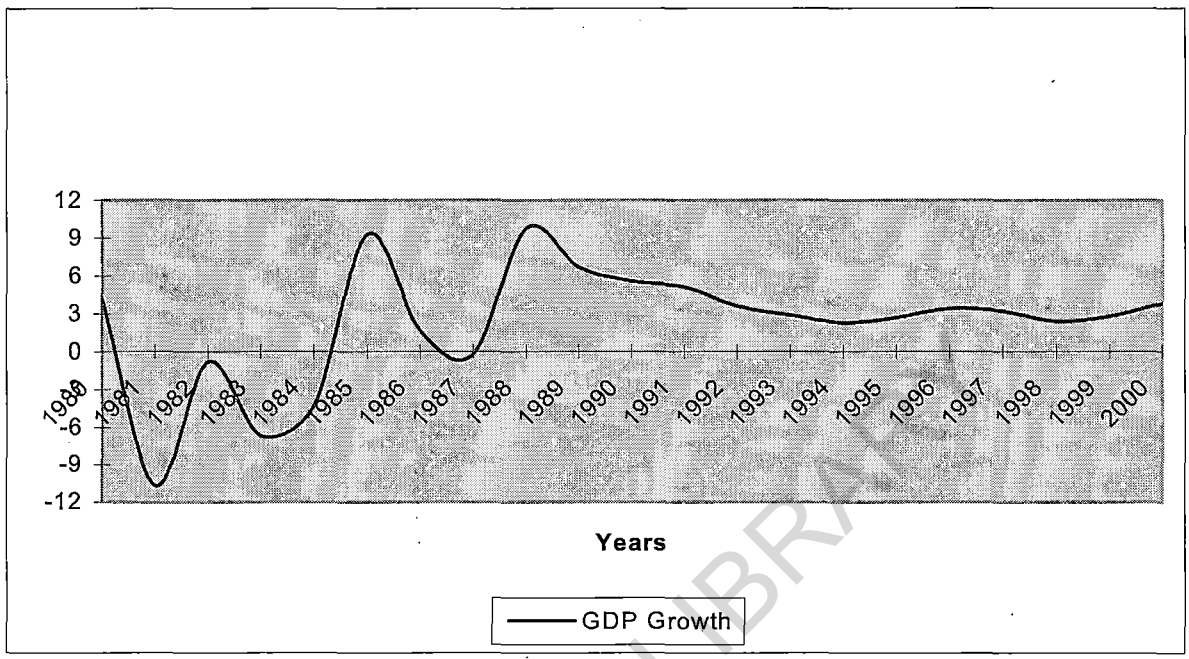
As a result of economic decline, depicted by a fall in per capita incomes, balance of payment deficits, inflation, and debt crisis in mid 1980s, the government adopted the SAP. As earlier mentioned, in the agricultural sector, SAP led to the abolition of agricultural commodity boards with favourable effects on the agricultural sector, though it was not sustained. Manufacturing output increased by 5.1 and 12.9 percent in 1987 and 1988 respectively.

The significant growth is attributed to the fact that inputs were sourced locally by manufacturers of food and beverages, soap and detergents, tires and tubes, textiles, and clothing. We note that the sub-sectors that benefited from the foreign exchange and trade reforms were mainly domestic-resource-based industries, which include wood products and furniture, textiles, rubber, minerals, and certain food products. The output of the textile sub-sector more than doubled between 1986 and 1989. In contrast, the import-intensive and low domestic value added sub-sectors, such as electronics and vehicle assembly, did not perform well, largely because their previous survival had depended on an overvalued exchange rate and heavy protection from imports.

Nigeria's exports are still dominated by oil, despite strong policies to achieve broader growth and diversification. Between 1986 and 1988 oil export revenue remained steady. In 1989 oil export revenue increased, and a further windfall occurred in 1990. The non-oil exports increased early on, but fell back to 1985 levels and remained constant between 1989 and 1991. As a result of demand management policies, tightening of imports and some recovery in oil exports, improvement in balance of payments first appeared in 1989, and the current account was balanced for the first time since 1980. The Gulf war, which started in 1990 led to higher oil prices, improved the balance of payments, however, the improvement could not be sustained in 1991 because of an increased budget deficit and rapid growth of money supply, along with receding oil prices after the Gulf war. Thus, the overall balance of payments deficit increased four-fold from its 1990 level.

The growth rate of GDP was about 2 percent in 1986, and improved remarkably to 6.7 percent in 1989, see figure 2.19. The spur in agricultural production led to this rapid growth, and was basically, a result of an increase in producer prices for traditional exports. The decline in non-oil output recouped during this period, with the GDP growth averaging 5.8 percent between 1989 and 1991. There was also a substantial contribution from the oil sector.

Figure 2.19: Real GDP Growth Rate 1980 – 2000 (at 1984 constant factor cost)



Between 1982 and 1986, Nigeria's value added in the manufacturing sector fell to 25 percent, partly as a result of inefficient resource allocation, inadequate capital to purchase inputs and poor infrastructural facilities. In 1985 the government selectively relaxed the indigenisation decrees to encourage foreign investment in neglected areas, such as large-scale agro-allied business and manufacturing concern that use local resources. After March 1988, foreign investors were allowed to increase their holdings in a number of other sectors. Though, this notwithstanding, the manufacturing capacity utilization which averaged 70 percent between 1970 and 1980, fell to 37 percent in 1990, and about 32 percent between 1996 and 2000, owing to infrastructural failures and other endemic problems within the economy. Thus, the manufacturing sector is currently producing below installed capacity.

The naira has been consistently depreciating since the introduction of reform

measures. The demand – supply gap for foreign currencies has been expanding rapidly, thus promoting activities at the parallel market. Much of this demand has been speculation generated by the monetary expansion and the controlled interest rate policies. Contrary to SAP goals on paper, an expansionary money supply continued – banks failed to comply with credit limits, the government engaged in deficit financing, and further, imposed a cap on interest rates, which encouraged the private sector to increase demand for foreign exchange with loaned money.

Coupled with the above is the high level of inflation. Despite a comparatively low inflation rate in 1986 and 1987, average inflation between 1986 and 1991 was 24 percent, compared with 18 percent between 1980 and 1985. The fiscal and monetary restraint envisaged was either abandoned or not pursued vigorously from the outset. Credit to the government increased by 12 percent in 1987, net credit to private sector remained relatively strong, leading to an increased money supply. Policy slippages since 1988 and the subsequent increase in the budget deficit led to an increase in monetary aggregates, and the inflation rate reached 51 percent in 1989. The rate of inflation decreased between 1990 and 1991 due to drastic monetary control –for example, increasing discount rates to raise the liquidity ratio, and the transfer of public deposits to the CBN. However, the rate of inflation increased persistently between 1992 and 1996 due to the controls being relaxed.

Infrastructure is an umbrella term for many activities referred to as 'social overhead capital', including public utilities such as power, telecommunications and pipe borne water supply. The others are roads, railways, urban transportation, ports and airports. Infrastructure can be described as the totality of basic physical facilities upon which

all other economic activities in a system depend, World Bank (1994).

The Bank's studies reveal that the growth of farm productivity and non-farm rural employment is linked closely to infrastructural provision. The government invested massively in building infrastructural capacity over the years, which does not add directly to productive capacity.

Table 2.1: Share of Public Utility Sector in Nigeria's Total Public Sector Investment 1955- 2000

Years	Percentage share
1955 - 1961	45.8
1962 - 1968	44.2
1970 - 1974	36.3
1975 - 1980	38.0
1981 - 1985	30.6
1986 - 1990	22.7
1991 - 2000	25.4

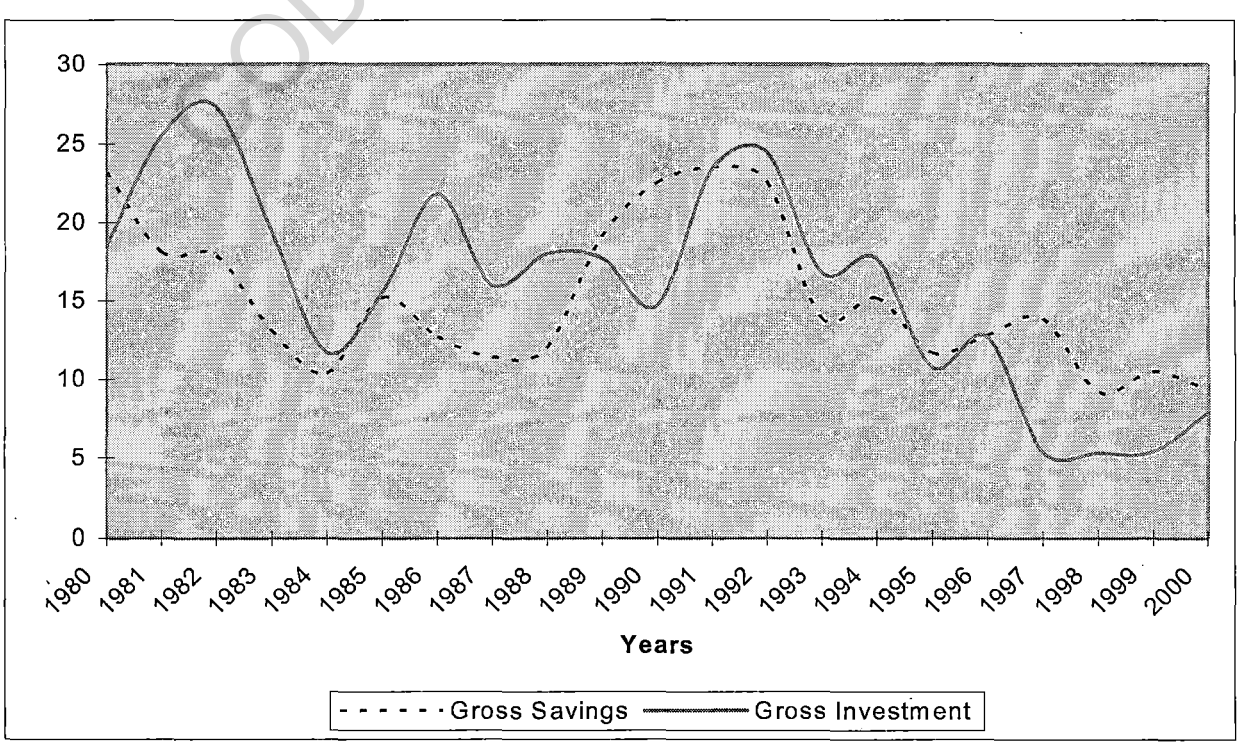
Source: CBN, Annual Reports and Statement of Accounts –various issues

Recently, the utility sector has been grossly under-funded relative to the demands of the economy (table 1.1). An evaluation of the performance of some key infrastructural facilities indicates a poor maintenance culture. The Nigerian railway system is characterised by congestion and frequent delays as well as cancellation of travel and schedules. Its problem has been poor funding, unserviceable facilities, and acute shortage of spare parts and repair kits. The performance of the road sub-sector is equally sub-optimal. The road network is facing the problem of constant deterioration, owing to overuse, inadequate repairs, poor budgetary allocation and underdevelopment of other transport modes. The electricity supply remained

unreliable as power cut, load shedding and rationing have become very frequent. Unfortunately, manufacturers invest huge capital funds to provide alternative infrastructural facilities for their operations. Hence, domestic industries carry a high cost/price structure, which result in a loss of competitiveness for their products in both the domestic and foreign markets.

The Nigerian economy did reasonably well during the oil booms. Windfall savings were relatively high, and investment expanded significantly. When domestic savings fell short of investment, foreign savings complemented domestic savings to finance investment. Figure 2.18 below shows both gross savings and investment as a percentage of GDP. Though, the performance of gross savings and investment as percentage of GDP improved early 1980s, it declined rapidly towards the end of the decade. The savings and investment improved dramatically between 1988 and 1992, they both peaking at 22.6 percent and 24.5 percent of GDP in 1992 respectively (figure 2.20).

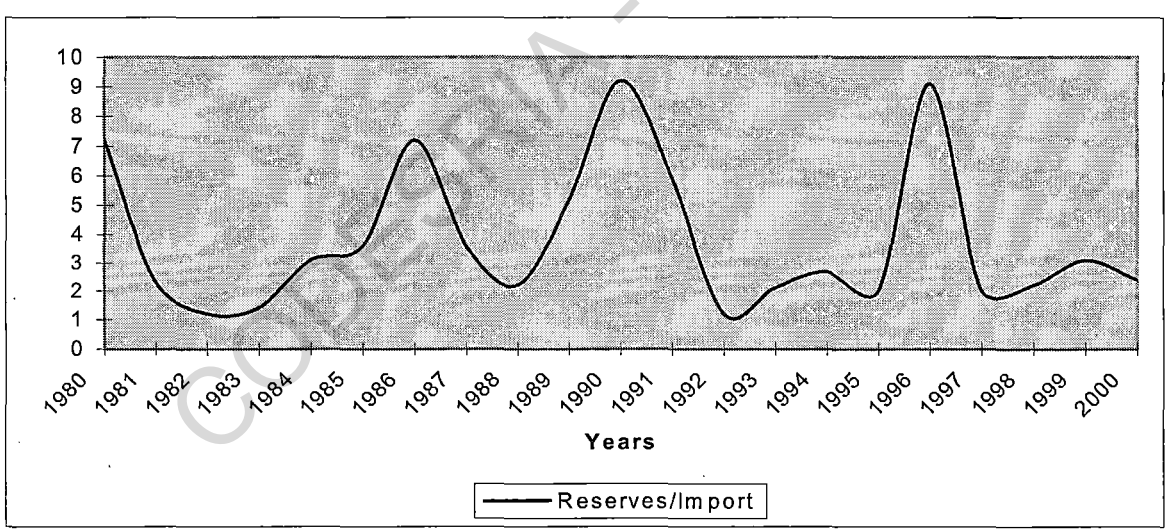
Figure 2.20: Gross Savings and Investment as Percentage of GDP 1980 - 2000



However, since 1995, the share of both savings and investment in GDP has been declining.

The reserve-import ratio in most cases is used as a measure of reserve adequacy. The number of months of imports which international reserves can finance range from a low of 1.2 months in 1982 and 1992 to a high of 9.2 months achieved in 1990 (figure 2.21). For a developing country like Nigeria, the convention is to consider as 'adequate' a level of international reserves that is sufficient to finance imports for a minimum of 4 to 6 months.

Figure 2.21: Foreign Reserves-Import Ratio (month equivalent) 1980 - 2000



The CBN has adopted international reserves as adequate if they can finance imports for a minimum of 4 months. Using this as a benchmark, we observe that the international reserves were adequate for 6 years within the period 1980 to 2000. During the 1990s, international reserves were adequate for only 3 years, namely,

1990, 1991 and 1996. Thus, using this criterion, the performance of Nigeria's external sector, even with the introduction of SAP, clearly leaves a lot to be desired.

2.3.1 A Brief Review of Economic Sectors in Nigeria

Given the focus of this study, investigating the effects of movement in exchange rate on sectoral prices is best contemplated within the context of the continuous structural changes in the sectors of the Nigerian economy. We therefore, first, review the changing pattern in the sectors in terms of its contribution to the economy.

For ease of analysis, we classified the Nigerian economy broadly into three sub-sectors, namely, the manufacturing sub-sector; the agricultural sub-sector and the services sub-sector. We excluded discussion on activities in the petroleum, mining and services sub-sector[36]. So, for our analysis, we focus our discussion on the manufacturing and the agricultural sub-sectors of the Nigerian economy. First, we briefly examine the manufacturing sub-sector.

2.3.1.1 The Nigerian Manufacturing Sub-Sector

At independence in 1960, the Nigerian industrial sector was relatively insignificant in terms of contribution to the gross domestic product (GDP). Most of the manufacturing industries established by the colonial trading companies, plus a handful of other international firms, concentrated on the production of light industrial commodities such as detergents, soft drinks, leather work, textiles, and confectionery.

[36] The companies are reluctant to release their price data. Most companies regarded price data as too sensitive and in very few cases where data were made available, the reliability of the data is seriously in doubt.

After independence, efforts were made by the government to lead the economy directly into a modern industrial structure through huge public investment in large scale industries. As a result of the non existence of strong indigenous entrepreneurial class, the government assumed the dominant position with the major aim to avoiding foreign control of industrial activities.

The pre and post colonial production policy occasioned distortions in the sector which was a result of reliance on foreign inputs. Also, technological constraints, such as ineffective research and inadequate utilization of modern inputs, somehow delayed the introduction of technical innovation that are essential for reducing production costs and the shifting upwards of the production function.

Further, inadequate attention was paid to the economic viability and market prospects of large scale public investment which gave rise to substantial excess capacity[37]. Therefore, many enterprises were squeezed, first by the economic crisis of early 1980s and subsequently by the stabilisation policies of 1982. Recently the introduction of an adjustment programme reduced protection, slashed subsidies (in many cases it was completely removed), restrained domestic absorption and alter relative prices.

Not all manufactured output are available for direct consumption, some items are exported to earn foreign exchange that is needed to offset and buy imported inputs

[37] For details see Olukoshi (1991)

and other necessary materials. Part of the output also serves as input for other manufacturing units.

2.3.1.1A Brief Performance of the Nigerian Manufacturing Sector 1981 – 2001

Before the introduction of the adjustment programme, public policy and private investment policy promoted investments in the extractive and distributive trade rather than in manufacturing industries. The country specialised in the production of raw materials while the United Kingdom and other trading partners served as the main suppliers of manufactured goods.

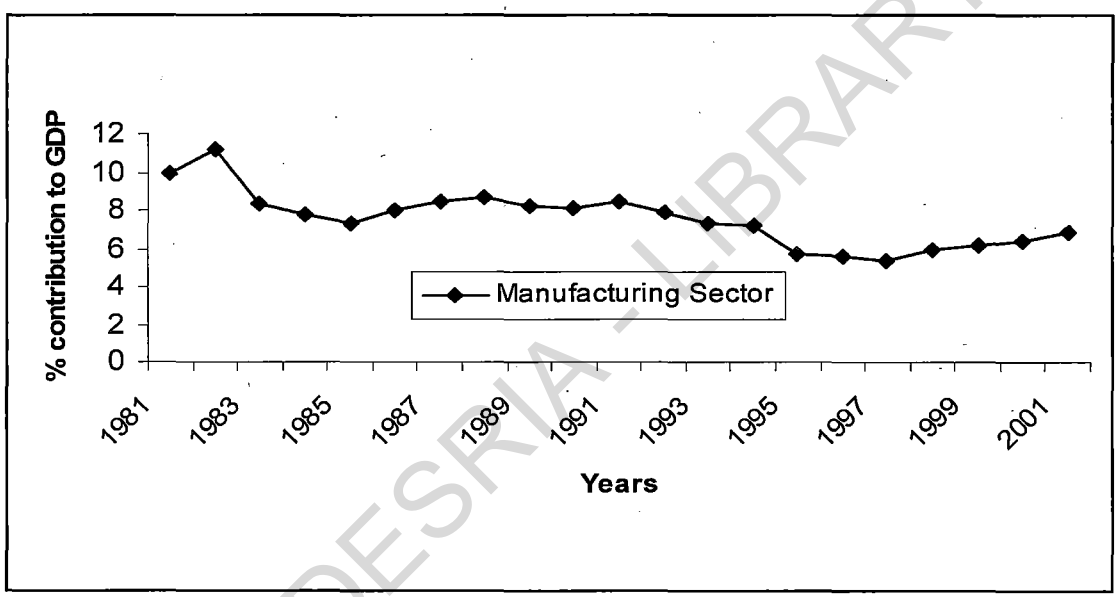
This unfavourable pattern of investment promoted specialisation based on a static scheme of comparative advantage, diverting the Nigerian economy into activities that offered little or no opportunity for technical progress, Uzoaga (1981). The few manufacturing industries concentrated on the production of light industrial commodities but in most cases relied on foreign inputs. These distortions affected the performance of the industrial sector in terms of its contribution to the gross domestic product, employment generation, capacity utilisation and value added, which are indices for measuring the performance of the manufacturing sub-sector.

(1) Contribution to Gross Domestic Product

In terms of contribution to the GDP, the manufacturing sub-sector performed only fairly between 1981 and 2001. Figure 2.22 below reveals the contribution of the

manufacturing sub-sector to GDP. With its highest contribution to GDP being 11.21 percent in 1982, its contribution fell persistently from 1983 to 1986, but the decline was overturned in 1987, a year after the introduction of the adjustment programme. There was a persistent increase in the manufacturing sub-sector' contribution to GDP until 1991. A critical look at the contribution shows that it is rather insignificant compared to the 20 to 40 percent share of most industrialised countries[38].

Figure 2.22: Performance of the Manufacturing Sector: 1981 - 2001



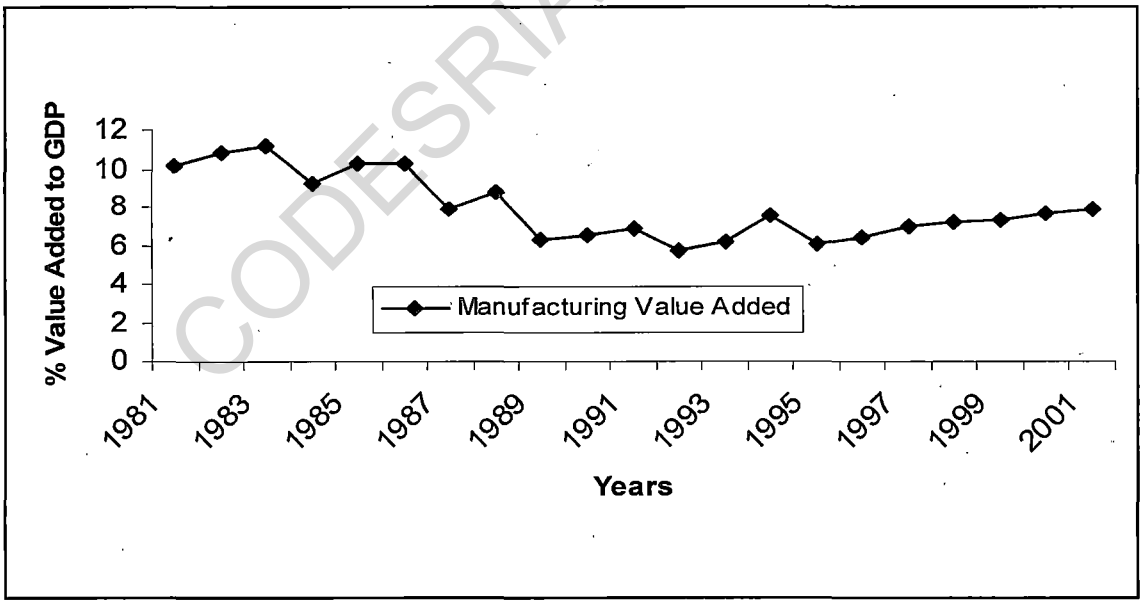
Factors, such as dependence on raw materials imports, small size of established enterprises, and inappropriate incentive structure, which was biased against local production, account for the low contribution of the manufacturing sub-sector to GDP. Most import substitution industries set up required foreign inputs for production and the importation of these inputs constitute a major drain on foreign exchange earnings.

[38] See World Development Report (2001)

(2) Contribution to Value Added

The index of manufacturing output reveals fluctuating growth rates between 1981 and 2001. Figure 2.23 revealed that the manufacturing sub-sector value added has not been stable except for between 1995 and 2001, which shows upward trend in value added contribution to the GDP. This upward trend may be as a result of the concerted effort by both the private sector and the government which resulted in the establishment of few small scale industries. The unstable trends reveal reduction in government spending and bank credit precipitated by the fall in oil revenue following severe economic recession.

Figure 2.23: Manufacturing Value Added to the Gross Domestic Product: 1981 – 2001



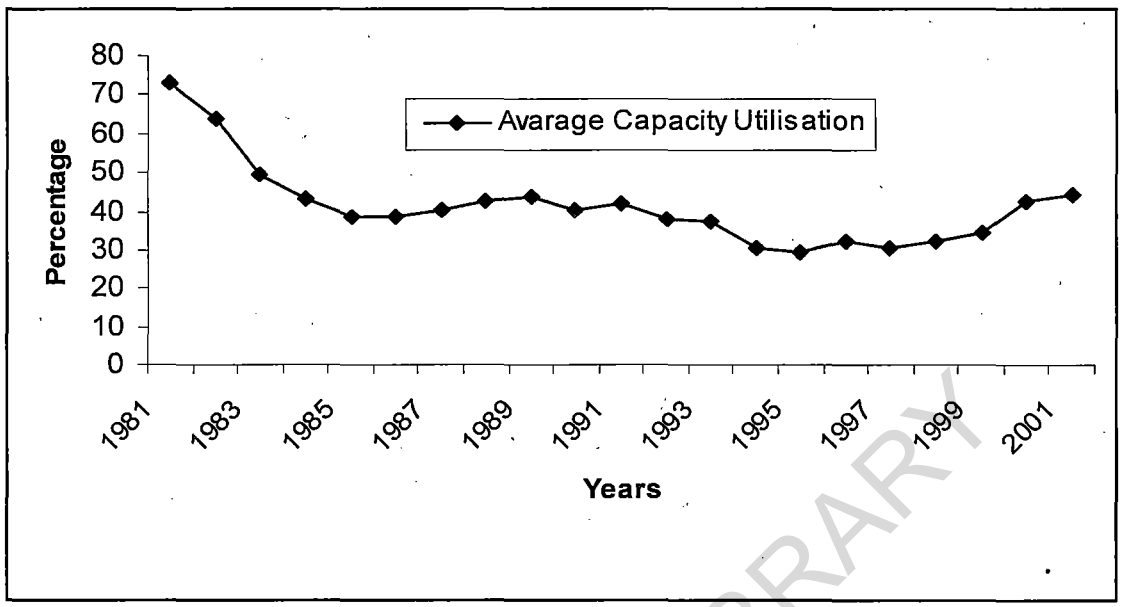
(3) Employment Level

The number of people in direct wage employment in manufacturing enterprises has increased since early 1980s. Specifically, a total of 233,578 were employed in 1983 with the consumer goods sector accounting for the largest share. The share of the consumer goods sector in total industrial employment was 67.5 percent in 1983 (FOS, 1983). The high demand for consumer goods and the labour intensive nature of production in this sector justify its dominance in terms of employment creation.

(4) Capacity Utilisation and Local Sourcing of Raw Materials

Figure 2.24 shows the average capacity utilisation in the manufacturing sector. In spite of the government incentives, capacity underutilisation persisted for most of 1981 to 2001 with exception of the early 1980s. The government had expected that the liberalisation of the foreign exchange market would assist manufacturers to procure raw materials and spare parts for equipment maintenance which would in turn enable them to increase the level of capacity utilisation in the sector to 60 percent.

Figure 2.24: Average Capacity Utilisation in the Manufacturing Sector: 1981 - 2001



As made clear in various reports of the Manufacturers' Association of Nigerian (MAN), the rate of capacity utilisation declined for most industrial subgroups after the adjustment programme. Also as reported in a study on manufacturing sub-sector by Akinlo (1995), 'for the sampled manufacturing industries, industrial subgroups such as chemical and pharmaceutical, electronic and electrical, metal products, paper and paper products recorded a decrease in capacity utilisation in the period 1986 to 1991'.

The average capacity utilisation level for paper and paper products dropped from 52.2 percent for the period between 1983 and 1987 to 46.2 percent in the period between 1987 and 1991[39]. The few subgroups that recorded slight improvements in capacity utilisation level were food and beverages, footwear and leather, soap and candy products. As highlighted in Akinlo (1995) those industries with higher import content suffered more in terms of capacity underutilisation than those that relied on local

[39] For details see Akinlo (1995)

inputs. Specifically, the extent of local sourcing of raw materials observed in the food and beverages industry group shows progress towards self reliance in the Nigerian manufacturing sector.

The decreasing capacity utilisation levels in the Nigerian manufacturing sub-sector is not unconnected with increased costs of production which limit employment. It created inadequate foreign exchange to procure raw materials, increased cost of borrowing from banks and decreased demand, which occasioned an accumulation of finished goods.

(5) Productivity Growth

The role that productivity, especially labour productivity, can play in industrial development cannot be overemphasised. Although there is a dearth of data on productivity levels in the Nigerian economy in general, ad-hoc studies conducted in 1989 have shown that, on the average, no impressive rise in productivity was noticeable. Recent study of food and basic metal industries by Osoba (1989) revealed that 30 percent of respondents indicated that their productivity had increased. As confirmed by Man (1989), in some cases there are just marginal increases in productivity in some areas.

Though various reasons has been adduced for the inadequate improvement in productivity in the manufacturing sector, we assume that the establishment of the National Productivity Centre, whose responsibility will be that of measuring and

monitoring productivity levels, will go a long way to alleviate the problem in sectors of the economy.

(6) Manufacturing Sub-sector Production Costs

In a perfectly competitive situation, a sector's output price equals its average cost. So, movement in exchange rate would affect the average cost facing a sector which in turn would affect the sector's output prices.

Naturally, increased production costs would lead to increased unit price of goods for all manufacturing industries. Specifically, increase in unit prices occurred more in manufacturing sub-sectors, and specifically for such groups as food and beverages, paper and paper products, textiles and clothing industries. As enunciated by NISER (2001) 'overall, 286 manufacturing industries representing 88.54 per cent of all industries interviewed affirmed an increase in their cost of production especially for such industrial groups as paper and paper products, chemical and pharmaceuticals, electronic, electrical and metal industries'[40].

The ability of these industries to increase their unit prices, retrenched workers and source their raw materials locally could have occasioned an increase in their capacity utilisation level.

[40] NISER (2001) surveyed 370 manufacturing industries randomly selected in the Eastern, Western and Northern region of Nigerian. Stratified random sampling technique was employed in choosing the sampled manufacturing industries which was divided into two strata, namely, consumer goods and producer goods industries.

2.3.1.2 The Nigerian Agricultural Sub-Sector

Viewed from an historical perspective, the agricultural sector is known to play key roles in the process of economic development. In fact, agriculture is regarded as the foundation of the human economy and thus the backbone of the Nigerian economy before and even after independence. The main crops are sorghum, millet, maize, groundnuts, wheat and cotton (grown in the North), cassava, yams, cocoyam, and plantains (grown in the middle belt) and rice (in river basins). Cash crops are cocoa, rubber, tobacco, and palm oil.

The important roles of agriculture, which change with stages of economic development, have been built into many theories of economic development. Some roles are often associated with agriculture in the early phases of economic development which include, the provision of an adequate supply of food for a growing population, the provision of most of the employment opportunities for the labour force, the generation of most of the GDP, and the generation of foreign exchange. Further argument suggests the generation of savings for investment in agriculture as well as other sectors, the production of raw materials and the release of surplus or underutilised resources for use in other sectors, especially in the fledging industrial sector and the provision of an expanding market for the products of non agricultural sectors.

However, many problems confront the agricultural sector in Nigeria. First, environmental constraints, this principally consists of wide fluctuations in climatic conditions as well as the incidence of pests and diseases. This group of constraints

reduces the production potential because of the limit imposed by the levels and timing of rainfall, the direct damage to output and storage difficulties created by pests and diseases. Second, there are land constraints in which increasing pressure on land resources, the problem of soil fertility, erosion and conservation, and an un-progressive land tenure system, which create problems of land resources management and utilisation.

Third, there are labour and manpower constraints, which have led to the high cost of labour on the farms, low productivity due to application of poor technologies and poor shortages facilities which affect the implementation of government programmes. Fourth, capital constraints, arising from the disproportionate share of government spending going into agriculture, the misdirection of government funds, as well as inadequate and lopsided distribution of credit facilities, have prevented the orderly growth of private agricultural investment.

Fifth, technological constraints, such as ineffective agricultural research and extension and the inadequate utilisation of modern inputs, have prevented the introduction of technical innovations that are essential for reducing production costs and the shifting forward of production function. Finally, market and price constraints have not provided an effective link between producers and consumers of agricultural products[41].

[41] For further details on problems of agriculture in Nigeria, see Ojo (1995).

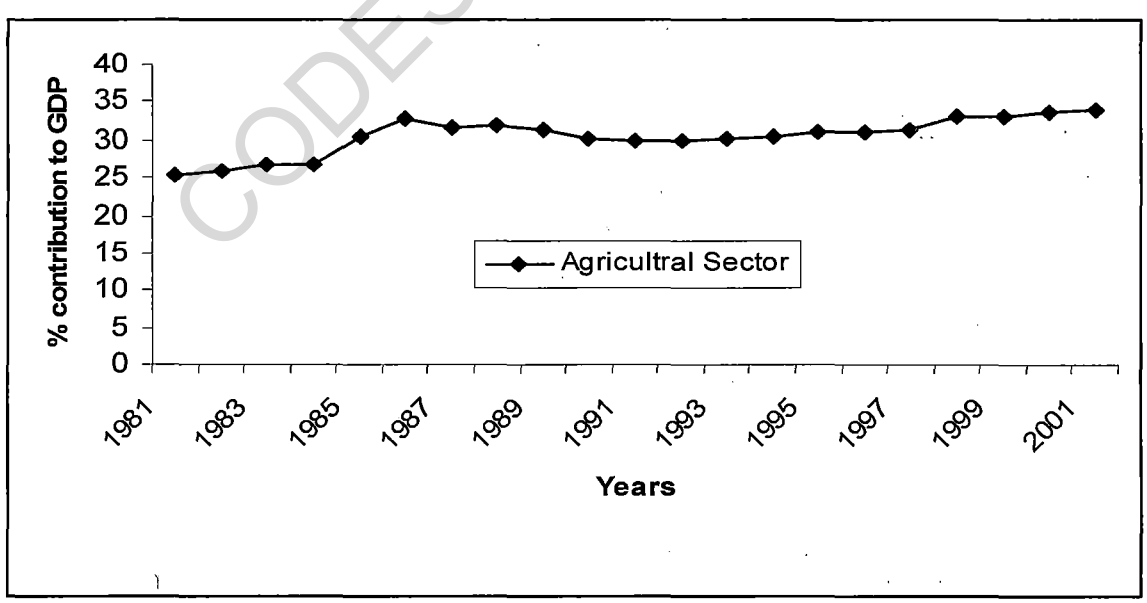
2.3.1.2A Brief Performance of the Nigerian Agricultural Sub-Sector 1981 – 2001

We analysis the performance of the agricultural sub-sector focusing on its contribution to the gross domestic product, value added, and employment level.

(1) Contribution to the Gross Domestic Product

Prior to the 1970s, agriculture was the most important sector of the Nigerian economy accounting for 60 percent of GDP and more than 75 percent of export earnings. However, with the expansion of the crude petroleum sector, agricultural development entered a period of relative decline.

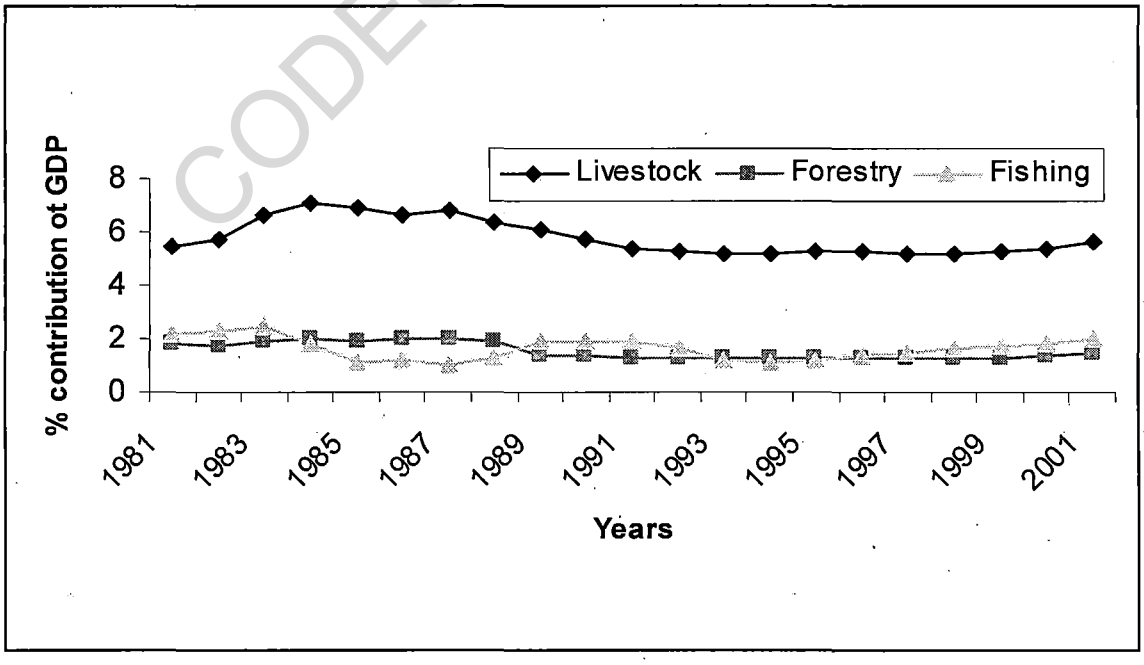
Figure 2.25a: The Contribution of Agricultural Sector to the GDP: 1981 – 2001



The contribution of agriculture declined from 63 percent in 1960 to 20.6 percent in 1980 being 36.6 percent in 1986. Figure 2.25a above reveals a slight improvement in the contribution of the agricultural sector to GDP since the adoption of the adjustment. Its contribution between 1981 and 2001 on average stood at 27.1 percent.

Figure 2.25b below reveals the index of agricultural production by type of economic activity. The percentage contribution of livestock was relatively stable at an average of 6.7 percent between 1981 and 1988. However, there was a decline in its contribution between 1990 and 1999 due to external factors such as droughts and diseases. Recently, livestock contribution witnesses a slight improvement, especially between 2000 and 2001. Forestry's and Fishing's contribution to the GDP has been relatively stagnant between 1.33 percent and 2.01 percent and between 1.38 and 2.48 percent respectively as depicted in figure 2.25b.

Figure 2.25b: The Contribution of Agricultural Production by type of Activity



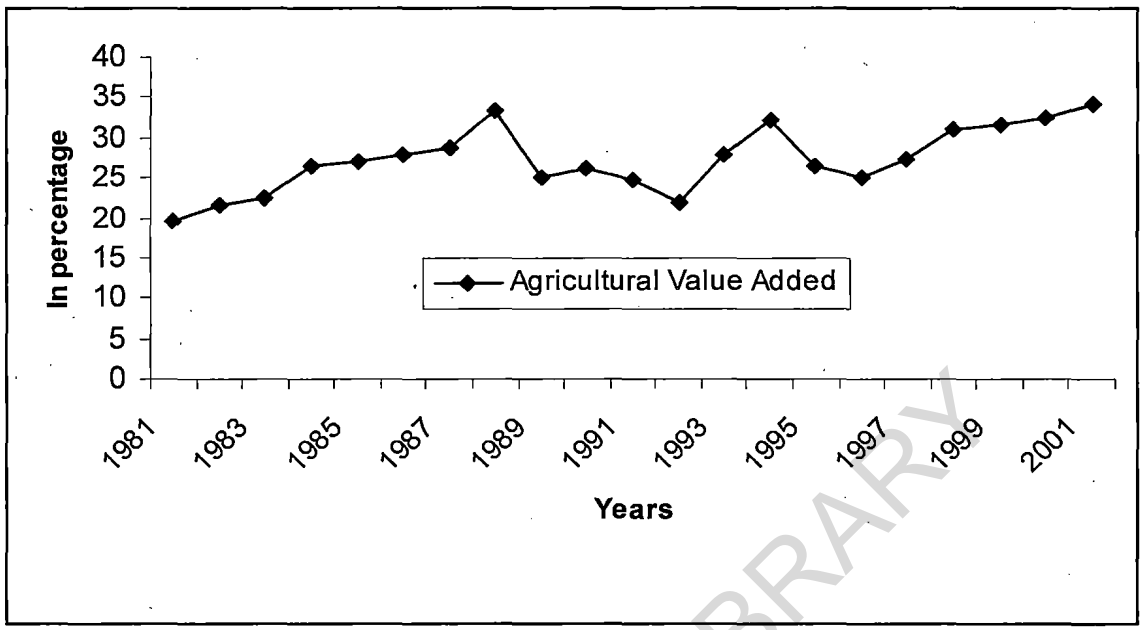
The great potential for fishery production is demonstrated in the annual fishing festival organised in the Northern States – Argungu, Kanji and Gashua. There is a large diversity of wildlife in the various national parks, forests and game reserves of the country even though poaching, hunting and droughts have taken their toll in recent years.

(2) Contribution to Value Added

Agricultural value added to gross domestic product stood at 19.5 percent in 1981. A cursory look at figure 2.26a below reveals that there was a consistent increase in agricultural value added to GDP between 1981 and 1989, thanks to the diversification programme of the government, the depreciation of the exchange rate and other various programme adopted by the government[42]. However, the contribution of agriculture decreased between 1990 and 1993 due to unfavourable climatic condition, especially in the Northern part of the country. Recently, its contribution has been on the increase between 1997 and 2001 but stood at 30.71 percent on average throughout the period.

[42] Several programmes have been introduced from late seventies to date including the Agricultural Development Programme (ADPs), River Basin Development Authorities (RBDAs), Operation Feed the Nation (OFN), Green Revolution (GR) and Directorate of Food, Roads and Rural Infrastructures (DFRRI), National Directorate of Employment (NDE), Better Life for Rural Women (BLP), National Agricultural Land Development Authority (NALDA), Family Support Programme (FSP), and Family Economic Advancement Programme (FEAP) among other. All these programmes aim to enhance food and raw material production.

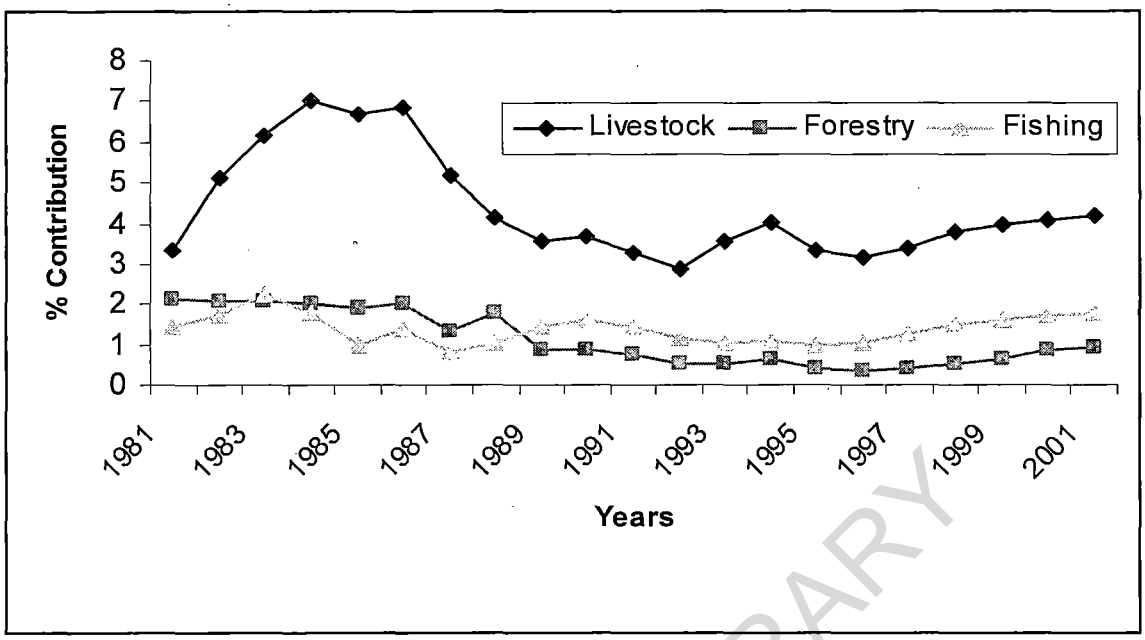
Figure 2.26a: Value Added by Agricultural Sub-sector to the Gross Domestic Product



Further, figure 2.26.b below shows the value added by agricultural production by type of economic activity. Specifically, livestock contributed on average 6.2 percent between 1981 and 1987. However, its value added to the GDP declined between 1988 and 1993 and was relatively stable between 1995 and 2001[43]. Finally, the value added by forestry and fishing to GDP was relatively stable throughout the period when compared with livestock.

[43] As mentioned earlier, the decline is not unconnected with droughts and diseases most especially in the Northern part of Nigeria.

Figure 2.26b: Agricultural Production by Type of Economic Activity



(3) Employment Level

In numerical terms, there has been a major decline in the farming population. Recent statistics suggests that less than 65 percent of the labour force is engaged in agriculture unlike 70 percent of the labour force as at independence. Further, the farming population has considerably aged reflecting the migration of the youth to the urban centres[44].

(4) Agricultural Sub-sector Production Costs

Since the introduction of the structural adjustment programme in Nigeria in 1986, the cost of agricultural inputs has continued to rise. For instance fertilizer, which was sold for an average of ₦80 per bag in 1982, increased to ₦ 141 per bag in 1985 and ₦

[44] See NISER (2001).

200 in 1996. It rose to ₦ 1,400 and ₦ 1,800 in 1997 and 2000 (CBN, 2001). Therefore, the increase in the cost of production of agricultural products is expected.

2.4 The Nature of Nigeria's Macroeconomic Problem

The present macroeconomic problem that Nigeria is facing can be traced to the early 1970s. Though the economy was very strong and stable in the 1960s, but excessive reliance on a single product whose price is determined at the world market had exposed the country to a series of external shocks. Coupled with these are inappropriate and inconsistent domestic policies (fiscal, monetary and commercial), that were implemented in the past.

The external imbalances and fiscal and monetary disequilibria have been a recurrent problem in Nigeria. The windfall from oil was huge during the oil booms (1973-74 and 1979-80). The revenue from oil provides the basis for a significant increase in government expenditure designed to expand infrastructure. Indeed, the large oil revenues did not only provide the government with the financial resources to undertake new programmes and projects but they affected the very institutions which are to make policy and the nature of centralisation of authority and decision making in Nigeria. Pressures on expenditure were exerted from all sides. Thus, as earlier stated, the government expenditure continues to increase without adequate consideration for alternative revenue generation[45]. So, given the total neglect of agriculture during the oil booms, coupled with an appreciation of the currency, agricultural exports fell. Imports became relatively cheaper in the domestic market as a result of government's

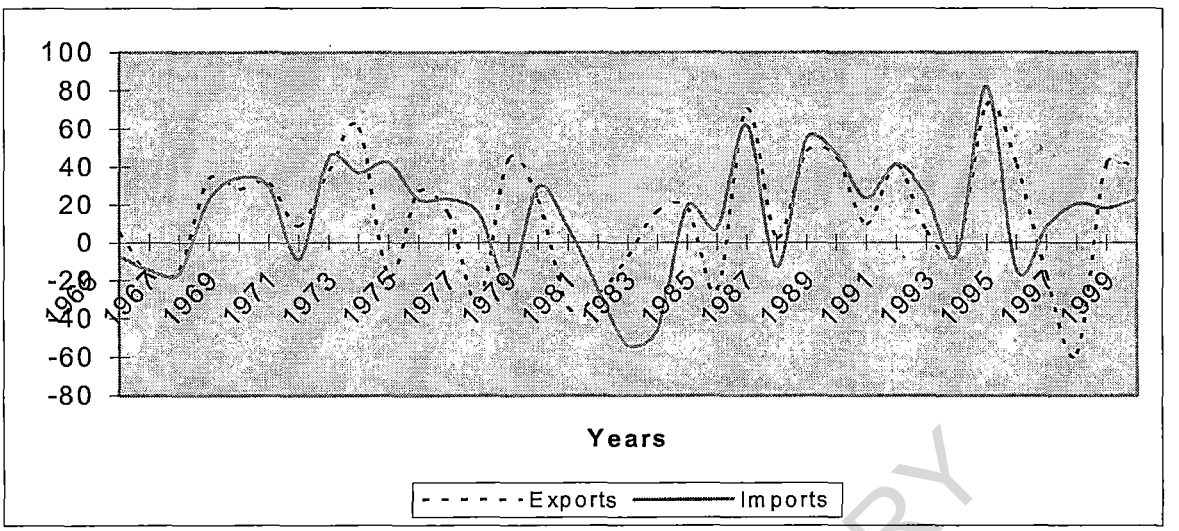
[45] A classic case of 'Dutch disease'

attempt to curb inflation via an overvalued currency. The continuation of increased government expenditure was because the collapse of the oil prices was either seen as temporary, or because programmes were difficult to stop or reduce when booms were over.

Though incentives were introduced to restore the lost glory in the agricultural sector and its dominance in terms of contribution to GDP and total exports, inconsistent policies and lack of political will has made the achievement a mirage. In the good old days of huge capital inflow, the manufacturing industries that relied on imported inputs were not encouraged to develop. The inappropriate macroeconomic policy (plus a system of tariff protection and import licensing) resulted in further appreciation of the naira. Large external borrowing became inevitable after the country's foreign exchange reserves had been substantially run down. The large external borrowing of the late 1970s continued, with substantial increases between 1978 and 1983. However, the experience of countries in East Asia with import substituting strategy demonstrates that it is the management of the policy that matters in ensuring success.

Figure 2.27 reveals that the growth of export had been struggling to match the growth of imports, thus creating current account deficits.

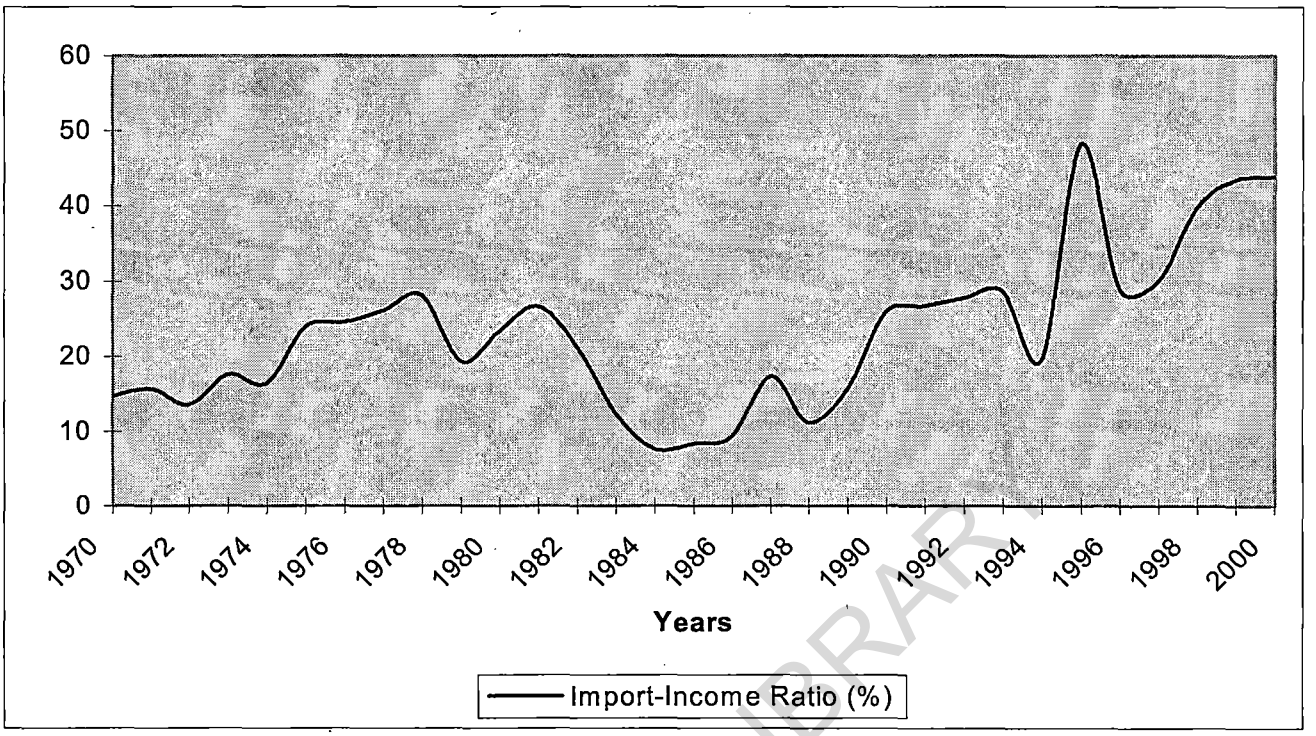
Figure 2.27: Annual Percentage Growth in Exports and Imports 1965 - 2000



Nigeria, which was a net exporter of agricultural products in the early 1970s, became a major food importer, importing more than US $2 billion worth of foodstuffs and manufactured goods, a year a decade later.

The ratio of imports to income is conventionally used as a measure of trade openness. In this study we use it as a measure of the related concept of import dependency. Using 1985, which marked the adoption of the adjustment programme as a benchmark, it is clear (figure 2.28) that import dependency has been increasing since the liberalisation of imports in 1986. From a level of 24 per cent of the GDP in 1990, import dependency increased to 48.2 per cent in 1995.

Figure 2.28: Import Dependency 1970 - 2000



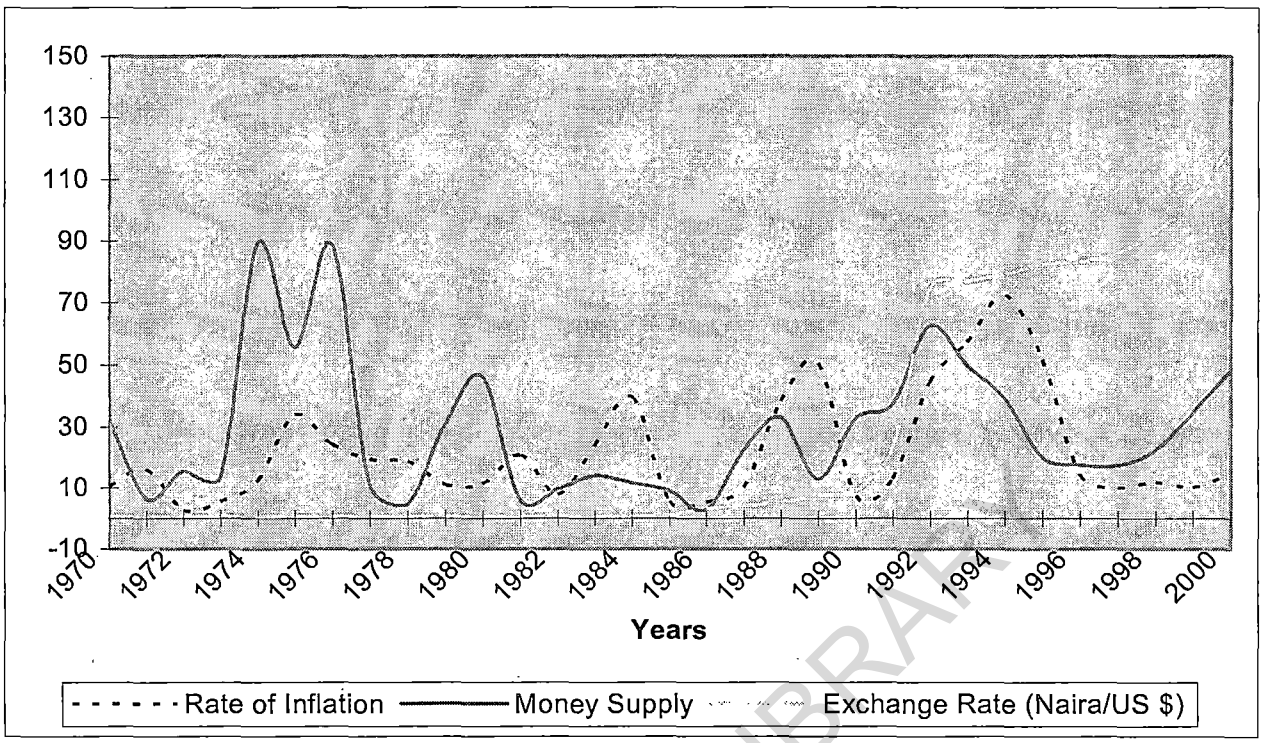
The import-income ratio decreased in 1996 to 29.0 percent but increased thereafter, reaching 43.8 per cent in 2000. Thus, judging from the record of the 1990s, there has been no significant reduction in the import dependency of the Nigerian economy. Unlike other highly indebted countries such as Brazil, Nigeria is unduly dependent on imports of food, manufactured goods, capital goods and also raw materials.

Also, projects undertaken during the crude oil booms, were planned and implemented without sufficient attention paid either to their economic viability or to the execution capacity of the government, while projects that are viable were located based on political consideration. Most of the manufacturing industries employ capital-intensive technology and the assembly type-industries depend on imported inputs. Industries were established with little consideration for employment generation.

Private investment also suffered, with the public expenditure programme expanding and contracting at the whim of oil revenues. The volatility and uncertainty that plagued oil earnings were channelled to the domestic economy through changes in relative prices and in the associated structure of production. If the oil shock had been permanent, the response would have been the correct one. But, because oil prices are uncertain and highly volatile, investors could not predict when the next shock. This uncertainty increases the risk investors' face in non-oil activities, reducing the volume of private investment and slowing the growth of the non-oil economy. As several World Bank (1995) studies confirm, volatile relative prices are one of the main factors limiting private investment in developing countries.

The implementation of a contractionary fiscal and monetary policy between 1980 and 1983 due to austerity measures reduced the budget deficit substantially, resulting in a decline in inflationary rate. With SAP policies, the inflation rate came down between 1985 and 1987 (figure 2.29).

Figure 2.29: Money Growth, Exchange Rate and Inflation 1970 - 2000



However, in 1988 when the opposition to austerity measures mounted, the government eased fiscal and financial policies, increasing the budget deficit. Also, the persistent devaluation increased the domestic price of imported goods. All these factors put serious pressure on inflation, with the inflation rate peaking at 45 percent in 1992. With the persistent deficit in the fiscal operation of the government, relaxation of monetary control measures and devaluation of the naira exchange rate, the inflation rate on average reached 49 percent between 1993 and 1996. Though inflationary pressure decreased between 1997 and 1999, it peaked up in 2000.

At the root of economic backwardness, stagnation and decline in Nigeria is the poor performance of the agriculture sector, which ideally, should have been the predominant sector. The root factors of the rapid decline in food production are well known. Domestic policies with regard to agriculture have often constituted a

disincentive for farmers, while the high rate of rural-urban migration has further aggravated the situation.

Forty-one years after independence, the envisaged economic emancipation remains elusive, at best a hope. The economy is still basically underdeveloped, with low-income per head, low level of productivity, a circumscribed and fractured industrial base, and a high dependence on oil exports and primary agricultural products. The resultant effect is an economy that is characterised by high level of openness and domination by foreign products.

CHAPTER 3

AGGREGATE EXCHANGE RATE PASS-THROUGH: A CASE STUDY OF A SMALL OPEN ECONOMY

3.1 Introduction

The end of the Bretton Woods era marked the beginning of unprecedented swings in the exchange rates. In fact, large swings in the 1980s revived interest in the relationship between exchange rate movements and the traded goods price adjustments. Exchange rate movements affect the domestic price levels mainly through the volume of import and import prices.

Thus, the choice of an appropriate exchange rate regime, and the broad thrust of exchange rate policy, is a crucial component of macroeconomic policy in both developed and developing countries. The exchange rate issue has been particularly prominent in developing countries in recent years with the adoption of the International Monetary Fund (IMF) and the World Bank adjustment programmes. The effectiveness of the exchange rate policy depends crucially on the nature and timing of linkages between nominal exchange rate, prices and inflation. If domestic inflation is largely determined by imported prices and the exchange rate, the initial improvement in competitiveness resulting from a devaluation may eventually be offset by the consequent increase in domestic prices[46].

Exchange rate pass-through has been defined in various ways. A textbook definition of exchange rate pass-through regards it as the percentage change in local currency import prices resulting from one percent change in exchange rate between the exporting and importing countries. Menon (1996) opines that exchange rate pass-through is 'the degree to which exchange rate changes are reflected in the destination currency prices of traded goods' while Han and Suh (1996) view pass-through as 'the

[46] This is in fact more applicable to most developing countries that relied heavily on imports of manufactured, semi – manufactured and equipments.

percentage by which import prices, measured by the home currency, rise when the home currency depreciates is known as the degree of pass-through from the exchange rate to import prices'. Broadly speaking, what we can infer from these definitions is that exchange rate pass-through relates to the effect of the movements of the exchange rate on domestic prices of traded goods.

Findings from many empirical studies that focused on the impact of commercial policy conducted in the 1950s and early 1960s revealed implicitly or explicitly that fluctuations in tariffs and exchange rates are reflected in import and export prices, though not fully.

From the literature survey, almost 60 percent of research in this area (i.e relationship between exchange rate and import prices) focused on large economies, such as the United States, Germany and Japan. Findings from these studies revealed that for these large open economies, import prices do not fully reflect changes in their exchange rates, a phenomenon, which most researchers have termed as 'incomplete' or 'partial' exchange rate pass-through[47]. Exchange rate changes are usually perceived as cost shocks for a foreign firm producing in its home country and selling in its export market. When the exchange rate changes, the firm may choose to pass the cost shock fully into its selling price (complete pass-through), or absorb the shock and keep its selling price unchanged (zero pass-through), or some combination of these (partial pass-through). Of course, how exporters respond to an exchange rate change depends on whether it is perceived as temporary or permanent, the elasticities of demand and supply, and the structure of the market.

[47] It is possible that the experience of small open economies might be quite different since such economies are price-takers.

Despite the existence of a relatively large literature on pass-through, pricing-to-market behaviour, and other related issues, little work has so far been done on the relationship between exchange rates and tradable goods prices for small open economies, specifically on sub-Saharan Africa economies and Nigerian economy in particular. This might not be unconnected with data problem and other issues researchers do face when investigating less developed economies.

Nigeria is a classic case of a small open economy. Though cash crops constitute the bulk of her exports in 1960s and early 1970s, currently Nigeria is the seventh leading exporter of crude oil in the world. As would be expected of a small crude oil and cash crops exporter, the economy is highly open, which makes the country vulnerable to external shocks[48]. The growth of her gross domestic product (GDP) is closely tied to export performance, while exchange rate, imports prices and domestic factors exert major influence on domestic prices. Crude oil constitutes about 58 percent of total exports and is priced in U.S. dollars, while imports are dominated by intermediate (machinery) and manufactures goods. In this case, Nigeria is a typical price taker. Thus, consistent with the small country assumption, tradable goods prices are determine in the world markets. Nigeria's exports are destined to markets in the United States (36.9%), the United Kingdom (10.7), Spain (7.5), India (8.6%), France (5.9), Brazil (6.3%) and few African countries, while the bulk of her imports come from the United States (15.4%), the United Kingdom (11.2%), France (8.4%), Germany (9.9%), China (5.8%), Netherlands and few other countries[49]. Since the introduction of the adjustment programme, the patterns of imports have changed from

[48] We recognise the fact that the price of crude oil is determined on the world oil market by the 'invisible hand' and may be another source of shocks.

[49] The figures are for 2001 and are calculated by the author from the Direction of Trade Statistics, a publication of the IMF and the Economic Outlook, a publication of the Organisation for Economic Co-operation and Development (OECD) Statistics of Foreign Trade.

intermediate to almost manufactured goods. The imports of manufactured goods into Nigeria from her major trading partners constitute about 70% of total imports.

This research work is germane in the sense that we intend to investigate the speed at which exchange rate and foreign price changes are transmitted into domestic prices, and whether there is a long-run relationship between the exchange rate and domestic prices. Next, we shed more light on the relationship between exchange rates and traded goods prices.

3.2 Traded Goods Prices and Exchange Rates

As mentioned earlier, a substantial number of studies have examined the relationship between traded goods prices and exchange rates for developed countries. Those studies contain three related strands on the relationship between traded goods and exchange rates. The strands are:

- the law of one price (LOP)
- exchange rate pass-through (ERPT)
- pricing to market (PTM)

Goldberg and Knetter (1997: 1246) provided a detailed analysis of the relationship between exchange rates and goods prices through their emphasis on how these research strands resulted from theoretical and institutional changes. In an attempt to examine the relationship between exchange rates and prices, they developed a generic model:

$$P_t = \alpha + \delta X_t + \gamma E_t + \psi Z_t + \varepsilon_t \qquad \textbf{(3.1)}$$

where all the variables are expressed in logarithms, P is the price of a particular product, X is a cost or price variable, E is the spot exchange rate, Z represents other control variables in the model, ε is an error term, and t denotes the time period. Thus, the three strands of empirical research on exchange rates and prices differ with respect to the choice of P, X and Z. The three strands are examined below.

3.2.1 The Law of One Price (LOP)

The law of one price, henceforth LOP, suggests that, in the absence of trade impediments, and under condition of perfect competition, efficient arbitrage would ensure that a homogeneous product, when expressed in a common currency, would be uniformly priced, allowing for the existence of transportation cost. In other words, if two markets have separate currencies and the exchange rate varies, at least one of the two prices of any good traded will have to shift to maintain equality. The percentage change in the relationship between the two prices should equal the percentage change in the exchange rate. The LOP then can be stated as:

$$P = EP^* \qquad \textbf{(3.2)}$$

where P denotes the local price of the commodity, say in Nigeria, P^* represents the foreign price of the same commodity, and E, the exchange rate of naira per unit of the foreign currency (here, the U.S dollar). When LOP holds, a 10 percent change in the exchange rate should translate into a 10 percent change in the importing country's price, all other things held constant (i.e., complete pass-through).

For instance, considering a hypothetical case, the price of sesame seeds (one of the basic ingredients in the Big Mac[50]) in Nigeria (in naira, ₦) and the United States (in dollars, $), respectively. It follows that if sesame seeds cost $5 per bushel in the United States, and the current Naira/dollar exchange rate is 110, then, the LOP states that the price of sesame seeds in Nigeria should be ₦ 550. For LOP, the assumptions

[50] Big Mac is the registered trademark of McDonald's.

of profit maximisation and costless transportation, distribution and resale must hold[51]. Therefore, departure from this law occurs when, for a given price of a traded good, changes in its domestic price are not proportional to changes in exchange rate. This implies a situation of partial or incomplete pass-through.

Since in practice, the assumptions of LOP are unlikely to hold[52], this has resulted in the modification of the absolute version of the LOP and the purchasing power parity (PPP), so that we have:

$$P = \alpha EP^{*} \qquad \textbf{(3.3)}$$

where α is the real exchange rate. If α remains constant over time, then common currency prices for a particular product change in the same way over time in both domestic (Nigeria) and the foreign country (the United States), and the relative LOP and PPP holds.

The relative version of LOP has been tested[53]. The absolute version of the LOP using equation 3.2 offers predictions for the three parametres in equation (3.1). Thus, if prices are measured in different currency units, then, this version of the LOP implies that $\alpha = 0$, $\delta = 1$ and $\gamma = 1$ where E is the exchange rate between Nigeria and the U.S where prices are measured. Alternatively, if the price measures are in the units of the same currency, say, the U.S dollar, then, the LOP implies that $\alpha = 0$, $\delta = 1$, and

[51] If sesame seeds sell for a higher price in Nigeria, an astute trader could buy sesame seeds in the United States and sell them in Nigeria at a profit. This type of activity is known as arbitrage.
[52] However, for some highly traded commodities, such as Gold, the LOP does hold, (see Rogoff, 1996).
[53] The open economy monetarist model relies on an assumption such as equation 3.2 or 3.3 to tie down the behaviour of exchange rates. Rogoff (1996) provides an excellent review of the theory and evidence on PPP.

$\gamma = 0$[54]. Findings from the tests revealed that while an arbitrary constant can help mitigate the problems arising from the use of price indices and the possibility of non-identical goods, it is not a good fix for the presence of trade frictions, such as tariff and non-tariff trade barriers. The evidence against LOP comes from the regression coefficient γ in equation 3.1. Using price indices, Kravis and Lipsey (1978), Richardson (1978) and Giovannini (1988) rejected the LOP as did Isard (1977), who used unit values.

3.2.2 Exchange Rate Pass-Through (ERPT)

As stated earlier, the extent to which exchange rate changes are transformed into changes in the prices of imports (denominated in the local currency) and exports (denominated in foreign currencies) is known as the "pass-through" effect of the exchange adjustments. In broad terms, pass-through measures the amount to which changes in exchange rates are transmitted to domestic prices of both tradable and non-tradable goods. The degree of pass-through has generated increasing concern not only for what it may tell us about competition in international trade but also because the adjustment of import prices is relevant for both small and large open economies in analysing the impact of exchange rate changes on balance of payments, trade balance and the rates of inflation.

The degree of exchange rate movements transmitted into domestic prices has important implications for the management of exchange rate policy. As noted earlier, information on pass-through helps in determining the impact of devaluations,

[54] A handful of research work on the LOP focused on an arbitrage condition rather than estimates of a pricing model and therefore do not include additional controls (i.e. Z is empty).

particularly on the length of time for which real exchange rate depreciation will be sustained following a devaluation (Atta et al. 1996). When pass-through is complete, total fluctuations in the exchange rate are reflected in domestic import prices. However, if the domestic import prices remain stable, it is the mark-up that has to assimilate exchange rate movements. Cases of incomplete pass-through suggest that some of the depreciation is absorbed by exporter's mark-up to the extent that it is not fully passed on in higher domestic prices of imports.

The theoretical underpinnings of the limited exchange rate pass-through literature emphasised models of imperfect competition, product differentiation and price discrimination. For instance, Dornbusch (1987) observed that market organisation, such as the dominance of price-setters in the market, possibility of substitution between domestic and foreign variants of a product and barriers to spatial arbitrage, can influence the size and speed of pass-through. Markets for manufactured goods are more likely to exhibit these characteristics than those for basic commodities (see Hooper and Mann, 1989). The theory of intra industry trade (Krugman, 1979; Lancaster, 1980 and Helpman and krugman, 1989), in which all traded goods are imperfectly substitutable, further lends support to the question of microeconomic price linkages across national markets. Given the above, LOP should not usually be expected to hold between domestic production and imports, but might hold between the same goods for both domestic and export markets.

The rise of imperfect competition and strategic trade theory motivated researchers to estimate exchange rate pass-through at the industry level. This approach is best illustrated through Feenstra (1989). Feenstra uses U.S import unit values from Japan

as a measure of import prices for three separate industries (Cars, compact Trucks, and heavy Motorcycles) and examines the extent of the effect of tariffs and exchange rate on U.S prices of Japanses cars, trucks and motorcycles. His finding reveals that pass-through relation varies across products.

With reference to equation (3.1), the coefficient γ represents the pass-through coefficient. Therefore, if γ is equal to one, pass-through is said to be full or complete, if less than one, $(1>\gamma>0)$ then pass-through is incomplete. Thus, γ serves as a measure of the mark-up over cost.

3.2.3 Pricing to Market (PTM)

The latest generation of empirical research on the relationship between prices and exchange rates focused more sharply on the issue of mark-up adjustment. The research revealed that the percentage change in the prices of imported goods is smaller but at times larger than the percentage change in the exchange rates of the exporting country and that price responses differ across destinations. The exchange rate induced price discrimination is termed as 'pricing-to-market', henceforth PTM, Krugman (1987). Thus, PTM represents the pricing behaviour of a firm in different markets. A firm achieves this by taking a rise (fall) in profit margins on its foreign sales when the exchange rate depreciates (appreciates), [Feenstra (1989)]. For a monopolist that price-discriminates across export destinations, PTM is a function of the convexity of the demand schedules [see Feenstra, (1989); Marston, (1990); Knetter, (1993)].

The extreme cases of price discrimination occur when a single firm sells a commodity for different prices in different markets (Krugman and Obstfeld, 1994). This is best illustrated by an article in the Financial Times, October 5, 1992 entitled "Why Buyers in Tokyo Spend $5,000 Less for UK – Built Nissan". This referred to Nissan cars built at Sunderland, UK, being sold for less in Japan than what the UK customers paid for the same cars in the early 1990s. The customer in the UK paid £ 16, 215, compared with his/her counterpart in Japan who paid £13, 375 for the same model.

In analysing the pricing behaviour of a firm in several markets, [see Goldberg and Knetter, (1997)], we consider a firm that sells output in n separate markets, indexed by i. The profit of the firm can be calculated as;

$$\pi(p_1,.....,p_n)=\sum_{i-1}^{n}p_iq_i(E_ip_iv_i)-C\left\{\sum_{i-1}^{n}q_i(E_ip_i;v_i),w\right\} \qquad \textbf{(3.4)}$$

where p denotes price in the exporter's currency, q the quantity demanded (a function of the price in the importers' currency Ep, and a demand shifter v), E the exchange rate i.e. units of the importers' currency per units of the exporter's currency while, $C(q,w)$ is the cost function with w representing inputs prices[55]. In this scenario, profit maximisation requires that firms equate marginal sales revenue in each market to common marginal cost. On the other hand, export price to each destination is a product of common marginal cost and the destination specific mark-up, so we have:

[55] Sales to the domestic market or to countries whose currencies are fixed to the exporters have an exchange rate equal to one.

$$p_i = C_q \left\{ \frac{-\eta_i}{-\eta_i + 1} \right\} \forall_i \qquad \textbf{(3.5)}$$

the argument of the marginal cost function C_q assumed suppressed and η_i denotes the demand elasticity in the i th foreign market with respect to changes in price.

Marston's (1990) model of a price discriminating monopolist selling both in domestic and export markets, best illustrates a good departure point to discuss PTM. Given the profit maximisation condition of equation (3.5), and as demonstrated by Marston (1990), the response of export price to changes in exchange rates depends on both the convexity of the demand curve in the export market and changes in marginal cost that result from changing output levels. Thus, we can infer that if demand is more (less) elastic as local currency prices rise, then, the exporter's optimal mark-up will fall (rise) as price in the buyer's currency increases[56]. Also, from the Marston model, there is a feedback effect which revealed that changes in cost influenced export and domestic prices but price adjustment depends on demand curvature.

With reference to equation (3.1), P denotes the export price, X is the domestic price of the good whose coefficient is constrained to be one and is subtracted from both sides of the equation, while Z includes both cost and demand factors in the two markets. It is important that the dependent variable must be the export/domestic price ratio just like the costs and any associated errors likely to influence the ratio only when a difference in the convexity of demand exist between the two markets.

[56] For example as the buyer's currency depreciates against the exporter's.

In a study, Knetter (1989) clearly disentangled cost changes from mark-up changes which resulted from the exporter's exchange rate fluctuations against the currency of the importing country. A situation in which changes in the exchange rate affect the exporters' marginal cost, the change in marginal cost is reflected in all destination markets, while mark-up changes are usually market specific. In auto industry, according to Gagnon and Knetter (1995), Japanese auto exporters are estimated to offset approximately 70 percent of the effect of exchange rate changes on buyers' prices through mark-up adjustment. The comparable number for Germany's auto exports varies by engine size: for small autos, about 40 percent of the effect of exchange rate changes is offset by destination-specific mark-up changes, whereas for large autos adjustment is minimal. However, no evidence of PTM for U.S. auto exports was found.

Extending the discussion on PTM, Knetter (1993) measured the degree of price discrimination across export destinations that are associated with exchange rate changes using the United States, the United Kingdom, Germany and Japanese industry-level data. The findings from the industries sampled, seven-digit industries, demonstrated more price discrimination across destinations in the United Kingdom, Germany and Japanese data. These findings provide further support for the earlier study by Gagnon and Knetter (1995).

3.3 The Relationship between Exchange Rates and Goods Prices

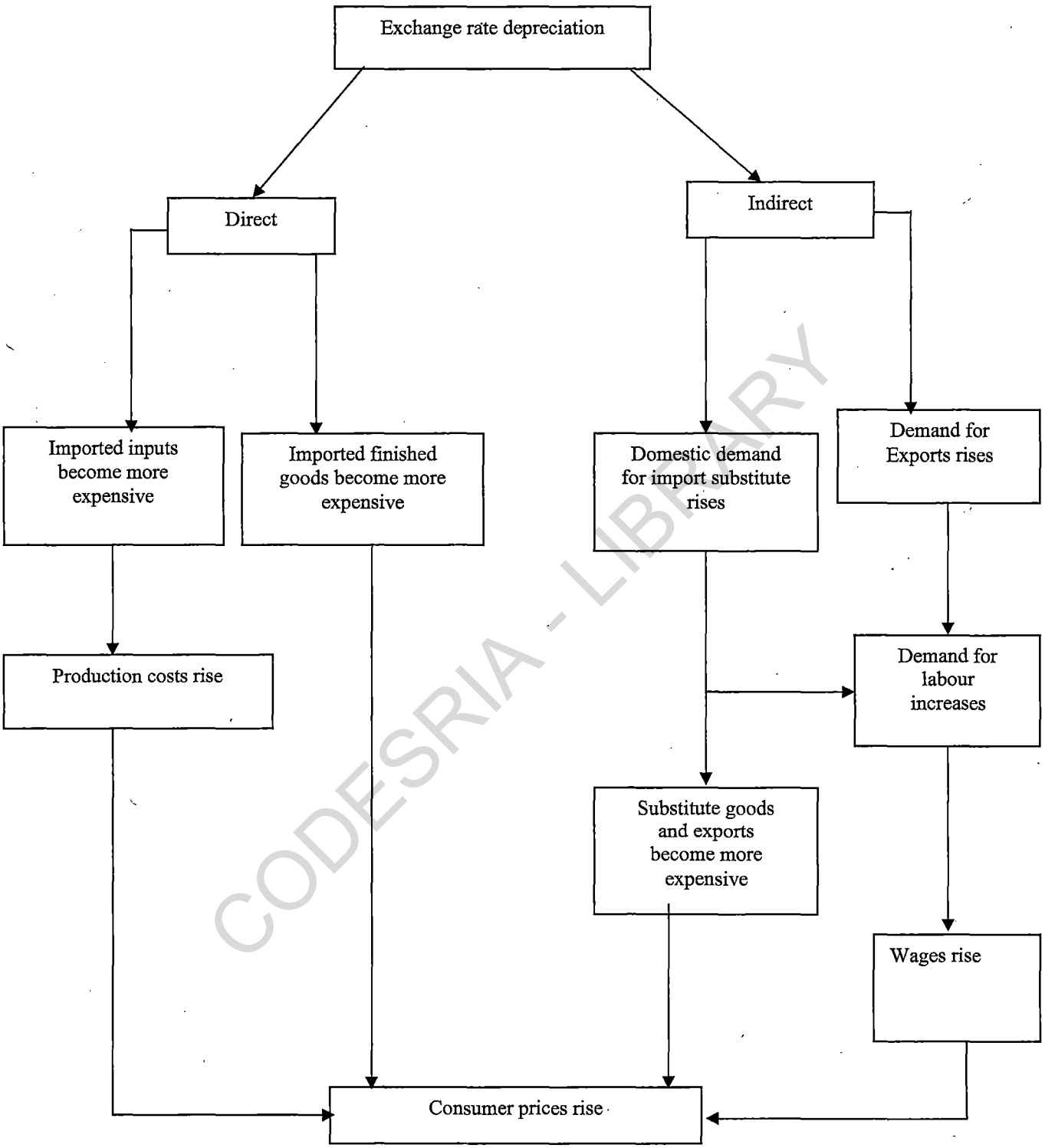
The depreciation of the naira against foreign currencies is expected to increase (decrease) the prices of imports (exports) measured in naira. This relationship

between foreign currency prices and domestic currency prices is termed exchange rate pass-through. Higher import prices as a result of the depreciation of naira will raise the cost of imports of both final consumption and capital goods as depicted in figure 3.1 below. With respect to imports of final consumer goods, the full rate of depreciation is likely to be passed through to consumer prices unless foreign exporters are willing to reduce their profit margins or maintain their market share. With regards to imports of intermediate inputs, the depreciation of the naira brings about price increases directly for imported intermediate goods and indirectly for domestic intermediate goods.

In this scenario, the Nigerian producers either pass on the price increases of their intermediate inputs to their customers in the form of higher output prices or absorb the increased cost of production by reducing their profit margins[57].

[57] This decision depends on market structure and other factors which include the elasticity of demand and supply, and whether the movement in the exchange rate is perceived as temporary or permanent.

Figure 3.1: The Transmission Mechanism of Exchange Rate Pass-Through



Source: Author's diagrammatic representation of relationship between exchange rate and price.

In summary, from the literature, the extent of exchange rate pass-through to domestic prices depends on three factors, including the relative elasticities of demand for and supply of traded goods, macroeconomic conditions, and the microeconomic environment. When we assume away shocks for expository purposes, the relative price elasticities are the principal determinants of pass-through. For imports, the degree of pass-through increases the lower is the elasticity of demand and the greater the elasticity of supply. Furthermore, macroeconomic shocks are more likely to reinforce or counteract the influence of elasticities. For instance, when domestic demand is buoyant or capacity is constrained, the extent of pass-through for imports is likely to be high irrespective of the relative elasticities (Piggot and Reinhart, 1985 and Phillips, R. 1988). However, when domestic demand is weak or capacity utilisation is low, the margins of foreign exporters may be reduced, thereby making pass-through incomplete irrespective of the elasticities.

Lastly, at the industry level, the microeconomic environment may influence the exporter's pricing strategies. When homogeneous goods are traded in an integrated market, arbitrage eliminates price differentials. However, when markets are imperfect and segmented, wide ranges of pricing responses are possible. In this situation, if exporters seek to maximise profit, pass-through is likely to be high, otherwise if exporters seek to maximise market share rather than profit, pass-through may be incomplete (Hooper and Mann, 1989). Also, the market structure may equally create an opportunity to discriminate between markets, in which PTM may occur (Krugman, 1987; and Gagnon and Knetter, 1992). For further exposition, we examine the theory of exchange rate pass-through.

3.4 The Theory of Exchange Rate Pass-Through

There are two theoretical approaches to exchange rate pass-through; these are the elasticity and mark-up approaches.

3.4.1 The Elasticity Approach

We can derive the relationship between the exchange rate and the traded goods prices through the use of elasticities. Following Menon (1995), let the demand and supply functions for the traded goods be stated as follows:

$$Q_D = D(P_D) \tag{3.6}$$

and

$$Q_S = S\left(\frac{P_F}{ER}\right) \tag{3.7}$$

where Q_D and Q_S represent the quantity demanded and supplied of the imported good, P_D and P_F represent the domestic and foreign currency price of the imported good and ER represents the exchange rate (the foreign currency price of domestic currency). Differentiating equations (3.6) and (3.7), we have

$$\partial Q_D = \left\{\frac{\partial D}{\partial P_D}\right\}\partial P_D \tag{3.8}$$

and

$$\partial Q_s = \left\{\frac{\partial S}{\partial P_F}\right\}\left\{\left(\frac{1}{ER}\right)\partial P_D - \left(\frac{P_D}{ER^2}\right)\partial ER\right\} \quad \textbf{(3.9)}$$

Representing elasticity of demand and supply as $\varepsilon_D = (\partial D / \partial P_D)P_D / Q_D$ and $\varepsilon_s = (\partial S / \partial P_F)P_D (ERP_D)$ respectively and setting equations (3.8) and (3.9) equal to each other at equilibrium, we have:

$$\left(\frac{ERQ_D}{P_D}\right)/\varepsilon_S\left\{\left(\frac{1}{ER}\right)\partial P_D - \left(\frac{P_D}{ER^2}\right)/\partial ER\right\} = \frac{Q_D}{P_D\varepsilon_D\,\partial P_D} \quad \textbf{(3.10)}$$

Equation (3.10) can be re-written as:

$$\left(\frac{\partial P_D}{P_D}\right)/\left(\frac{\partial ER}{ER}\right) = \left(1 - \frac{\varepsilon_D}{\varepsilon_S}\right)^{-1} \quad \textbf{(3.11)}$$

In the absence of shocks, equation (3.11) shows that the percentage change in the domestic currency price of the imported good following an exchange rate change is a function of the price elasticities of demand and supply. For exports, the degree of pass-through will increase the greater is the elasticity of demand and the smaller the elasticity of supply. Conversely, for imports, which are the focus of our research, the degree of pass-through will increase the lower is the elasticity of demand and the greater the elasticity of supply. Thus, it is clear from the above that if the demand for imports is perfectly elastic, then pass-through will be complete but if perfectly inelastic, pass-through will be zero.

3.4.2 Market Structure and Product Characteristics: A Mark-up Approach

In a perfectly competitive market there is no deviation between price and marginal cost. Therefore, when market structure deviates from perfect competition to imperfect competition, pricing will no longer be at marginal cost, and firms can charge a mark-up on costs to earn above normal profits even in the long run. Thus, the variation in mark-up over marginal cost will be determined by two important factors the degree of substitutability between domestic and imported goods, as determined by the degree of product differentiation and the degree of market integration or segregation.

A market is integrated when geographical or nationality does not have systematic effects on transaction prices for identical products[58] while segregation refers to lack of integration. A product market is geographically segmented if the location of the buyers and sellers influences the terms of the transaction in a substantial way[59].

According to Pigou (1920) there exists a third-degree price discrimination. This occurs when different groups of consumers pay different prices for identical goods. For instance, if Japanese and German customers pay different prices for a similar Toyota Celica, net of transportation costs, then the market for Celica is segmented.

However, a market that is integrated may not be perfectly competitive. A monopoly supplier may charge a price above marginal cost, but be incapable of price

[58] Gold is a good example. The location of buyers and sellers is virtually irrelevant to the terms of transaction.

[59] The market for automobile is segmented. Automobile purchase in a foreign market may attract additional taxes at the border and may not comply with safety and environmental regulations in the home market. See Goldberg and Knetter (1997) for details.

discrimination if buyers are well organised or the product is easily transported across markets. Therefore, the lower the degree of substitutability between goods and the degree of market integration, then, the greater will be the market power of the sellers. The Cournot oligopoly model, which assumes perfect substitutability between the domestic and imported goods, is a useful tool for illustrating how different market structures affect pass-through. .

Recent research work on pass-through has employed the mark-up approach [see Menon (1993a), Menon (1995), Kenny and McGettugan (1996), Alexius (1997) and Kikuchi and Sumner (2002)]. A simple mark-up model was used to derive the import price equation that can be used to test for the effects of exchange rate pass-through. Menon postulated that the mark-up depended on macroeconomic and industry data. This approach is adopted to estimate exchange rate pass-through for Nigeria. First, it is assumed that producers abroad set their foreign currency export price, PX, as a mark-up, π, on their cost of production in foreign currency terms, CP[60]

$$PX = \pi CP \qquad \textbf{3.12}$$

The domestic currency, (i.e. Nigerian naira), import price, PM is therefore given by

$$PM = PX\,ER = (\pi CP\ )ER \qquad \textbf{3.13}$$

where ER denotes the Nigerian naira price of a unit of foreign currency. The mark-up is hypothesised to depend on competitive pressures in the Nigerian market, and the

[60] The mark-up π is equal to $1 + \varphi$, where φ is the profit margin.

exchange rates(ER). The influence of the domestic demand conditions on the import pricing decision would be captured by the domestic price variable. The difference between the prices of importing competing goods (PD) and the exporter's production cost is used to proxy the competitive pressure, so that we have:

$$\pi = \left(\frac{PD}{CP\,ER}\right)^{\alpha} \tag{3.14}$$

Equation (3.14) can be substituted into equation (3.13) to obtain

$$PM = \left\{\left(\frac{PD}{CP\,ER}\right)^{\alpha}\right\} CP\,ER \tag{3.15}$$

Therefore, taking logarithms of the variables represented by L (with the coefficient of the variable representing elasticity), equation (3.15) can be reformulated as

$$LPM = \alpha LPD + (1-\alpha)LCP + (1-\alpha)LER \tag{3.16}$$

From equation (3.16), the extent of pass-through is of the same magnitude for both changes in foreign costs and the exchange rate. Therefore, if α , the coefficient on LPD is zero, this means that the coefficient on foreign costs and the exchange rate will be unity and pass-through will be complete. However, on the other hand, if α is found to be unity, the coefficient on both foreign costs and the exchange rate will be zero, implying pass-through is zero.

3.5 Exchange Rate Pass-Through: The Empirical Evidence

In this section, attention is paid to theoretical and empirical developments in the pass-through literature. Specifically, attention is given to approaches adopted in estimating pass-through, i.e. estimation methods, the nature of the data and the findings. Our survey of the empirical literature covers 36 studies on pass-through issues. Of these studies, 24 examined the pass-through of import prices, 6 examined pass-through to export prices and 6 studies examined pass-through of both import and export prices. Also, 25 studies are based on large open economies while 11 studies are on small open economies. For ease of reference, these studies are summarised in tabular form, with separate columns that identify the study, the data frequency, the empirical method employed and the key findings (Tables 3a and 3b). The studies are arranged in chronological order based on the years of publication.

3.5.1 Salient Features of Previous Studies on Exchange Rate Pass-Through: Country Coverage, Data, Methodology and Findings

From the empirical literature on exchange rate pass-through the important considerations concern country coverage, data, methodology and findings. These are examined below.

3.5.1.1 Country Coverage

As mentioned earlier on, most empirical work on exchange rate pass-through have concentrated on the experience of large open economies while the experience of small

and more trade dependent economies have received less attention[61]. More than 50 percent of the available estimates of pass-through are for the United States, Japan and Germany.

However, the few studies that have examined exchange rate pass-through for small open economies have reported mixed results thus leaving the issue very much unresolved. This is particularly true in the case of Korea but more importantly for Australia, where results from separate studies have been contradictory (Table 3b below).

3.5.1.2 Data

Recently, serious concern has been raised not only over the proxies used to measure some of the key variables but also whether attention is paid to the time series properties of the data used. With the exception of Menon (1996) and a very few others, most previous researchers on exchange rate pass-through employed price proxies such as import unit values to represent the transaction price of imports. The bias introduced into estimates of pass-through due to measurement errors inherent with such price proxies is highlighted by Alterman (1991) when he compares the results obtained using import prices and import unit values[62]. From Table 3a, pass-through on large open economies, we note that only Helkie and Hoper (1988), Kim (1990), Yang (1991), Athukorala and Menon (1994), Rezitis and Brown (1999) employed 'true' import or export prices while others used unit values. Similarly, in Table 3b, pass-through on

[61] One of the reasons why small open economies had received less attention might not be unconnected with data problem and other important issues researchers do face when investigating less developed countries.

[62] However, most studies carried out on developing economies are more likely to be affected because the Central Banks in these countries do not collect price data.

small open economies, Lattimore (1988), Phillips, R. (1988), Athukorala (1991), Menon (1995) and Asafu-Adjaye (1998) employed 'true' import or export prices while others used unit values.

Also, perusal of the literature reveals that most previous studies employed a 'world' price variable (in the form of import-weighted export prices) to capture changes in competitiveness of export sales to destination markets. The problem with this index is that it represents the pricing decision on exports to all markets. This is inappropriate especially for a small open economy and also when pricing-to-market and incomplete pass-through behaviour are common for manufactured goods. It is important to point out that Hooper and Mann (1989) and Meade (1991) employed a foreign cost of production variable in their models while all other studies used a 'world' price variable, constructed as a weighted average of export unit values or export prices of the import supplying countries. Though Hooper and Mann (1989) constructed the foreign cost of production variable as an input-output weighted index of foreign labour and material costs, Meade (1991) used a trade-weighted index of foreign consumer prices.

Like the import price, the measurement of the exchange rate is equally of concern (see, Woo, 1984; Feinberg, 1991; and Athukorala and Menon, 1994). Athukorala and Menon (1994) employed a currency-contract-weighted exchange rate index obtained by dividing export prices measured in Yen by export prices measured in the currency in which the contract is denominated while most other studies employed a proxy in the form of a trade weighted-exchange rate index. Parsley (1993) and Menon and Athukorala (1994) examined pass-through of Japanese exports but arrived at different estimates for pass-through. Parsley reported that a 10 percent appreciation of the yen

would raise the foreign currency price of manufactured exports by only 1.8 percent while Menon and Athukorala found that the same appreciation would reduce the domestic currency export price of 'total' manufactured goods by 2.1 percent[63].

On closer inspection it becomes clear that different currency denominations were used. The different currency denominations used in these studies signal an important feature of the export price series calculated by the Bank of Japan. They are published both in Yen and in contractual currency, but the ratio between these two series would provide a precise measure of the effective exchange rate. This implies that an unanticipated appreciation would cause an unplanned fall in yen-denominated prices, and it is the correspondingly muted rise in foreign currency prices which accounts for Parsley's low estimate of pass-through.

Also, many studies have employed aggregate data to analyse pass-through though with the notable exception of Menon (1992), and of very few others. This raises the possibility of aggregation bias in the pass-through estimates, especially given the fact that studies such as Feenstra (1989), Marston (1990), Menon (1992) and Parsley (1993) found significant differences in rates of pass-through across products. All these factors are likely to bear significantly on the degree to which the index under or overstates the currency fluctuation, thus affecting the estimate of pass-through, which is the degree to which import prices respond to these changes.

[63] Menon and Athukorala (1994) used quarterly export data from 1980q1 to 1992q2 while Parsley employed monthly export data from 1980:01 to 1988:09. We do recognise that the different sample sizes might equally have contributed to the different estimates obtained for pass-through.

3.5.1.3 Methodology

Tables 3.1a and 3.1b show that many researchers employed Ordinary Least Square (OLS) to estimate pass-through. Polynomial distributed lags are used to capture the dynamic response of traded goods to exchange rate changes. Empirical findings suggest that most macroeconomic time series data and asset prices, such as exchange rates, are non-stationary, also as forcefully proved by Nelson and Plosser (1982).

However, with the exception of Feenstra (1989), Athukorala (1991), Menon (1993a, 1995) and Athukorala and Menon (1994), Kenny and McGettigan (1996), Tjirongo (1998) and Asafu-Adjaye (1998) and a few others (see Tables 3a and b), little attention has been paid to the time series properties of the data by many researchers. Of course, the major concern here is that the use of OLS to estimate regression using non-stationary data may result in 'spurious regressions'. Therefore, given the fact that the data used to estimate pass-through possess a stochastic trend, most of the previous estimates of pass-through may have been biased as a result of the non-stationarity of the data. Further, some studies reported high R^2 and low Durbin-Watson (DW) statistics, which reflect non-stationary residuals. According to Hendry (1986), when R^2 is greater than the DW statistic the likelihood that the relationship is spurious is extremely high.

Furthermore, only few of the studies listed in Table 3.1a and 3.1b paid attention to diagnostic model evaluation. The exceptions are Yang (1991), Athukorala (1991), Menon (1993), Athukorala and Menon (1994), Menon (1995), Kenny and McGettigan (1996), Rezitis and Brown (1999), Yoshida and Takagi (2001) and few others. Also, only Baldwin (1988), Moffet (1989), Lattimore (1988), Ohno (1989), Kim (1991) and

Athukorala and Menon (1994) examined the stability of the pass-through coefficient estimates. Out of these studies, however, only Lattimore (1988), Moffet (1989) and Athukorala and Menon (1994) found that the pass-through relationship remained stable throughout the period of their study.

As mentioned earlier, the extent of pass-through is dependent on a number of factors, which include price elasticities of demand and the structure of competition. Thus, pass-through may change for a variety of reasons. For example, possible explanations for recent findings of a decline in the U.S pass-through include the possibility that consumers have developed a taste for imports or that the U.S market structure has recently changed, thus enabling exporters to the U.S market to change their export-pricing strategies.

Another reason which may account for changes in pass-through is the possibility that firms regarded exchange rate movements during the 1980s as temporary. This depended on whether firms care about market share, as in Froot and Klemperer (1989), see Table 3.1a, or if there is persistence in demand as in Parsley (1992). In either of these cases firms will pass-through only that part of an exchange rate change regarded as permanent. Thus, the claim is that pass-through declined in the 1980s because firms expected a greater portion of current exchange rate changes to be reversed over their planning horizon.

One often overlooked potential explanation for a change in pass-through focuses on the effects of aggregation in the data. Aggregation may be responsible for a change in pass-through if two conditions are met. First, if pass-through varies across

commodities, industries, or sectors. Second, there must be a change in the commodity composition of trade. Under these conditions aggregate pass-through may change if either the commodity composition of trade changes, or if pass-through at the sectoral level varies. Finally, aggregation may introduce measurement errors in the data, when the country composition of trade varies significantly while holding trade weights in aggregate indexes constant.

With the exception of Athukorala and Menon (1994), the approach to model building in other studies is the 'bottoms up' or 'specific-to-general' approach. As highlighted by Hendry and Mizon (1978), the 'bottoms up' or 'specific approach', as distinct from 'general-to-specific' approach, prevents the research from distinguishing between serial correlation in the error process and the presence of a common factor in the lag distribution.

Furthermore, in terms of estimation method, Kim (1991) estimated a VAR after detrending the variables while other studies used the conventional OLS method. Among the studies that used OLS, Woo (1984), Phillips (1988), Helkie and Hooper (1988), and Hooper and Mann (1989) employed a serial correlation correction mechanism. The way in which the dynamics are modelled varies, though, from our review, four of the empirical studies in our review employed polynomial distributed lags but imposed different orders on the shape of the polynomial, few entered the lags unconstrained while others imposed constraints but at different points. Specifically, see Tables 3.1a and 3.1b, Woo (1984), Phillips (1988), Helkie and Hooper (1988), and Hooper and Mann (1989) employed Cochrane – Orcutt transformation to correct for serial correlation while unconstrained and polynomial lags distribution were used to

capture the dynamics.

Some of the studies employed co-integration techniques. Parsley (1993) and Menon (1993) and others employed the Engle-Granger (1978) two-step procedures while Moreno (1989), Yang (1991), Menon (1995), Kenny and McGettigan (1996), Alexius (1997), Asafu-Adjaye (1998), Rezitis and Brown (1999) employed the Johansen Maximum Likelihood estimator techniques. Though the Engle-Granger procedure has been frequently employed in the literature, it suffers from a number of problems.

First, should a co-integrating relationship be identified, the assumption is made that the co-integrating vector is unique. This need not be true in the multivariate case, if we denote the number of variables as n, then there can be up to $n-1$ co-integrating vectors. If there is more than one co-integrating vector, the estimates from the Engle-Granger procedure will be invalid. Second, concerns have been raised regarding the considerable small sample bias in estimates from this procedure. In fact, Stock's (1978) empirical finding reveals that the bias in finite samples is in of the order of $\frac{1}{T}$, where T is the sample size. Further investigation by Banerjee et al. (1986) revealed this potential bias, and showed that it is related to $\left(1 - R^2\right)$ and that the bias may decline much more slowly than the theoretical rate. Finally, the Engle-Granger procedure, unlike the Johansen procedure, is unable to accommodate dynamics which can help reduce bias and improve efficiency in the estimated co-integrating relationships[64].

[64] For further details of the comparison of Johansen, ECM, and Engle-Granger procedures see Ericsson and Mackinnon (2002).

Table 3.1a: Empirical Studies on Exchange Rate Pass-through for Large Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Shwartz and Perez (1974)	United States imports data for 1972. Cross Section	Analysis of data for U.S imports from Belgium, France, Italy, Japan and West Germany collected in 1972.	-	Import price data	Incomplete pass-through between 70 and 80 percent. Specifically, pass-through of 65% for imports from Belgium, 63% from France, 71% from Italy, 68% from Japan and 61% from West Germany.
Kreinin (1977)	Multi-country Annual imports and exports data from 1970 to 1972. Cross Section	Pass-through was measured as the difference between hypothetical price change (using the control country approach) and the actual price change following an exchange rate adjustment.	-	Used consumer price index as proxy for traded good prices.	Pass-through though incomplete, varied inversely with the size of the country. The individual country estimates for import pass-through of a 10% depreciation are, the U.S. (50%), Germany (60%), Japan (80%), Canada (90%), Belgium (90%) and Italy (100%).
Woo (1984)	United States aggregate quarterly import data (net 0f food and fuel) from 1975q2 to 1984q1. Time series	Instrumental Variable method. Almon polynomial lags. Cochrane-Orcutt transformation to correct for serial correlation.	Yes	Exchange rate variable was constructed using bilateral import-share index. This is a weighted average.	Estimates of pass-through ranged between 40 to 70 percent. Quotas on US imports of motor vehicles tended to distort pricing relationship. Also, absorption of exchange rate changes occurred at the retail level, due to differences in import deflator and domestic inflation indicators, such as the consumption deflator.

Table 3.1a (Contd.): Empirical Studies on Exchange Rate Pass-through for Large Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Feinberg (1986)	Germany annual data from 1977 to 1983.	OLS technique. Analysis in two stages (a) estimate pass-through using industry intercept and slope dummies and (b) explain differences in pass-through using market structure variables.	Yes	41 3-and 4-digit International Standard Industry Classification (ISIC) industries. 287 pooled cross-section/time series observation.	Incomplete pass-through of about 24 percent in real terms, which implies that 8.4 percent depreciation of the German mark from 1977 to 1983 increased domestic producer prices by 2 percent relative to GDP deflator. Increased market concentration reduced pass-through, while increased import penetration led to increase in pass-through.
Baldwin (1988)	United States imports data from 1967q1 to 1987q2.	OLS estimates.	-	Import prices are unit values.	Large real exchange rate shocks have permanent effect by altering market structure and inducing hysteresis. Appreciation of dollar resulted in an increased number of foreign sellers in the U.S market which generated increased competition and fall in prices. However, finding at odds with other U.S studies that reported increased profit margin during depreciation.
Helkie and Hooper (1988)	United States imports & exports non-oil aggregate quarterly data from 1969q1 to 1984q4.	OLS estimate. Cochrane-Orcutt transformation to correct for serial correlation. Simulation to examine the response of trade prices and volumes to 10 percent depreciation.	Yes	Traded goods prices are actual prices.	Incomplete pass-through on import of about 91 percent, with lags extending up to 8 quarters, while pass-through on exports ranged between 80 to 100 percent, with lags extending up to 4 quarters.

Table 3.1a (Contd.): Empirical Studies on Exchange Rate Pass-through for Large Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Moffet (1989)	United States imports aggregate quarterly data from 1967q1 to 1987q4.	OLS estimates. Almon polynomial lags (second order without tail constraint). Dummy variable to check for stability of pass-through during periods of fixed and floating exchange rate.	Yes	Exchange rate measured using Morgan Guaranty's 15-country index. Foreign price constructed using producer prices of 8 largest trading partners.	Incomplete pass-through of around 50%, with lags extending to eight quarters. Pass-through not affected by the direction of the exchange rate change.
Ohno (1989)	Japan United States domestic exports. Quarterly data from between 1977q4 and 1983q3 to 1987q3.	Iterative three-stage least squares estimates, with a constant and lagged dependent and independent variables as instrument.	Yes	7 2-digit ISIC Japanese and 12 4-digit ISIC U.S. industries.	Pass-through on exports around 80%. Japanese firms' price discriminate between domestic and export market. American exporters base prices on domestic cost factors. Evidence of structural break in the pass-through equation for Japanese exports of machinery and equipment in the 80s.
Hooper and Mann (1989)	United States imports quarterly data from 1973q1 to 1988q2 for manufactures (total and from Japan).	OLS estimates. Cochrane-Orcutt transformation was used to correct for serial correlation. Used unconstrained and polynomial distributed lags to capture the dynamics.	-	Used fixed-weighted average (using 1982 import share weights) as import price of manufactured goods. Unpublished data from IMF used to construct foreign cost index.	Estimate of pass-through for manufactured import ranged between 50 and 60 percent. Japanese firms appeared to absorb a higher proportion of exchange rate fluctuations into their profit margins on sales to the United States than to other countries on average.

Table 3.1a (Contd.): Empirical Studies on Exchange Rate Pass-through for Large Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Feenstra (1989)	United States imports quarterly data from 1974q1 to 1987q1 for motor car, compact trucks and heavy motorcycles from Japan.	OLS estimates.	Yes	Import prices proxy by wholesale (c .i. f) unit values obtained from U.S. Bureau of the Census.	Estimates of pass-through ranged between 63 and 89 percent. Cars -71.30, trucks -62.70, cycles (consumption) -89.30, cycles (shipments) -105.30, cycles (pooled) -88.60. Hypothesis of symmetric pass-through of tariff and exchange rate changes accepted for all products.
Feinberg (1989)	United States domestic annual data from 1974 to 1987.	OLS estimates. Analysis pass-through in two stages: (a) estimate pass-through using industry intercept and slope dummies (b) explain inter-industry differences in pass-through using market structure variables	-	84 4-digit ISIC industries. 1380 pooled cross-section/time series observations.	Average pass-through of 16 percent in real terms. Close to complete pass-through for industries heavily reliant on imported inputs and producing goods highly substitutable for imports. Much lower pass-through for capital intensive and concentrated industries.
Froot and Klemperer (1989)	United States imports aggregate 2 yearly averaged data from 1976 to 1986.	OLS estimates. Standard error corrected by White's heteroscedasticity-consistent covariance matrix.	Yes	Expected depreciation measure from surveys by The Economist and Amex Bank Review.	Incomplete pass-through. Appreciation regarded as temporary led to a lower rate of pass-through. Temporary appreciation could lead to an increase US dollar import prices. Finally, the interpretation was that both expected and future market share affects the degree of pass-through.

Table 3.1a (Contd.): Empirical Studies on Exchange Rate Pass-through for Large Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Kim (1990)	United States imports quarterly data from 1968q1 to 1986q4.	Varying parameter approach in the form of Kalman filter.	Yes	Wholesale prices used to proxy for export prices, and unit values for import prices.	Reduced sensitivity of import prices to exchange rate in the 1980s, with significant pricing-to-market behaviour. Thus, the smoothed parameter estimates confirm the original pass-through findings, with variation in the mark-up employed to insulate prices from exchange rate changes.
Marston (1990)	Japan domestic exports quarterly data from 1980 to 1988.	OLS estimator. Distinguish between planned changes in profit margins and changes induced inadvertently by exchange rate surprises.	Yes	Transport equipment and electrical machinery industries. Price data are actual export prices.	Pricing to market behaviour widely practiced in all but 2 indutries. For 5 out of the 17 products, pass-through was higher during appreciation compared with depreciation.
Khosla (1991)	Japan exports quarterly data from 1975q1 to 1987q4.	OLS estimator. Chow test used to test for structural break.	Yes	Cost of production index is an input-output weighted index of materials and productivity-adjusted labour cost.	Incomplete pass-through, approximately 43%, with significant differences in rates across industries. However, pass-through in materials industries lower than final goods industries. Asymmetry in pass-through during depreciation and appreciation in only four industries.

Table 3.1a (Contd.): Empirical Studies on Exchange Rate Pass-through for Large Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Feinberg (1991)	United States Domestic annual data from 1974 to 1987.	OLS estimator. Re-estimates Helkie-Hooper (1988) model with different measures of real exchange rate.	-	84 4-digit ISIC industries. 1280 pooled cross-section/time series observations. Used 3 alternative measure of real exchange rate: Dallas Fed Index (101 currencies); Fed Reserve Board Index (10 major currencies); and Industry-specific Indexes (31 currencies weighted using average import shares for 1978, 1981 and 1984.	Incomplete pass-through but it tends to vary depending on the measure of exchange rate used. Pass-through of 24 percent for broad Dallas Index, and 13 percent for industry-specific indexes. Obtained the same result for the performance of the market structure variables in explaining inter-industry differences in pass-through as in Feinberg (1989), except that the seller concentration variable is significantly different from zero.
Alterman (1991)	United States imports and exports monthly data from September 1980 to December 1988.	OLS estimates. Compared pass-through obtained using Bureau of Census unit value indices and BLS import price indices.	Yes	Trade weighted average of the CPIs of the 40 major exporters used to proxy for foreign costs of production index.	Incomplete pass-through for imports and exports and varies significantly according to products. Confirmed aggregate pass-through of 48.7%. Concluded that pass-through on imports using unit values significantly lower than those obtained using the BLS import price index. Specifically, for capital goods, pass-through was 50% using BLS index and 33% using unit values. Thus, significant differences in rates of pass-through during depreciations and appreciations.

Table 3.1a (Contd.): Empirical Studies on Exchange Rate Pass-through for Large Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Kim (1991)	United States imports; aggregate quarterly data from 1974q1 to 1989q2 for total imports	The variables used de-trended by regressing them on a constant and time trend. Model specified as Vector Auto-regression.	Yes	Total imports from Germany and Japan. Exchange rate and price indices are weighted averages of six major trading partners.	Pass-through relationship for total imports changed (i.e. lower) in the 1980s and concluded: '… the pass-through problem explains the stubbornness of the U.S trade deficit for multilateral trade but not bilateral with Japan or Germany'.
Meade (1991)	United States imports and exports aggregate data from 1978q1 to 1986q4.	Re-estimate Helkie-Hooper (1988) model with different data using OLS.	-	Fixed weighted import price index which excludes computers, foreign cost proxy by consumer prices of other G-10 and 8 major developing countries.	Incomplete pass-through of about 85 percent in all cases for exports and imports. Imports and export price pass-through are insensitive to both the use of a fixed weighted index and the exclusion of computer prices.
Yang (1991)	United States imports quarterly data from 1975q2 and 1988q4.	Johansen Full-Information Maximum Likelihood estimator.	Yes	Fixed - weight import price index for total manufactured imports and wholesale prices to proxy for foreign costs.	There was a significant structural break in the pass-through relationship for the 1980 – 1982 period and the 1982 – 1984 period.
Parsley (1993)	Japanese aggregate and sectoral monthly exports data from 1980:01 to 1988:09.	Engle-Granger (1987) two-step procedure employed to estimate model	Yes	Export price data at both the aggregate and at the industry level. Sub-aggregate studied: chemicals, electrical machinery, general machinery and precision instruments, metals and related products, textiles, and transport equipment	Japanese pass-through at both aggregate and disaggregate sectoral level revealed that pass-through elasticities vary widely among major commodity sector. We could not reject the null hypothesis of stability for five of six sectors studied.

Table 3.1a (Contd.): Empirical Studies on Exchange Rate Pass-through for Large Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
David and Papel (1994)	G7 countries imports quarterly data from 1971 to 1991.	Semi-structural model, which lies in between specification of a fully structural model estimation of reduced-form equations.	Yes	Used effective exchange rates, with weights derived from the International Monetary Fund's Multilateral Exchange Rate Model (MERM), domestic and foreign prices, foreign income, and foreign interest rates.	Incomplete exchange rate pass-through for the G7 countries. Pass-through is largest for United Kingdom, followed by United States and Canada. However, pass-through increased when prices were measured by the producer price index.
Athukorala and Menon (1994)	Quarterly data from Japan exports from 1980q1 to 1992q1.	OLS estimator. Hendry's general-to-specific methodology employed in specification search. A 2 -equation model comprising an export price and cost equation estimated in ECM form.	Yes	Export prices are actual prices. Currency-contract-weighted rates obtained by dividing export prices in Yen by export prices in contract-currency terms.	Pass-through incomplete in all cases. By separating the pricing-to-market effect form the cost changing effect of exchange rate changes, the finding dispute the widely held view that Japanese exporters relied on pricing-to-market strategies during yen appreciation in 1985. For exports, pass-through is 22% when only pricing to market behaviour is considered, but 34% when cost implications of exchange rate changes are taken into account.

Table 3.1a (Contd.): Empirical Studies on Exchange Rate Pass-through for Large Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Rezitis and Brown (1999)	United States imports annual data from 1968 to 1995.	OLS estimates.	Yes	Import prices of non-manufactured Greek oriental tobacco obtained from U.S. department of Agriculture, Economic Research Service (USDA-ERS).	Partial pass-through of exchange rate and tariffs. Exchange rate pass-through of about 27 percent while tariff was 19 percent. One possible reason for incomplete pass-through is oligopolistic nature of tobacco market in Greek.
Yoshida and Takagi (2001)	Monthly series of unit export and import values from 1988 to 1999 for 20 nine-digit industrial commodities between Japan and East Asia and industrial country.	Used dynamic panel model.	Yes	Export and import unit values calculated from Japanese customs data on the quantities and values of nine-digit exports and imports.	Incomplete pass-through. Pass-through is much larger for Japanese exports than for Japanese imports, suggesting that the yen prices of Japanese exports do not fall (rise) very much when the yen appreciates (depreciates) whereas the prices of Japanese exports rise (fall) considerably in the buyer's currency.

Table 3.1b: Empirical Studies on Exchange Rate Pass-through for Small Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Lattimore (1988)	Australia imports quarterly data from 1981q3 to 1987q4.	OLS estimator.	Yes	12 2-digit Australian Standard Industry Classification (ASIC) industries. Import prices are actual prices.	Estimates of pass-through incomplete for 7 industries, but appeared sensitive to model specification. Chow test (applied at 1985) revealed no evidence of structural break.
Phillips (1988)	Australia imports quarterly data from 1981q3 to 1987q4.	OLS estimator. Cochrane-Orcutt transformation to correct for serial correlation.	Yes	34 1 and 2-digit Australian Import Commodity Classification (AICC) industries. Import prices are actual prices.	Estimates of pass-through ranged between 66.5 and 120.7 percent but lower for sub-period 1984 – 1987 compared to entire sample.
Moreno (1989)	Taiwan Korea imports and exports aggregate quarterly data from 1974q1 to 1987q4.	Model estimated in error correction form using OLS.	Yes	Traded prices are unit values, and weighted average of foreign consumer prices used to construct foreign price variable.	Incomplete pass-through. Confirmed pass-through to export prices of 58% for Korea and 36% for Taiwan. While pass-through to import prices of 58% for Korea and 74% for Taiwan.
Leith (1990)	Botswana imports aggregate monthly data from 1976 to 1987.	1988 – 1989 data used to evaluate performance of the model outside estimator period. Disequilibrium behaviour captured by lagged dependent variable.	Yes	CPI used as proxy for domestic prices. Foreign prices based on unit values.	Incomplete pass-through with lags extending to 15 months. Forecast from estimated import price equation did well outside the sample with mean-squared error of 0.00004.

Table 3.1b (Contd.): Empirical Studies on Exchange Rate Pass-through for Small Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Athukorala (1991)	Korea exports quarterly data from 1980q1 to 1989q1.	OLS regression fitted to first differences.	Yes	4 2-digit ISIC industries. Prices data are actual prices.	Incomplete pass-through. Confirmed pass-through of between 71% and 82%. Lags between pass-through between 4 to 5 quarters. Chow test and intercept dummy variable rejected the hypothesis of asymmetric pass-through during depreciation and appreciation.
Menon (1993)	Australia imports quarterly data from 1981q3 to 1990q4 for passenger motor vehicles.	Engle-Granger (1987) two-step procedure employed to estimated model.	Yes	Import unit values as proxies for import prices. Weighted average of industry-specific labour and materials costs for the five major import supplying countries as foreign cost of production index.	Pass-through of 70 and 80 percent in short and long run respectively. Lags in short-run pass-through do not extend beyond one quarter. Pricing practices of multi-national corporations (MNCs) and quantitative restrictions (QRs) as explanation for incomplete pass-through.
Menon (1995)	Australia imports quarterly data from 1981 to 1992.	Johansen (1988) Maximum Likelihood (ML) estimation procedure.	Yes	Actual import prices of manufactured goods.	Found pass-through of 66.27 percent. Incomplete pass-through is a rejection of the small - country assumption of international price taking behaviour for Australia's imports.

Table 3.1b (Contd.): Empirical Studies on Exchange Rate Pass-through for Small Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Kenny and McGettigan (1996)	Ireland imports quarterly data from 1963 to 1995.	OLS estimates. Johansen co-integration technique.	Yes	Import unit values as proxies for actual import prices of manufactured goods.	Incomplete pass-through. Confirmed pass-through of 93%. Results suggest that deviations from long-run equilibrium take some time to be restored for import prices and, hence, support the notion of incomplete pass-through in the short run.
Alexius (1997)	Sweden imports quarterly data from 1976 to 1995.	OLS estimates. Johansen co-integration technique.	Yes	Import unit values as proxies for actual import prices.	Incomplete pass-through. The long-run pass-through of exchange rate changes to import prices on manufactured goods was found to be between 60 and 80 percent. Slightly higher than what is typically found in small open economy. Import prices are affected by Swedish macroeconomic conditions, which violate the small open economy assumption. Finally, neither the LOP nor the small open economy assumption is rejected in the case of Swedish oil imports.
Asafu-Adjaye (1998)	Papua New Guinea imports quarterly data from 1987 to 1996.	OLS estimates. Co-integration and error correction technique.	Yes	Actual import prices of manufactured goods.	Incomplete pass-through. Confirmed pass-through of about 32%. Changes in the exchange rate have a relatively small short-run effect on inflation, but with stronger effects being felt in the next period.

Table 3.1b (Contd.): Empirical Studies on Exchange Rate Pass-through for Small Open Economies

Author(s) and Publication Year	Frequency and Period of Data	Methodology		Main Variables	Main Results
		Empirical Method(s)	Time Series properties of the data		
Tjirongo (1998)	Namibia imports quarterly data from 1972 to 1995.	OLS estimator.	Yes	Import unit values as proxies for actual import prices of manufactured goods from South Africa.	Incomplete pass-through. The speed of pass-through of imported inflation to domestic prices ranged from 6 weeks to 15 month. The speed of pass-through is too short to permit reasonable adjustment of relative prices or some allocation of resources from non-tradable to tradable sectors.

3.5.1.4 Findings from Previous Empirical Studies

From Tables 3.1a and 3.1b, it is clear that incomplete pass-through is a common phenomenon across a broad range of countries. Only 8 out of 36 studies reported almost complete pass-through. Some of these studies include research work by Kreinin (1977), Spitaeller (1980), and Kenny and McGettigan (1996). In the majority of the studies, exchange rate changes are only not fully reflected in prices but the lags corresponding to the partial pass-through process are quite extensive. Some studies that do not find full pass-through point to even longer lags in the transmission of exchange rate changes to prices. For instance, Helkie and Hooper (1988) find that lags associated with import price pass-through extend to 8 quarters, see Table 3a and 3b, while Leith (1990) reported lags extending to 5 quarters.

We observe that there are significant differences in estimates of pass-through reported for some countries and across countries. The United States serves as a good example for the former. The median rate of pass-through according to Goldberg and Knetter (1997) is approximately 50 percent for shipments to the United States. Confirming the latter, Kreinin (1977) finds pass-through that ranged from a low of 50 percent for the United States to full pass-through for Italy. Kreinin interpreted incomplete exchange rate pass-through as the reflection of either incomplete adjustment during the sample period or largeness of the importer in the sense of being able to influence the world price.

Yang (1997), among others, confirmed that the rate of pass-through varies both across and within industries by using the U.S manufacturing data from 1980 to 1991. His

empirical estimation of the pass-through elasticites demonstrates that pass-through is incomplete and varies across industries. The degree of pass-through was found to be positively correlated with different proxies for product differentiation, and negatively to a proxy for the elasticity of marginal cost.

From the survey of the literature, 5 studies that estimated the aggregate pass-through of exchange rate to import prices covering almost the same period, starting from 1970 and ending around 1988 (see Tables 3.1a and 3.1b) reported estimates that range from a low of 48.7 percent reported by Alterman (1991) to a high of 91 percent reported by Helkie and Hooper (1988). Thus, given that there is little or no difference between these studies in terms of time coverage, and commodity, the observed findings may be due to differences in the proxies used, methodology, and model specification.

The range of pass-through estimates found in various studies seems to be centred around 60 percent, though Kreinin obtained close to 50 percent pass-through for the U.S after the currency realignments. Most studies in the last two decades explained that in the destination-currency (local currency), prices do not respond fully to exchange changes.

Menon (1993) finds that the long-run import pass-through is in the vicinity of 70 percent to 80 percent for Australian imports of Passenger Motor Vehicles. In a recent study of pass-through for Australian manufactured imports, Menon (1995) obtained an incomplete pass-through of 66.27 percent. He concluded that the pass-through coefficient suggests that a 1 percent change in the exchange rate results in a 0.6627 percent change in import price, with the residual (0.3373) reflecting a change in the

profit margin.

In comparison with previous studies on Australia conducted by Lattimore (1988) and Phillips (1988) and for other small open economies undertaken by Moreno (1989) for Taiwan and Korea, and Alexius (1997) for Sweden, the pass-through estimate seems to be within a range of 60 to 80 percent i.e. incomplete pass-through. With respect to Australian studies, both Phillips (1991) and Lattimore (1988) estimated pass-through at around 85 percent which seems much higher than Menon's estimate of 66.27 percent. The difference between Menon's result and those of Lattimore and Phillips could be due to the fact that both applied conventional OLS procedures to data that are clearly non-stationary and a 'world' price variable in the form of import weighted export prices was used to capture changes in the competitiveness of supply of exports to Australia.

Moreno (1989) employed the error correction framework and obtained a pass-through estimate of 58 percent and 74 percent for Korea and Taiwan, respectively. On the other hand, Athukorala (1991) obtained an estimate of 75 percent for Korea. Athukorala and Menon (1994) used the modified Phillips-Hansen procedure to examine Swedish manufactured exports, and obtained pass-through of about 75 percent. Finally, for most studies on small open economies pass-through seems to be incomplete.

Taylor (2000) contends that a lower price pass-through rate may be due to the lower inflation environment that many countries have achieved. Campa and Goldberg (2000) analyse the behaviour of pass-through changes in exchange rates into import prices across a large sample of 27 countries between 1975 and 1998. They argue that exchange rate pass-through elasticities appeared to be correlated with the

macroeconomic aggregates of the import country. The volatility of the nominal exchange rate, high inflation, and high growth of money aggregates are correlated with lower elasticity of import prices to exchange rate.

3.6 Pass-Through in the Nigerian Economy

3.6.1 Data Sources and Measurement Issues

The choice of data is germane to the study of the relevant issues since claims have been made that the 'pass-through puzzle' is as a result of data rather than behaviour (see Lawrence, 1990). The accuracy of the data, as noted earlier, is paramount to ensuring the reliability of the inferences made. There is consensus among researchers that the prices of primary products are considered to be fairly accurate, however, many problems exist that lead to scepticism about the quality of data for manufactured goods prices. In fact, Lipsey, Molinari and Kravis (1991) succinctly highlighted the problem inherent in using various measures of the prices of manufactured goods, describing them as the weak link in empirical studies of international trade.

During the data collection, as earlier pointed out, it was discovered that many countries, including Nigeria, do not collect price data for imports and exports, therefore, import unit values have to be used[65]. By definition, the unit values are the values of imports or exports divided by the number (volume/quantity) of items shipped, without consideration for adjustments or changes in both the quality and composition of imports over time. As rightly posited by Alterman (1991), unit values may be regarded as crude measures that do not accurately reflect prices of individual products and are combined using different weights and formulae in different countries. Furthermore, the problem is that changes in the quality of the product over time, which might not be reflected in the price index, could lead to overestimation of

[65] The few developed countries include the United States, the United Kingdom, Japan and Germany.

the product's price. While the data problems identified in the literature (noted earlier) that are associated with the use of unit values are recognised, the import unit values are considered to provide the only and best source of data relevant for our study. Next, we describe in detail the sources, choice and construction of the data.

3.6.2 Data Selection and Construction

The study relies on secondary data, basically, quarterly time series data from 1970:1 to 2001:4. This gives a sample size of 128 observations. The sample size is relatively large when compared with those used in previous studies on pass-through, particularly for small open economies. The import unit values for Nigerian imports were collected from the *African Development Indicators*, a publication of the World Bank and Nigerian Federal Office of Statistics (FOS). Instead of constructing import unit values for Nigeria for imports from the United States, the United Kingdom, France, Germany, Italy, Netherlands, China and Japan, we used the 'total' import unit values[66]. This is justified because aggregate imports from these major trading partners constituted, on average, between 67 percent and 85 percent of Nigeria's aggregate total imports between 1970 and 2001[67].

The domestic Nigeria competing price is the Producer Price Index (PPI) which is obtained from the World Bank's *African Development Indicators* and Nigerian Federal Office of Statistics. This index is derived from price indices for both manufacturing and agricultural industries. Most previous studies employed a 'world' price variable (in the form of import-weighted export prices) to capture changes in

[66] Though import unit values for Nigeria would have been constructed for the main trading partners, the author was unable to collect volume data for their exports into Nigeria, while the dollar values of exports are available in *Direction of Trade Statistics*, a publication of the IMF.

[67] The author complied the import share of Nigeria trading partners from the *Direction of Trade Statistics* a publication of the IMF and *OECD Statistics of Foreign Trade* (series A).

competitiveness of export sales to destination markets. The problem with this index as earlier mentioned, is that it represents the pricing decision on exports to all markets; it is particularly inappropriate for small countries and when pricing-to-market behaviour is common for manufactures.

In an attempt to avoid the problem mentioned above, we construct the foreign cost of production index that is unaffected by the pricing-to-market problem. The foreign cost of production index is constructed as an import share weighted-average of foreign costs in the eight major import supplying countries mentioned above[68]. Finally, the data for the exchange rates were obtained from the *International Financial Statistics* (IMF) CD-Rom for all Nigeria's trading partners at dollars values and converted to naira, Nigeria's local currency. Thus, we construct the effective or trade weighted exchange rate for Nigeria. This is the weighted average of nominal exchange rates (per foreign currency) of the eight main import supplying countries. The weights used are import shares for 1990[69].

3.6.3 Method of Analysis

In most conventional studies OLS is used. As we have mentioned, the literature on pass-through revealed that different econometric approaches have been used to estimate pass-through with a variety of short-comings. However, in this study, we estimate VARs and co-integration techniques using the Johansen procedure, which appears most suitable for our estimation. This procedure is a multivariate estimation technique that

[68] These include the unit labour costs in manufacturing obtained from OECD, *Main Economic Indicators*; OECD average import price of crude oil obtained from OECD *Economic Outlook*; and the price index of minerals, ores and metals were obtained from the International Energy Agency publications.

[69] The countries are the United States, the United Kingdom, France, Germany, Italy, Japan, China, and Netherlands and the weights (in percentages) are 11.09, 17.17, 9.16, 15.04, 4.51, 5.97, 3.32, and 4.81, respectively.

might uncover long-run stationary relationships among sets of non-stationary data. The multivariate approach, with its allowance for the potential endogeneity of all the variables eliminates the single-equation bias, which would have been problematic for previous studies on pass-through.

Furthermore, under the presence of co-integration, the approach allows us to investigate the speed of adjustment to the long-run equilibrium, along with any short-run relationships which may exist. Johansen's maximum likelihood estimation technique is discussed in Johansen (1988, 1991, and 1995) and Johansen and Juselius (1990). Hamilton (1994) provides an excellent account of the intuition behind the Johansen approach. Below we discuss the time series properties of the data for the study but would return to a brief description of the Johansen technique later on in this chapter.

3.6.3.1 Time Series Characteristics of the Data: The Unit Root Tests

In research work, the finding that most macroeconomic time series data may contain a unit root has spurred the development of the theory of non-stationary time series analysis. To make valid statistical inference, the time series properties of all the variables must be evaluated to avoid the problems of spurious relationships.

The first step of the Johansen procedure involves carrying out a unit root tests on all the variables of interest. By definition, a time series is said to be stationary if its means, variance and covariances are all invariant with respect to time[70].

[70] This implies that a stationary series tends to return to its mean value and fluctuate around it within a more or less constant range, while a non-stationary series has a different mean at different points in time and its variance increases with the sample size.

There are several ways of testing for the presence of a unit root. Notable early studies include Dickey and Fuller (1979), Nelson and Plosser (1982), and Said and Dickey (1984). The statistical methodology used in all these studies is the same, it is that of Dickey and Fuller (1979) which entails testing the null hypothesis that a series does contain a unit root (i.e. it is non-stationary) against the alternative of stationarity. All these studies confirm that, almost all macroeconomic variables have a unit root. These findings stimulated studies that led to the emergence of alternative approaches to test for the presence of unit root. Recent, but notable alternative, approaches are suggested by Phillips (1987), and extended by Perron (1988) and Phillips and Perron (1988), and recently by Perron (1989, 1997).

The augmented Dickey and Fuller (ADF) test is due to Dickey and Fuller (1979) and Said and Dickey (1984). The ADF test is valid for stationary and invertible autoregressive moving average (ARMA) noise functions of unknown order, provided the lag length, k is chosen in relation to the sample size. The test is usually used to determine whether or not macroeconomic variables are stationary.

Assume an infinite auto-regression of the following:

$$\Delta y_t = (\rho - 1) y_{t-1} + \sum_{i-1}^{\infty} d_i \Delta y_{t-i} + \varepsilon_t, \quad [\varepsilon_t \sim IID(0, \sigma^2)] \tag{3.17}$$

Dickey and Fuller (1979) and Said and Dickey (1984) suggest the following truncated version as an approximation:

$$\Delta y_t = (\rho - 1) y_{t-1} + \sum_{i=1}^{k} d_i \Delta y_{t-i} + \varepsilon_t \tag{3.18}$$

Truncated such that $\varepsilon_t \sim IID\left(0, \sigma^2\right)$

$H_0 : \rho = 1$ against the alternative hypothesis that $H_1 : \rho < 1$,

in equation (3.18) above. The test is sensitive to the choice of the lag length since it has significant power and size implications. An appropriate k, by assumption, satisfies certain conditions that ensure consistency of the least squares estimates. Said and Fuller (1984) make the following assumptions:

(a) k is chosen as a fraction of sample size T such that

$$\frac{k^3}{T} \to 0 \text{ and } k \to \infty \text{ as } T \to \infty.$$

(b) with $C > 0$ and $r > 0$ such that $Ck > T^{\frac{1}{r}}$.

The first assumption, i.e. (a) is imposed to guard against over-parameterization of the model as this may lead to loss of power of the test while the second assumption, i.e. (b), is a lower-bound condition that confines k to be a polynomial rate in T, ruling out the values of k that are proportional to log of T. Of course, it is imposed to guard against overly parsimonious models (excludes those values of k that are so small to provide an inadequate approximation to the true model). Further, Said and Dickey show that when k satisfies (a) and (b), the least squares estimates $\hat{d}(k), \{d_1, d_2, ..., d_k\}$, are $\sqrt{T}$ consistent and the coefficient on $y_{t-1}, \left(\hat{\rho} - 1\right)$, provides the basis for testing the unit root hypothesis. The limiting distribution for the $t-$statistic on $\left(\hat{\rho} - 1\right)$ for testing the null hypothesis that $\hat{\rho} = 1$, implies that;

$$t = (\int_0^1 (r) dw(r)) \left(\int_0^1 w(r)^2 dr \right)^{-\frac{1}{2}} \qquad \textbf{3.19}$$

where $w(r)$ stands for the standard Brownian motion in the space $c\{0,1\}$. The percentiles of the distribution are provided by Fuller (1976). We can extend the statistics to cover the case where deterministic components are included in equation 3.18[71].

The unit root tests suggested by Phillips and Perron (1988) have two main advantages over the corresponding ADF test. First, in contrast to ADF test, which includes more explanatory variables to deal with the autocorrelated residuals and reduces the degrees of freedom, the Phillips-Perron test overcomes the problem of autocorrelation by using a non-parametric correction. Second, the Phillips-Perron test is valid under more general assumptions about the sequence of innovations, hence, allowing for all finite ARMA processes.

However, one of the drawbacks of Phillips-Perron unit root test is that the number of autocovariances used for the Newey-West estimator of the error term variances is arbitrary. Finally, though irrespective of the above comments on ADF (i.e. its demerits) and the merits of the Phillips-Perron (henceforth PP) test highlighted above, we used both ADF and PP tests to investigate stationarity.

[71] However, we note that it is possible to have a situation in which the unit root test might indicate unbalanced equations, in which the variables are integrated of different orders. This may not be unconnected with the reliability of the test used. In fact, as highlighted by Schwert (1989) and Maddala and Kim (1998), the ADF test suffers from size distortion and low power.

3.6.3.2 Co-integration and Long-run Analysis

An important issue in econometrics is the need to combine short-run dynamics with a long-run equilibrium. The traditional approach of modelling short-run disequilibria is the partial adjustment. This procedure, however, throws away potential valuable information about long-run relationships. The theory of co-integration developed by Granger (1981) and elaborated by Engle and Granger (1987) addressed the issue of integrating short-run dynamics with long-run equilibrium. This is further developed into a multi-variate function by Johansen and Juselius (1990) and Johansen (1991, 1995). Next, we provide brief description of the Johansen's Maximum Likelihood (ML) approach to co-integration.

3.6.3.2.1 Johansen's Maximum Likelihood Approach to Co-integration: A Summary

Here, we provide a brief description of Johansen's maximum likelihood approach to testing for co-integration. Of course, the starting point of this analysis (general analysis) is the following VAR (k) specification for the $p \times 1$ vector of variables integrated of order one, X_t.

$$X_t = \sum_{i=1}^{k} \Pi_i X_{t-i} + c + \Phi D_t + \varepsilon_t \qquad \textbf{(3.20)}$$

where c is a $p \times 1$ vector of constants terms, D is a $p \times 1$ vector of dummy variables and $\varepsilon_1, \ldots\ldots, \varepsilon_T$ are $i.id.\ N_p(0, \Sigma)$. The Johansen procedure entails setting out the VAR model in error correction form[72], where Δ, is the difference operator:

[72] This enables us to distinguish between stationarity due to linear combinations and differencing.

$$\Delta X_{t-1} = \Pi X_{t-1} + \sum_{i-1}^{k-1} \Gamma_i \Delta X_{t-1} + c + \Phi D_t + \varepsilon_t \quad [73] \qquad (3.21)$$

for (initial) values $X_{-k+1,}\ K,\ X_0$

where,

(a) $\Pi = \sum_{i=1}^{k} \Pi_i - I = -\left(I - \sum_{i=1}^{k} \Pi_i \right)$

(b) $\Gamma_i = -\sum_{j=i+1}^{k} \Pi_j$ and

(c) $\Gamma = I - \sum_{i=1}^{k-1} \Gamma_i$

The expression (c) is required to prove Granger's Representation Theorem on reduced rank and co-integration. Also,

$A(z) = I - \sum_{i=1}^{k} \Pi_i z^1$, where z can be set of lag operator, L.

The roots of the determinant equation for $A(z)$ determine whether the given VAR system is mathematically stable (covariance stationary) or not; to the effect that for such a condition to hold the inverse of all roots must be less than one in absolute value or equal to plus one in the event of unit roots and co-integration. This is because the inverse roots are the roots of the *companion matrix* of the VAR system.

[73] Notice that all the variables on the left side of the equation (3.21) are first differenced, so they are $I(0)$. On the right side of the equation, all terms are also $I(0)$ since they are first differenced. Π is the long run impact matrix of the equation that describes how the growth rate of imports is impacted by the levels from the previous period.

Thus, if the data are integrated of order one, i.e. $I(1)$, then the matrix Π has to be of reduced rank, r[74]. On the other hand, if Π is of full rank, this implies that all variables are $I(0)$. Also, if Π has zero rank, the term ΠX_{t-1} drops out of the equation and the variables in question are not co-integrated, where 0< rank of Π < P, there is at least one co-integration vector. Thus, we have:

$$\Pi = \alpha\beta'$$

where α and β are $p \times r$ matrices and $r < p$. The βs are the cointegrating vectors that have the property that βX_t is stationary (i.e. $\beta' X_t$ represents the linear combinations of non-stationary variables which are stationary), while on the other hand, αs are the long-run adjustment coefficients that 'corrects' for the disequilibrium in the long-run relationship, βX_t (i.e. αs are the matrix of adjustment coefficients)[75].

In this research work, a general–to–specific modelling is employed to obtain parsimonious dynamic models for changes in aggregate and sectoral imports[76]. The equilibrium-error term generated from the Johansen co-integration procedures is included as an additional regressor to avoid the loss of potentially relevant information.

As mentioned earlier, Johansen (1988) gave a detailed and elaborate insight into the determination of the co-integrating vectors (and their number) for a general VAR

[74] This implies that X_t is stationary so that each variable is a single cointegrating vector.
[75] For details, see Johansen (1988).
[76] For details, see Hendry (1995).

model with n variables and k lags[77]. The strength of the co-integration method is its ability to incorporate short-run dynamics with long-run equilibrium relations among variables. We employ the Johansen (1988) model, which was expanded by Johansen and Juselius (1990) and Johansen (1991, 1995). This method features the widely accepted maximum likelihood procedure, facilitates treatment of multivariate analysis and is considered to be more powerful and efficient.

3.6.3.3 Vector Autoregression (VAR): A Brief

Vector autoregression (VAR) models are widely employed in empirical analysis. This methodology avoids the need for a complete specification of a structural model of the economy.

The effect of the movement in the exchange rate and import prices (i.e. the exchange rate pass-through) is estimated using the VAR approach as proposed by Bernanke and Blinder (1992) of the form given in equation (3.22). It can be presented as:

$$Sy_t = A(L)y_t + \varepsilon_t \tag{3.22}$$

$A(L)$ is a matrix polynomial in the lag operator L for a $VAR(p)$:

$$A(L) = A_1L + A_2L^2 + \ldots\ldots\ldots\ldots\ldots\ldots + A_pL^p \tag{3.23}$$

Given the MA representation as:

[77]The Johansen procedure is very popular because there is a well-documented computer programme. Also, it is a systems method and it determines the number of co-integrating vectors. For further explanation, see Hall (1989) and for illustration see Dickey, Jansen and Thornton (1991).

$$y_t = \phi(L)\varepsilon_t$$

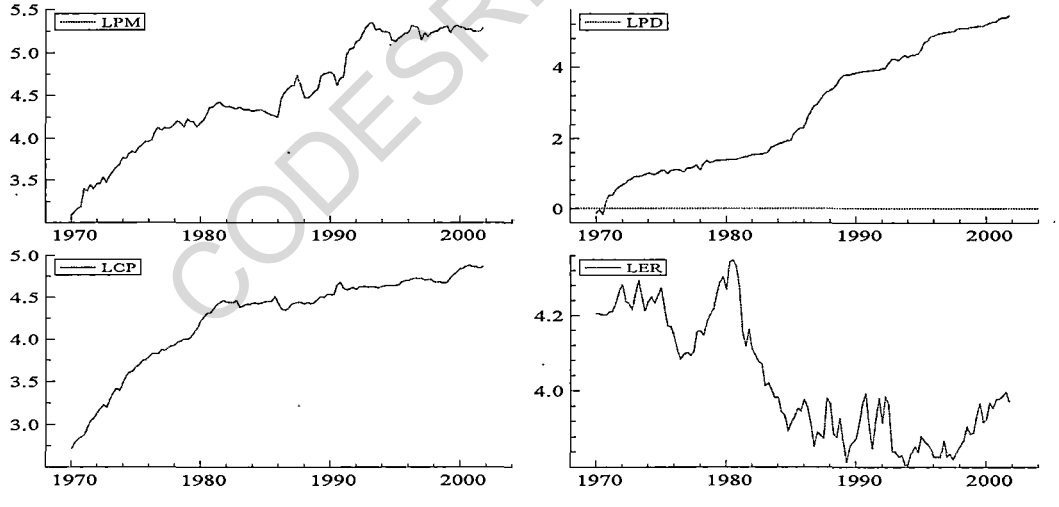
where $\phi(L) = [S - A(L)]^{-1}$. The structural parameters of the contemporaneous endogenous variables are contained in S. y_t is a vector of endogenous variables in the system, while ε_t, the vector of structural imbalances, $E[\varepsilon_t] = 0$ as in Sims (1980), $E[\varepsilon_t \varepsilon_t'] = I_n$. In this case $E[\varepsilon_t \varepsilon_t']$ will be I_n if $y_t = n x 1$, the matrices S and A_p being conformable with the y vector. L^p is the lag operator, where p describes the order of the VAR. Furthermore, deterministic terms can be added on the right-hand side, as is frequently the case in Johansen's analysis of cointegration, by adding a term ψD_t. This is required in most cases to allow dummies to capture possible structural breaks.

3.7 Estimation and Results

3.7.1 Informal Chart-based Analysis

A graphical representation of the series in logarithmic form is displayed in figure 3.2. LPM represents import unit values, LPD represents the producer price index or the Nigerian manufacturing output prices (i.e. the domestic competing price), LER is the nominal exchange rate (per foreign currency) of the eight main import supplying countries (the United States, the United Kingdom, France, Germany, Italy, Japan, China and Netherlands), while LCP is these weighted-average of foreign costs in the eight major import supplying countries.

Figure 3.2: Prices, Foreign Costs and Exchange Rate



The most striking features to emerge from figure 3.2 is the strong similarity between the LPM, LPD and LCP price variables. This, however, is only to be expected given

that Nigeria is a classic example of a small open economy[78].

3.7.2 Unit Roots Results

The first step in the Johansen technique is the test for stationarity. Therefore, in carrying out the unit root tests, we employed Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) tests.

From Table 3.2, the results of the unit roots tests indicate that we can not reject the null hypothesis of a unit root at 5 percent level of significant for the logarithms of the levels of import unit values, producers' costs and the trade weighted exchange rate while it is possible to reject the null hypothesis at 5 percent for the logarithms of domestic competing costs.

[78] The best methodology for uncovering such long-run co-integrating relationship is, perhaps, the Johansen technique.

Table 3.2: Time Series Properties of the Data

Variables	ADF			PP			Order of Integration
	T, C	C	N	T, C	C	*N*	
LPM	-2.05	-1.62	2.33	-2.61	-2.26	2.71	1
ΔLPM	-5.52**	-5.34**	-4.56**	-11.19**	-11.01**	-10.35**	
LPD	-2.26	0.09	2.03	-1.38	-0.60	3.98	1
ΔLPD	-3.19*	-3.22**	-2.33**	-10.47**	-10.49**	-8.15**	
LCP	-3.35*	-3.85**	1.57	-3.38*	-5.56**	3.50	0
ΔLCP	-4.08**	-3.39**	-2.82**	-9.72**	-8.85**	-7.59**	
LER	-1.51	-1.96	-0.63	-1.50	-2.02	-0.63	1
ΔLER	-5.40**	-5.44**	-5.38**	-10.54**	-10.52**	-10.56**	

Note: ADF: Augmented Dickey-Fuller unit root test; PP: Phillips-Perron unit root test; T: Trend term included in the unit root test; C: Constant term included in the unit root test; N: No trend and constant terms are included in the unit root test; Δ: The first differenced variables; **: Variables stationary at 5%; *: Variables stationary at 10%; Mckinnon critical values for rejection of hypothesis of a unit root for PP and ADF tests: 1% = -3.48, 5% = -2.88, 10% = -2.57 (with constant only); 1% = -4.03, 5% = -3.44, 10% = -3.14 (with constant and trend included) 1% = -2.58, 5% = -1.94, 10% = -1.61 (no trend and constant term). The results were obtained using 4 lags.

We reject the null hypothesis of a unit root at 5% significant level for the first difference of all the variables. Thus, the fact that the levels have unit root and the first difference of the series is stationary provides evidence that all logarithms of the series are integrated of order one, i.e. $I(1)$.

In general, the linear combination of a $I(0)$ series with another $I(0)$ series is also $I(0)$, while the combination of two $I(1)$ series is $I(1)$. However, higher order series will dominate so that a $I(1)$ series plus a $I(0)$ series will be $I(1)$. Furthermore, if a linear combination of the $I(1)$ variables is $I(0)$, then the variables are described as 'co-integrated' meaning that an equilibrium linear relationship exists which maintains a stationary difference between the variables in question in the long run.

3.7.3 The Overview of the Properties of the VARs

The lag for VAR is determined by using several criteria. The ultimate first step entails choosing a set of lag lengths for the VARs that produce mathematical stability, that is, the companion matrix has roots less than unity in absolute value, (or equal, under cointegration, to plus 1), the Akaike information criterion, misspecification tests such as autocorrelation, heteroscedasticity, no ARCH and normality. These diagnostic tests are also supplemented by the tests of graphic analysis which includes recursive graphics and stability tests to evaluate system (parameter) stability. The graphical analysis involves the actual and fitted values (to describe the fitted and actual values) of the equations over time, including the 1 step forecast, cross-plot of actual and fitted (to describe the cross plot of actual and fitted values) and residual

density (to show histogram of the residual of the equations); while the recursive graphics analysis involves residual sums of squares, 1 –step residuals with $0\pm2\sigma$ (this helps to reveal any model deficiencies by showing v_t and twice equation standard error at each t on other side of zero), loglikelihood/T at each t, break-point (N down) Chow tests (to test the stability of the equation).

Therefore, taking the information above into consideration, we need 4 lags for the aggregate pass-through. Also, we included (impulse) dummy variables on the basis of economic rationale which includes correction for the outliers and most especially to reflect the deregulation of the Nigerian economy, through the introduction of the structural adjustment programme (SAP) – exchange rate, interest rates, were effectively liberalised in 1986[79]. Perhaps, the addition of further dummy variables could have eliminated the normality problem but the robustness of Johansen procedure to many dummy variables is not known.

For illustration, we present our results below. The results indicate that all our VARs are mathematically stable. The roots of the companion matrix always less than 1 in absolute value, while the diagnostic tests such as the autocorrection, heteroscedasticity, and ARCH tests indicate that there is no autocorrection, heteroscedasticity and ARCH, as presented in Table 3.3:

[79] Though the adjustment is still on course, recent International Monetary Fund (IMF, 2001) reports on Nigeria observed that the policies are now gradually being relaxed.

Table 3.3: Diagnostic Tests Results

Variables	**AR** AR 1-5 F(5, 98)	**Normality** Normality $\chi^2(2)$	**ARCH** ARCH 4 F(4, 95)
LPM	0.79554 [0.5554]	5.2849 [0.0712]	0.27715 [0.8921]
LPD	1.0705 [0.3815]	11.859 [0.0027] **	0.70307 [0.5918]
LCP	0.79918 [0.5529]	17.19 [0.0002] **	0.70281 [0.5919]
LER	0.62391 [0.6819]	0.49823 [0.7795]	1.35034 [0.1572]

From Table 3.3, we observed that the residuals are not normally distributed; this might not be unconnected with the presence of excess kurtosis (see the residual density presented in Panel D in Figure 3.3). In sum, given the graphic analysis, actual and fitted values, and the cross plot of actual and fitted as depicted in Panels A and B, we observed that the VAR system performs very well. However, Panel C presents a slight different result as the residual scale test revealed that the variables demonstrate some fluctuation for at least one time given our sample frequency.

Figure 3.3: Graphic Analysis

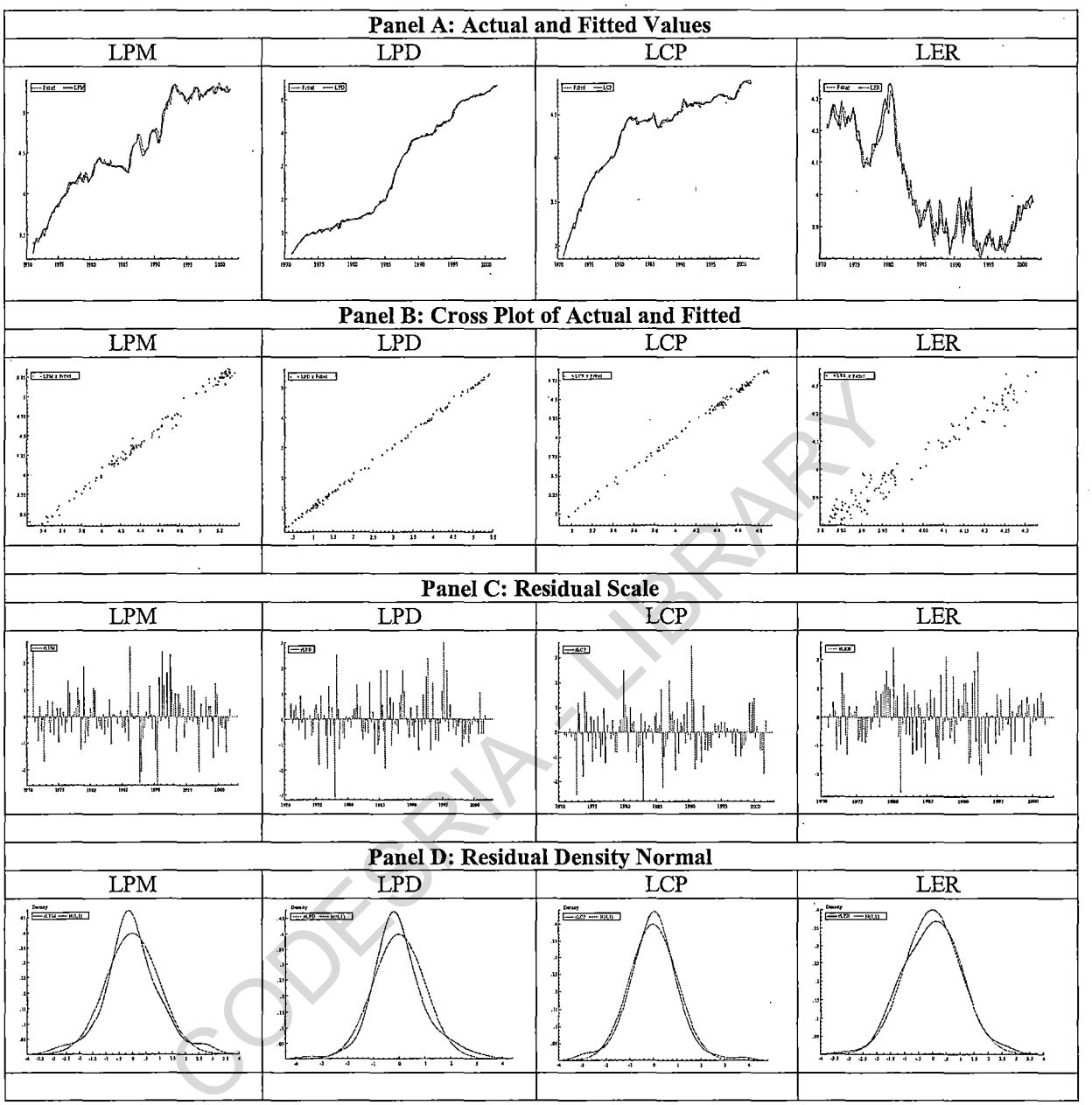


Figure 3.4: The Recursive Analysis

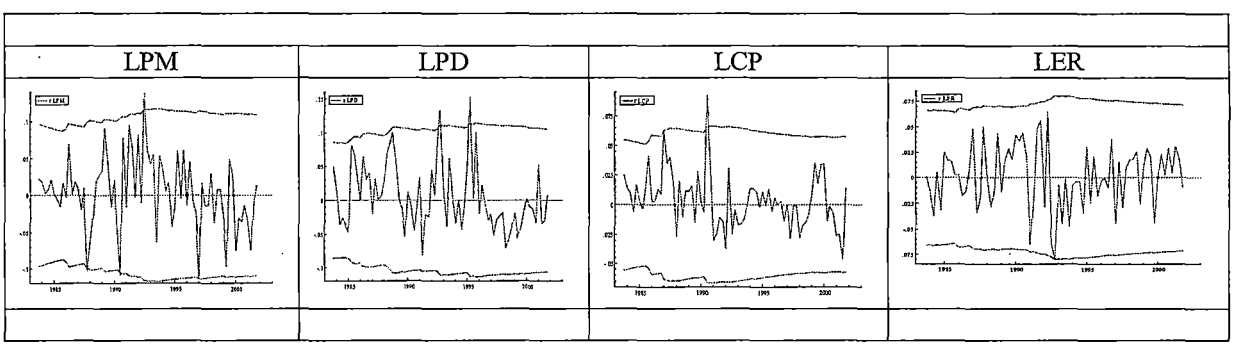
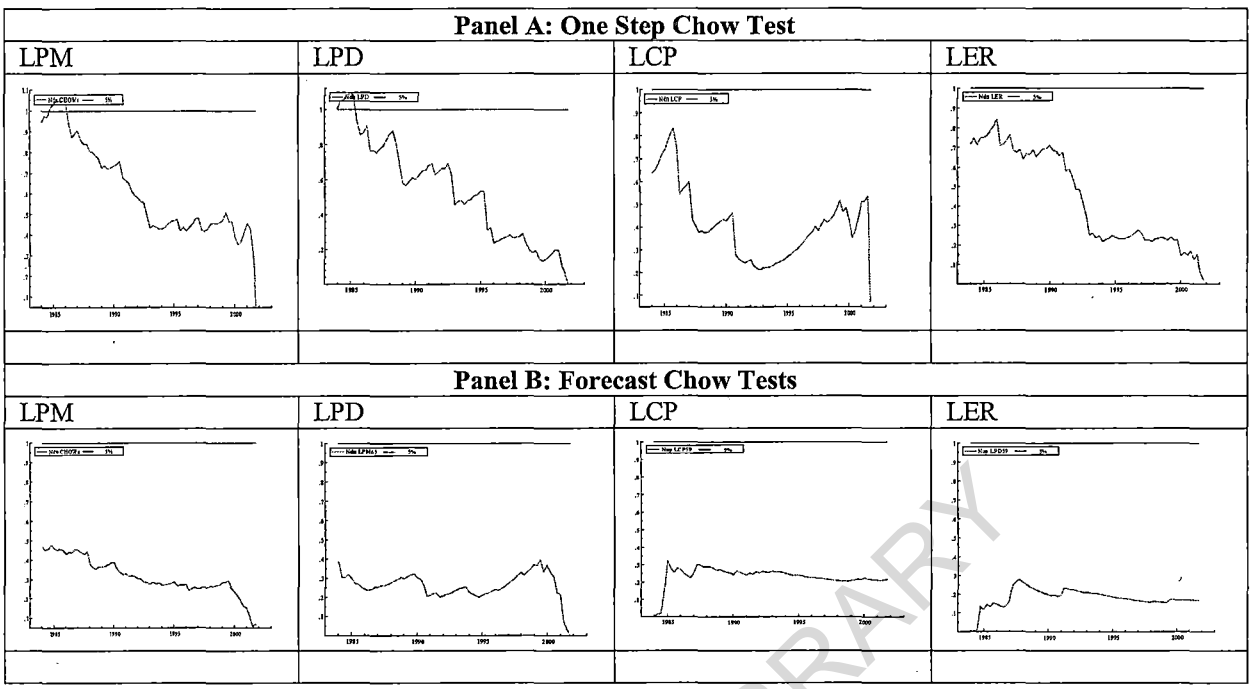


Figure 3.5: The Stability Analysis



Also, the recursive analysis (one step residuals) as depicted in Panel A of Figure 3.4, though the data performed very well as revealed by our results (the results are good for all the variables where the series are all within the 5% band). Further, the Break Point Chow tests as presented by Panel A in Figure 3.5 indicate that for the equations the parameter can be taken as constant given the estimation period. Also, the results of the Forecast Chow tests as presented in Panel B demonstrated relative stability.

Finally, we can therefore infer that not all our tests as presented in Figure 3.3, 3.4 and 3.5 above indicate perfect results, (especially the normality of the residuals which are mainly due to the presence of excess kurtosis), but the key mathematical and statistical results are fulfilled by our VARs, thus, we argue that our VARs are acceptable channel to investigate the presence of long run relationships and the nature of impulse responses.

3.7.4 Cointegration Tests Results

Given the importance of the possibility of cointegration in our VARs estimation, before we explain about our VAR specification and present the empirical results, we conduct the test to investigate the presence of cointegration in all our VARs (having found that all our variables possess a single unit root)[80].

As mentioned earlier, the implication of no co-integration between variables with a single root is that the series tend to diverge over time. Our a priori assumption is that the variables are co-integrated. Visual inspection of the time series plots of the variables indicates little evidence to suggest that this assumption is false.

The number of co-integrating vectors (r), which indicates the dimension of the co-integrating space, is determined by two tests statistics, the maximal eigenvalue $(\lambda_{\max})$ and the trace statistic, which are mathematically represented as:

$$\lambda_{\max} = -N \ln\left(1-\hat{\lambda}_{r+1}\right) \text{ and}$$

$$Trace = -N \sum_{i=r+1}^{m} \ln\left(1-\hat{\lambda}_i\right)$$

where N is the number of observation and $\hat{\lambda}$ the estimated eigenvalue.

Table 3.4 reports both the trace and maximum eigenvalue statistics for co-integration tests between import unit values, domestic PPI, Nigeria's trading partners' production costs and exchange rate. It is difficult to assume that the domestic Nigeria output or

[80] We tested for cointegration using E-Views and PcFiml. From the two programmes we confirmed cointegration for aggregate and sectoral data; results from the E-Views are reported in this study.

prices play a role in the determination of the production costs or the exchange rate but the opposite deterministic relationship is plausible[81].

Table 3.4: The Co-integration Test Results Using Model 3 of Johansen (1995)

Series: LPM LPD LER LCP
Lags interval (in first differences): 1 to 3

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.244106	61.67735	47.21	54.46
At most 1	0.110494	26.97538	29.68	35.65
At most 2	0.068192	12.45636	15.41	20.04
At most 3	0.029386	3.698469	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 1 cointegrating equation(s) at both 5% and 1% levels

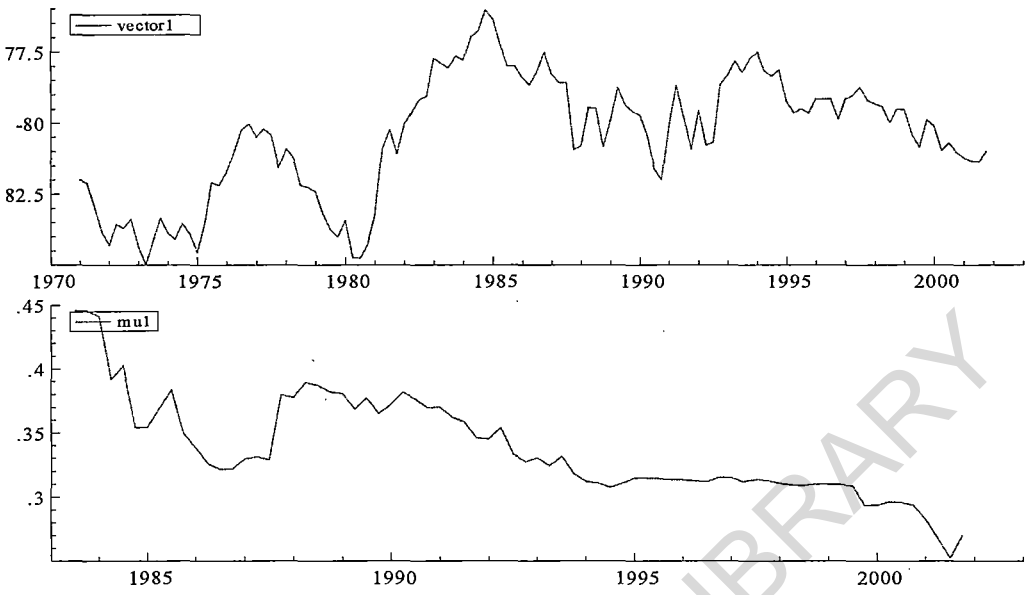
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.244106	34.70196	27.07	32.24
At most 1	0.110494	14.51902	20.97	25.52
At most 2	0.068192	8.757891	14.07	18.63
At most 3	0.029386	3.698469	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Max-eigenvalue test indicates 1 cointegrating equation(s) at both 5% and 1% levels

According to the results in Table 3.4, we found evidence for one co-integrating relationship. This is equally supported by the graphical illustration in Figure 3.6 below.

[81] In the examination of pass-through for larger open economies such as the US, Japan, Germany, it may be plausible that the domestic exchange rate could affect the foreign cost structure. However, given the fact that Nigeria is a small open economy and the small share of Nigeria's trade in the trading partners' trade, such hypothesis is not appropriate in this study.

Figure 3.6: Graphical Representations of Cointegration Relationships and Eigenvalues



Also, we present the long run relationship between the variables as:

$$LPM = 30.10815 - 0.901687LPD + 0.884353LCP - 8.926596LER$$

Next, the tests of the restrictions on the co-integration vectors was conducted jointly with a test of the hypothesis that LPD, LCP and LER are weakly exogenous[82]. Testing for weak exogeneity entails imposing restrictions on α; that the α_{ij}'s are different from zero, that is, $\alpha_{ij} \neq 0$.

Thus, testing for weak exogeneity in the system as a whole requires the test of the hypothesis that $H: \alpha_{ij} = 0$, for $j = 1, ..., r$, that is, row i contains zeros only. The

[82] The tests for weak exogeneity was conducted to ensure that it is valid to condition on the LPD, LCP and LER variables and use single equation estimation of the dynamic relationship. Thus, the test for weak exogeneity for LPD, LCP, and LER requires restrictions to be placed on the weighting matrix, the standardized α eigenvectors.

test is conducted by imposing row restrictions on α to yield a new restricted model. Also, we test for cross coefficient restrictions to ascertain if the coefficient on Nigerian exporters' production costs and the exchange rate are equal. In Table 3.5 we presented the estimated co-integrating vector.

Table 3.5: Estimate of Pass-Through

$LPM_{tot} = 1.00\,LCP + 1.00\,LER + 0\,LPD - 0.0006t \quad \chi^2(6) = 38.211\,[0.00]$
t denotes trend

The rejection of exclusion restriction in all the cases under consideration implies that for aggregate import unit values, the hypothesis of full pass-through from Nigeria's trading partners' production costs and exchange rate changes cannot be accepted. The χ^2 statistics refer to the exclusion restrictions on domestic prices and weak exogeneity, where p- value is in bracket.

3.7.5 Estimated Vector Error Correction Model

Next, we examine the effect of exchange rate movement, exporters foreign cost of production, and domestic output prices on import prices by estimating an error correction model (i.e. the dynamics to the long run equilibria). This is of interest because it indicates the behaviour of the changes in import unit values over time, providing addition information on pass-through. The variables included are 3 lags of $\Delta LPM_{it}, \Delta LCP_{it}$, ΔLER_t and ΔLPD_{it} . The equilibrium correction term generated from the co-integration equations was included as an additional channel through which the speed of pass-through can be estimated (denoted as ecm).

The results from the vector error correction (VECM) were subjected to a number of diagnostic checks, including stability, within equation residual serial correction, heteroscedasticity, and normality tests. Also, Chow test for parameter constancy was graphed following recursive estimations.

The results from our estimation reveal that the movement of the exchange rate has positive effect on import prices. In the short run, 1 percent depreciation leads to 44 percent increase in import prices, so one can say that part of the exchange rate shocks are passed on to import prices (see Table 3.6 below). This is again supported by Variance Decomposition estimates. Variance decomposition decomposes variation in an endogenous variable into the component shocks, giving information about the relative importance of each random shock to the variable. The estimates indicate that movement in the exchange rate explain 2.92 percent of the variation of import prices.

The foreign costs equally have positive effects on import prices, specifically, a 1 percent increase in foreign costs of production, results in 0.21 percent increase in import prices, suggesting that suppliers pass on additional costs by selling their products at higher prices, all things being equal. A decrease in the price of an import competing good (domestic manufacturing output prices in this case) was expected to increase competition, induce suppliers of imports to reduce their mark-up and sell their products (imports) at lower prices. This is supported in the estimation, as manufacturing output prices, though not significant but has a positive effect. We included a dummy variable to capture the effect of liberalisation. Liberalisation has a positive effect on import prices, though not highly significant. A possible explanation

is that, though the adjustment programme was introduced in 1986, the policies were introduced slowly and to date some of the policies are still not fully implemented. This might not be unconnected with the political uprising in 1989 and 1992 due to loss of jobs and economic hardship that followed some of the policies implemented.

In ECM equation, the coefficient of the own error correction term should be negative, that is, the dependent variable should vary in the opposite direction of the error, the deviation from equilibrium. This ensures that the model corrects the deviation from equilibrium; otherwise the system would never converge to equilibrium following a shock. From the results, the error correction term has the right sign and is highly significant. The speed of adjustment is 0.01, suggesting that, following shocks; the system takes a short period to adjust towards equilibrium[83]. The diagnostic tests from the error correction model looks good (see Table 3.8 below) although, the Jargue-Bera statistic for testing normality shows that the residuals are not normally distributed.

The serial correlation LM test which tests for higher order ARMA errors show that residuals do not exhibit autocorrelation. The ARCH LM test for autoregressive conditional heteroscedasticity shows that there is no ARCH in the residuals. The White's test of the null hypothesis of no heterosecdasticity is accepted. Ramsey's Regression Specification Error Test (RESET) test shows that the model is of correct functional form and that the disturbance vector has the multivariate normal distribution N $(0,\sigma^2, 1)$. A plot of the recursive residuals as depicted in Table 3.8

[83] The interpretation of the adjustment coefficient is partial in the sense that it is assumed that all the movement towards equilibrium is accounted for by the dependent variable alone. The coefficient of – 0.01 and based on the fact that $(1.0-0.01)^n = 0.5$ where n represents the number of periods in the half life of deviation of LPM from its equilibrium, the half life can be computed by taking natural logarithms and rearranging to get n = (ln0.5/ln0.99) = 68.967 quarters.

shows that the residuals are inside the standard error bands suggesting stability in the parameters of the model.

The impulse response function traces the effect of a one-time shock to one of the innovations on current and future values of the endogenous variables. The results of impulse response show that exchange rate movement leads to a sharp increase in import prices most importantly at the beginning of the period (see Figure 3.7, part A) but dissipates gradually through the entire period. Further, shocks from import competing goods have gradually increasing effects on import prices. This is not surprising due to the costs of intermediate imported input, also, the foreign costs revealed a little higher but constant effect on import prices.

Table 3.6: The Results E-Views Estimates of the Adjustment to the Long Run Equilibrium Relationships

Dependent Variable: DLPM
Method: Least Squares
Date: 10/10/05 Time: 17:00
Sample(adjusted): 1971:1 2001:4
Included observations: 124 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.419969	0.210850	-1.991785	0.0489
DLPM(-1)	-0.015166	0.096818	-0.156650	0.8758
DLPM(-2)	0.188248	0.094183	1.998743	0.0481
DLPM(-3)	-0.138389	0.093952	-1.472980	0.1436
DLPD(-1)	0.084317	0.082590	1.020906	0.3096
DLPD(-2)	-0.090981	0.081499	-1.116353	0.2667
DLPD(-3)	0.122360	0.083293	1.469039	0.1447
DLCP(-1)	-0.195097	0.187509	-1.040466	0.3004
DLCP(-2)	0.214991	0.101932	2.109162	0.0371
DLCP(-3)	0.045374	0.184891	0.245408	0.8066
DLER(-1)	0.435327	0.155148	2.805876	0.0059
DLER(-2)	0.224969	0.152773	1.472573	0.1437
DLER(-3)	0.065592	0.155421	0.422027	0.6738
ECM(-1)	-0.014327	0.007128	-2.009944	0.0469
DUM	0.012489	0.016446	0.759413	0.4492

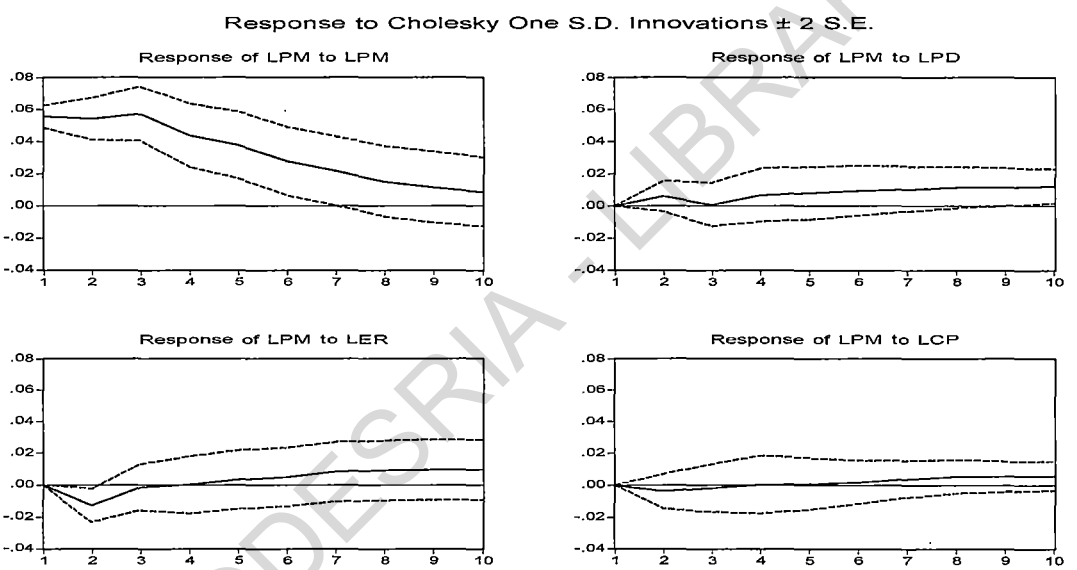
R-squared	0.209646	Mean dependent var	0.016912
Adjusted R-squared	0.108133	S.D. dependent var	0.059421
S.E. of regression	0.056116	Akaike info criterion	-2.809785
Sum squared resid	0.343243	Schwarz criterion	-2.468622
Log likelihood	189.2067	F-statistic	2.065205
Durbin-Watson stat	1.979789	Prob(F-statistic)	0.019182

Table 3.7: Variance Decomposition of Import Prices

Period	S.E.	LPM	LPD	LER	LCP
1	0.054843	100.0000	0.000000	0.000000	0.000000
2	0.077993	96.24458	0.509652	2.919732	0.326033
3	0.096309	97.38846	0.337782	1.939899	0.333863
4	0.105861	97.46743	0.622825	1.609561	0.300183
5	0.113091	97.21762	0.933928	1.556369	0.292085
6	0.117499	96.56442	1.400493	1.763184	0.271900
7	0.120672	95.43701	1.894933	2.392069	0.275986
8	0.123025	93.99620	2.533106	3.155936	0.314761
9	0.124966	92.44355	3.243633	3.940190	0.372631
10	0.126608	90.84181	4.032513	4.675601	0.450079

Figure 3.7: The Impulse Responses

(A)



(B)

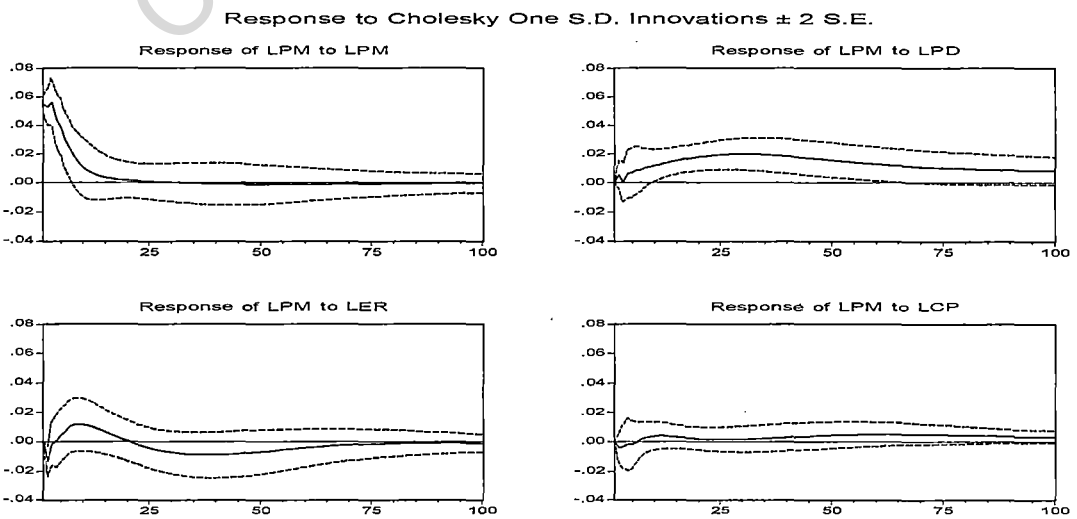
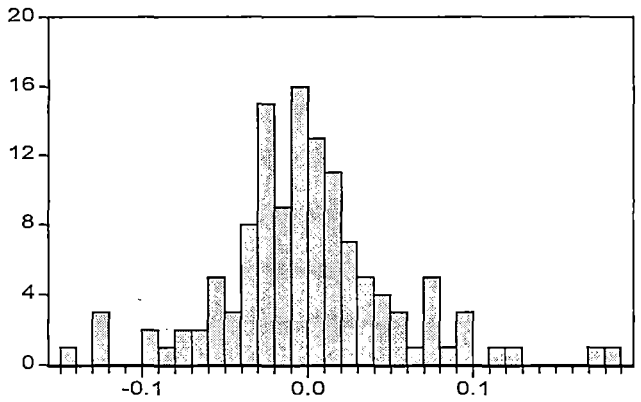


Table 3.8: Results of the Diagnostic Tests



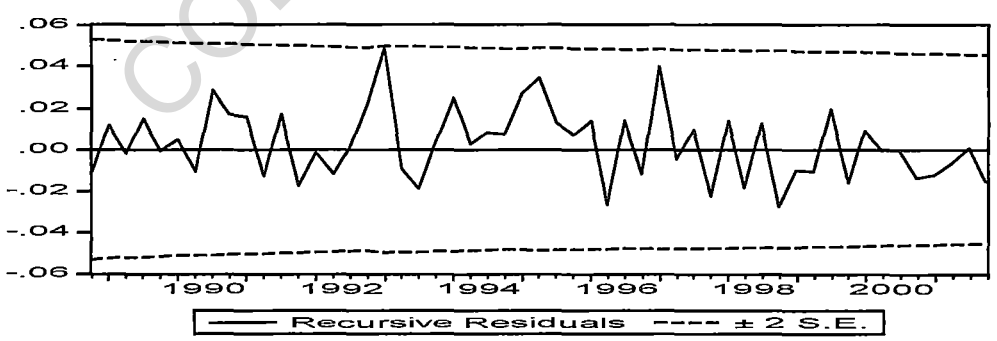
Series: Residuals	
Sample 1971:1 2001:4	
Observations 124	
Mean	1.49E-16
Median	-0.001970
Maximum	0.182748
Minimum	-0.143522
Std. Dev.	0.052826
Skewness	0.416679
Kurtosis	4.811912
Jarque-Bera	20.55048
Probability	0.000034

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.318570	Probability	0.864995
Obs*R-squared	1.486818	Probability	0.828974

ARCH Test:			
F-statistic	0.485474	Probability	0.746364
Obs*R-squared	1.992680	Probability	0.737105

White Heteroskedasticity Test:			
F-statistic	3.938168	Probability	0.000000
Obs*R-squared	65.16558	Probability	0.000053

Ramsey RESET Test:			
F-statistic	17.47049	Probability	0.000059
Log likelihood ratio	18.59248	Probability	0.000016



3.7.6 Summary of Findings and Conclusion

In this chapter we examine the degree of pass-through from producers' costs and the exchange rate to the prices of Nigeria imports from her major trading partners using quarterly aggregate in order to gauge the country's vulnerability to external shocks and therefore inform monetary policy implementation to mitigate such shocks. The movements in the exchange rate are transmitted to domestic price of imports through the direct importation of consumption goods, prices of intermediate goods (through production costs channel) and domestic goods priced in foreign currency.

We use the mark-up approach, which implies setting export prices as a mark-up on production costs. So, the price facing importers is the exchange rate adjusted production costs where mark-up depends on the competitive pressures in the import's market and the nominal exchange rate. For our analysis we employed the Vector Autoregressive (VAR) approach to time series analysis to investigate the pass-through of the exchange rate fluctuations to import prices involving cointegration analysis, an error correction model, impulse response functions and variance decompositions.

The steps we adopted are as follows; first we established the existence of stationarity by carrying out Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) tests. Second, we test for cointegration using Johansen method. Third, we established pass-through by running an error correction model, and estimating impulse responses and variance decomposition of import prices.

Full pass-through from the exchange rate and the major trading partners' producer

costs could not be accepted for the aggregate import unit values for the sample period 1970q1 to 2001q4. The long run relationship shows that a 1 percent change in the exchange rate leads to a 44 percent change in import prices. The short run exchange rate pass-through is also incomplete with the movement in the exchange rate positively affecting import prices.

Our findings are in line with the incomplete pass-through hypothesis. So, to place our results in context, a comparison with the findings from small open economy that used aggregate data would be in order. Studies that focused on small open economy include Moreno (1989), Phillips (1988), Athukorala (1991) and Menon and Athukorala (1994) and Menon (1995). While Moreno (1989), Phillips (1988) and Menon (1995) focused on Australia, Menon and Athukorala (1994) focused on Korea. Our results of incomplete pass-through at the aggregate level compare favourably with evidence available from small open economies most especially for, Sweden and Korea.

CHAPTER 4

DISAGGREGATE EXCHANGE RATE PASS-THROUGH: A CASE STUDY OF A SMALL OPEN ECONOMY

4.1 Introduction

In chapter 3 of this thesis, we estimated aggregate pass-through. This chapter focuses on estimating exchange rate pass-through using disaggregated data. This is germane due to the fact that sectoral dependence on imported intermediate inputs differs across sectors. Given the Nigerian economy and other developing economies, the manufacturing sector and a few other sectors, ceteris paribus, would depend more on imported inputs than the agricultural sector which has implications for the exchange rate pass-through. This implies that the degree of pass-through would likely vary across sectors.

In fact, Romer (1987, p2) strongly suggests disaggregate level analysis to examine economic fluctuations. According to her, the disaggregate level analysis 'allows ... both to examine common behaviour of all series and to pinpoint important differences in the behaviour of series representing different sectors of the economy'.

However, from the literature review, apart from the fact that the bulk of the literature on pass-through, as mentioned earlier, focused on large open economies, most of these studies were conducted at the aggregate level. This might raise concern of possible aggregation bias in the pass-through estimates, especially given the fact that studies such as Feenstra (1989), Marston (1990) and Menon (1992) find significant differences in the rates of pass-through across products. Furthermore, disaggregating the data may also enable more accurate estimation of the time-lags involved in the transmission of the exchange rate to import prices. We recognized the fact that the major constraint to disaggregate analysis is data. Therefore, data availability

constitutes the major determinant of the sectors investigated in this study.

4.2 Brief Sectoral Comparison

For the ease of analysis and based on 'standard' classification, the Nigerian economy is classified into sectors. Specifically, we adopted the United Nations (1994) Commodity Index for the Standard International Trade Classification. The sectors include the food, beverage and tobacco (sector 12); chemicals and chemical, rubber and plastic products (sector 59); paper and paper products, including printing and publishing, (sector 64); textile, wearing apparel and leather (sector 65); iron and steel bars, and angles shapes (sector 67); fabricated metal products, machinery and equipment (sector 74); wood and wood products including furniture (sector 82). Some sectors (e.g. oil sector and few others) were excluded as no comparable domestic producer price index is provided, the major reason being the requirement of confidentiality given the role of this sector in the Nigerian economy.

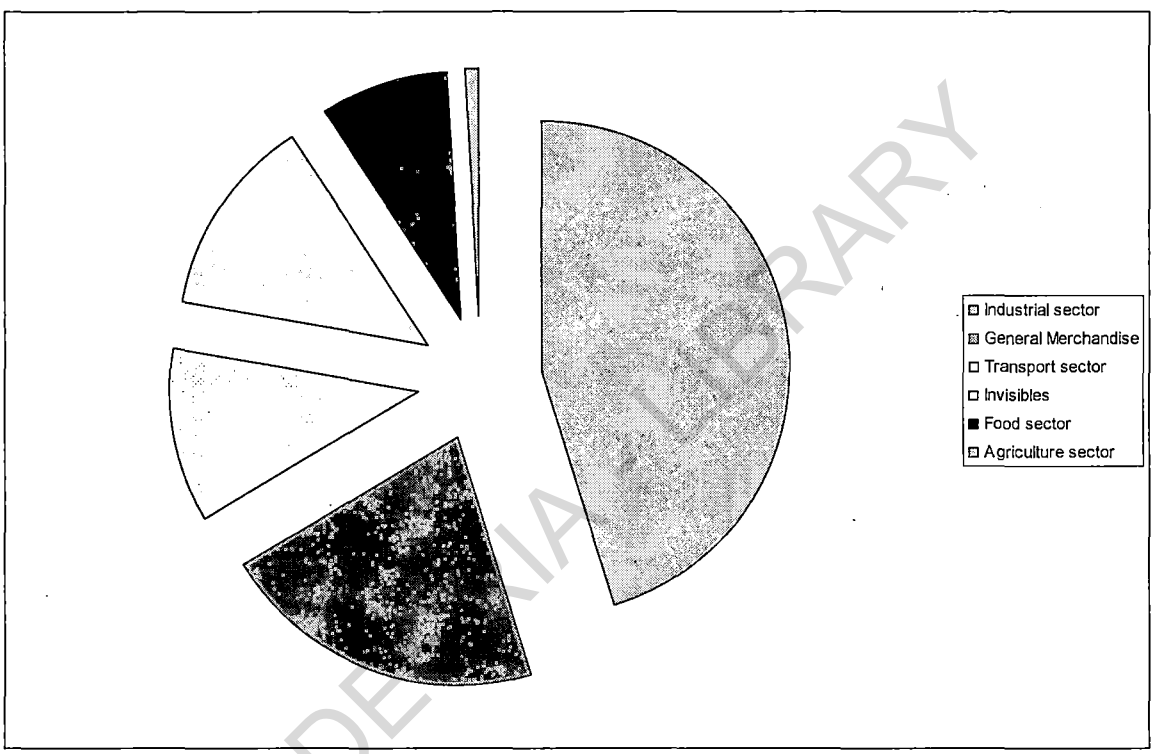
In terms of sectoral foreign exchange utilization or requirement, the industrial sector of the Nigerian economy accounts for the bulk of total foreign exchange utilization, followed by the general merchandise[84]. Other beneficiary sectors, in a descending order of importance include transport, invisibles, food and agricultural sector.

On average, the sectoral requirement of foreign exchange between 1986 and 2000 is given by figure 4.1. The industrial sector accounted for the bulk of total foreign exchange with 45.31 percent during the review period, followed by general

[84] This is in line with findings by studies on industrial sector in developing countries. As country grows, the activities in the industrial sector would increase, ceteris paribus, see Chang, H-J (1994).

merchandise (21.01 percent), invisibles (13.04 percent), transport (11.47 percent), food sector (8.3 percent) and finally, the agricultural sector (0.87 percent) (CBN, 2001). As expected, the agricultural sector depends more on domestic inputs and thus, the sector demand for the foreign exchange is the lowest.

Figure 4.1: Sectoral Utilisation of Foreign Exchange 1986-2000



With the reference to the classified sectors, .i.e. sectors 12, 59, 64, 65, 67, 74 and 82, ceteris paribus, we assume that, sectors 59, 67 and 74 relied more on imported intermediate inputs and thus would require more foreign exchange than sectors 12, 64 and 82. Also, sectors 59, 67 and 74 are more capital intensive than other sectors

4.3 Estimation and Results

In collecting disaggregate data to estimate pass-through; we followed the procedure and issues described in section 3.6.1 and 3.6.2 of chapter 3. Specifically, the data is collected from the IMF, the WB, the CBN, the FOS, and OECD. Similar method and procedure as highlighted in chapter 3, section 3.6.3 of this thesis is employed in this chapter to estimate disaggregate exchange rate pass-through for Nigeria.

4.3.1 Informal Chart-based Analysis

A graphical representation of the series (LPM, LPD, LER and LCP) in logarithmic form is displayed in figure 4.2.

The most striking features to emerge from figure 4.2 is the strong similarity between the LPM, LPD and LCP price variables. This, however, is only to be expected given that Nigeria provides a classic example of a small open economy. However, the best methodology for uncovering long-run cointegration relationships is the Johansen technique.

Figure 4.2: Prices, Foreign Costs and Exchange Rate

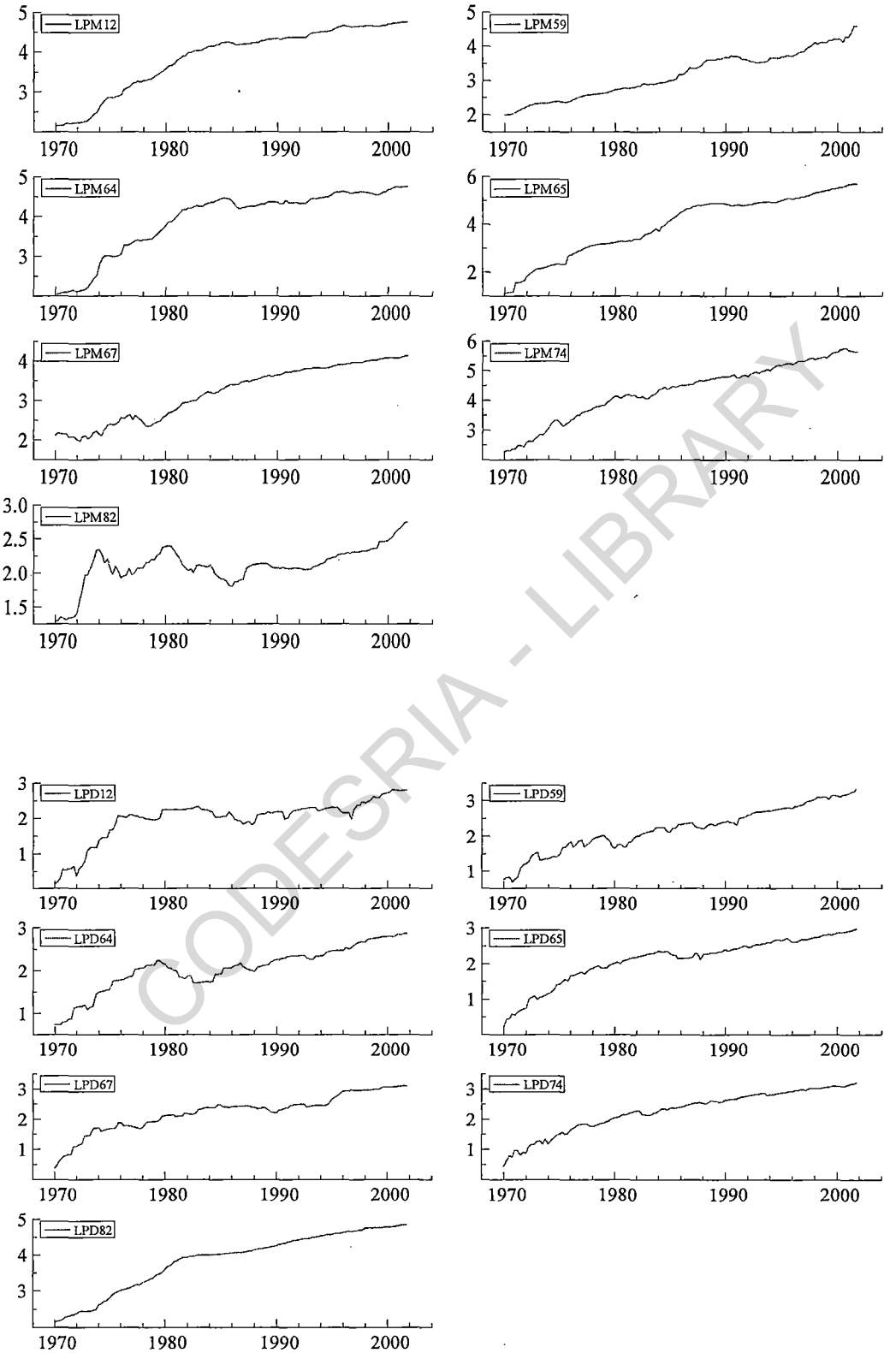
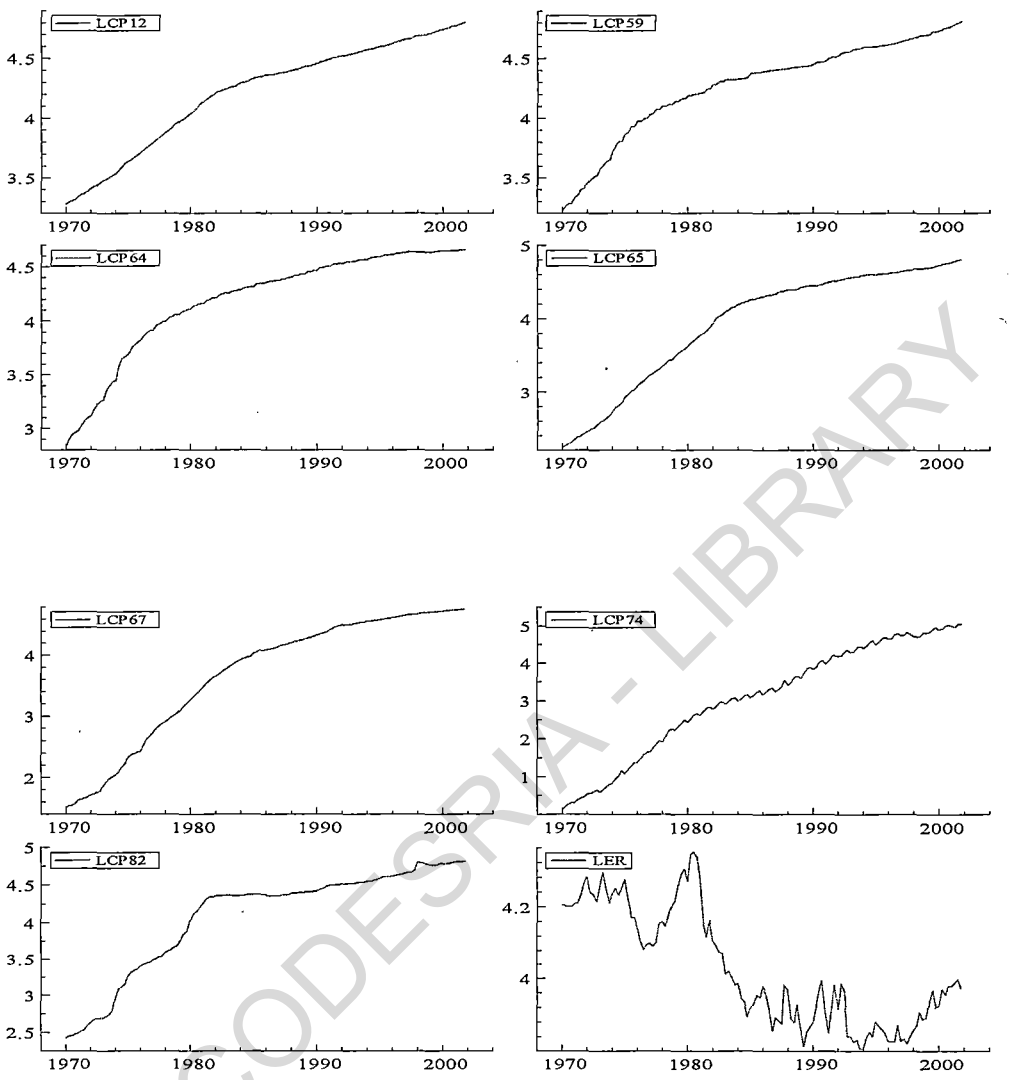


Figure 4.2 (Contd.): Prices, Foreign Costs and Exchange Rate



4.3.2 Unit Roots Results

As mentioned in chapter 3 of this thesis, the first step in the Johansen technique is the test for stationarity. Therefore, in carrying out the unit root tests, we employed Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) tests.

The results of the unit root tests in Table 4.1 below indicate that we can not reject the null hypothesis of a unit root at 5 percent level of significant for the logarithms of the levels of import unit values, producers' costs, domestic producer prices and the trade weighted exchange rate for all the sectors.

Table 4.1: Time Series Properties of the Data

Variables	ADF			PP			Order of Integration
	T, C	C	N	T, C	C	*N*	
LPM_{12}	-1.24	-2.78*	1.7	-0.72	-3.18**	3.28	1
ΔLPM_{12}	-4.93**	-3.74**	-2.57**	-7.92**	-7.29**	-5.53**	
LPM_{59}	-1.82	0.61	3.27	-1.66	0.59	5.17	1
ΔLPM_{59}	-3.44**	-3.42**	-1.98**	-10.72**	-10.70**	-8.97**	
LPM_{64}	-1.96	-3.01**	1.65	-1.38	-2.88*	2.63	1
ΔLPM_{64}	-5.04**	-4.27**	-3.45**	-7.02**	-6.58**	-5.76**	
LPM_{65}	-1.56	-1.60	1.89	-2.14	-3.34**	3.88	1
ΔLPM_{65}	-3.61**	-3.44**	-2.62**	-10.64**	-10.02**	-7.74**	
LPM_{67}	-1.95	-0.84	2.29	-1.56	-0.72	3.59	1
ΔLPM_{67}	-3.94**	-3.87**	-2.78**	-9.74**	-9.78**	-8.95**	
LPM_{74}	-2.70	-2.81*	2.40	-2.15	-2.83*	4.34	1
ΔLPM_{74}	-5.80**	-5.20**	-3.47**	-11.43**	-11.04**	-9.38**	
LPM_{82}	-4.15**	-3.30**	0.70	-2.55	-2.13	1.18	1
LPM_{82}	-3.59**	-3.60**	-3.42**	-8.82**	-8.84**	-8.68**	

Note: ADF: Augmented Dickey-Fuller unit root test; PP: Phillips-Perron unit root test; T: Trend term included in the unit root test; C: Constant term included in the unit root test; N: No trend and constant terms are included in the unit root test; Δ: The first differenced variables; **: Variables stationary at 5%; *: Variables stationary at 10%; Mckinnon critical values for rejection of hypothesis of a unit root for PP and ADF tests: 1% = -3.48, 5% = -2.88, 10% = -2.57 (with constant only); 1% = -4.03, 5% = -3.44, 10% = -3.14 (with constant and trend included) 1% = -2.58, 5% = -1.94, 10% = -1.61 (no trend and constant term). The results were obtained using 4 lags.

Table 4.1 (contd.): Time Series Properties of the Data

Variables	ADF			PP			Order of Integration
	T, C	C	N	T, C	C	N	
LPD_{12}	-2.69	-2.64*	1.00	-3.12	-3.47**	1.34	1
ΔLPD_{12}	-5.02**	-4.85**	-4.41**	-10.89**	-10.67**	-10.30**	
LPD_{59}	-4.84**	-1.70	2.26	-3.51**	-1.44	2.71	1
ΔLPD_{59}	-4.93**	-4.87**	-3.90**	-10.14**	-10.16**	-9.52**	
LPD_{64}	-3.68**	-3.65**	1.77	-4.58**	-5.32**	2.36	1
ΔLPD_{64}	-4.73**	-4.14**	-3.14**	-13.31**	-12.34**	-11.17**	
LPD_{65}	-3.03	-2.22	1.59	-2.47	-2.12	2.27	1
ΔLPD_{65}	-4.36**	-4.24**	-3.63**	-10.50**	-10.42**	-9.81**	
LPD_{67}	-3.54**	-2.39	1.40	-4.38**	-3.91**	2.20	1
ΔLPD_{67}	-3.89**	-3.75**	-3.28**	-10.30**	-9.76**	-9.17**	
LPD_{74}	-2.52	-3.42**	3.30	-4.21**	-4.17**	3.08	1
ΔLPD_{74}	-8.27**	-7.20**	-4.92**	-14.45**	-13.53**	-11.64**	
LPD_{82}	-1.44	-2.25	1.29	-0.94	-3.35**	3.83	1
ΔLPD_{82}	-3.34*	-2.61*	-1.78	-6.96**	-6.06**	-3.54**	

Note: ADF: Augmented Dickey-Fuller unit root test; PP: Phillips-Perron unit root test; T: Trend term included in the unit root test; C: Constant term included in the unit root test; N: No trend and constant terms are included in the unit root test; Δ: The first differenced variables; **: Variables stationary at 5%; *: Variables stationary at 10%; Mckinnon critical values for rejection of hypothesis of a unit root for PP and ADF tests: 1% = -3.48, 5% = -2.88, 10% = -2.57 (with constant only); 1% = -4.03, 5% = -3.44, 10% = -3.14 (with constant and trend included) 1% = -2.58, 5% = -1.94, 10% = -1.61 (no trend and constant term). The results were obtained using 4 lags.

Table 4.1 (contd.): Time Series Properties of the Data

Variables	ADF			PP			Order of Integration
	T, C	C	N	T, C	C	N	
LCP_{12}	-2.14	-2.14	0.81	-1.18	-4.81**	5.83	1
ΔLCP_{12}	-2.62	-1.67	-1.05	-7.83**	-5.61**	-1.95**	
LCP_{59}	-3.91**	-2.26	0.96	-4.31**	-6.33**	4.04	1
ΔLCP_{59}	-1.85	-1.86	-1.48	-13.41**	-12.06**	-8.06**	
LCP_{64}	-3.59**	-3.42	0.00	-4.30**	-9.66**	2.91	1
ΔLCP_{64}	2.00	-1.41	-1.64	-11.56**	-9.15**	-6.87**	
LCP_{65}	-1.89	-2.70	0.50	-0.83	-5.53**	3.72	1
ΔLCP_{65}	-2.17	-1.26	-1.11	-7.60**	-4.47**	-2.19**	
LCP_{67}	-0.50	-3.02**	0.67	-0.29	-4.96**	3.22	1
ΔLCP_{67}	-3.96**	-1.67	-1.16	-6.95**	-4.44**	-2.33**	
LCP_{74}	-0.84	-2.66**	0.74	-0.70	-3.44**	3.08	1
ΔLCP_{74}	-3.12*	-2.15	-1.31	-13.38**	-11.94	-10.64**	
LCP_{82}	-2.18	-2.97**	1.24	-1.39	-3.34**	2.74	1
ΔLCP_{82}	-3.83**	-3.00**	-2.32**	-6.78**	-6.15**	-4.94**	
LER	-1.51	-1.96	-0.63	-1.50	-2.02	-0.63	1
Δ LER	-5.40**	-5.44**	-5.38**	-10.54**	-10.52**	-10.56**	

Note: ADF: Augmented Dickey-Fuller unit root test; PP: Phillips-Perron unit root test; T: Trend term included in the unit root test; C: Constant term included in the unit root test; N: No trend and constant terms are included in the unit root test; Δ : The first differenced variables; **: Variables stationary at 5%; *: Variables stationary at 10%; Mckinnon critical values for rejection of hypothesis of a unit root for PP and ADF tests: 1% = -3.48, 5% = -2.88, 10% = -2.57 (with constant only); 1% = -4.03, 5% = -3.44, 10% = -3.14 (with constant and trend included) 1% = -2.58, 5% = -1.94, 10% = -1.61 (no trend and constant term). The results were obtained using 4 lags.

We reject the null hypothesis of a unit root at 5 percent significant level for the first difference of all the variables. Thus, the fact that the levels have unit root and the first difference of the series is stationary provides evidence that all logarithms of the series are integrated of order one, i.e. $I(1)$.

4.3.3 The Overview of the Properties of the VARs

The ultimate first step entails choosing a set of lag lengths for the VARs that produce mathematical stability, that is, the companion matrix has roots less than unity in absolute value, (or equal, under cointegration, to plus 1), the Akaike information criterion, misspecification tests such as autocorrelation, heteroscedasticity, ARCH and normality.

As mentioned in chapter 3 of this thesis, these diagnostic tests are also supplemented by the tests of graphic analysis which includes recursive graphics and stability tests to evaluate system (parameter) stability. The graphical analysis involves the actual and fitted values (to describe the fitted and actual values) of the equations over time, including the 1 step forecast, cross-plot of actual and fitted (to describe the cross plot of actual and fitted values) and residual density (to show histogram of the residual of the equations); while the recursive graphics analysis involves residual sums of squares, 1 – step residuals with $0 \pm 2\sigma$ (this helps to reveal any model deficiencies by showing v_t and twice equation standard error at each t on other side of zero), loglikelihood/T at each t, break-point (N down) Chow tests (to test the stability of the equation).

Thus, given the above analysis, we need the following lags: 5 lags for food beverage and tobacco (sector 12); 5 lags for chemicals and chemical, rubber and plastic products (sector 59); 5 lags for paper and paper products (including printing and publishing, sector 64); 5 lags for textile, wearing apparel and leather (sector 65); 5 lags for iron and steel bars, and angles shapes (sector 67); 4 lags for fabricated metal products, machinery and equipment (sector 74); and 4 lags for wood and wood products including furniture (sector 82).

Table 4.2 contains the diagnostics for the VAR analysis. The results indicate that all our VARs are mathematically stable. The roots of the companion matrix always less than 1 in absolute value, while the diagnostic tests such as the autocorrection, heteroscedasticity, and ARCH tests indicate that there is no autocorrection, heteroscedasticity and no ARCH, as presented below in table 4.2:

Table 4.2: Diagnostic Tests Results

Variables	AR AR 1-5 F(5, 93)	Normality Normality $\chi^2(2)$	ARCH ARCH 4 F(4, 90)
LPM 12	0.73432 [0.5996]	16.623 [0.0002] **	1.3754 [0.1329]
LPD 12	2.5898 [0.0507]	3.3893 [0.1837]	1.0216 [0.4656]
LCP 12	0.87725 [0.4996]	5.6771 [0.0585]	2.2766 [0.0671]
LER 12	2.4885 [0.0667]	0.11751 [0.9429]	1.6718 [0.1634]
	AR 1-5 F(5, 93)	Normality $\chi^2(2)$	ARCH 4 F(4, 90)
LPM 59	0.73432 [0.5996]	16.623 [0.0002] **	1.1412 [0.0823]
LPD 59	2.5898 [0.0507]	3.3893 [0.1837]	1.3754 [0.1329]
LCP 59	0.87725 [0.4996]	5.6771 [0.0585]	2.2766 [0.0671]
LER 59	2.4885 [0.0667]	0.11751 [0.9429]	1.6718 [0.1634]
	AR 1-5 F(5, 93)	Normality $\chi^2(2)$	ARCH 4 F(4, 90)
LPM 64	0.85664 [0.5134]	40.166 [0.0000] **	0.32733 [0.8590]
LPD 64	2.0531 [0.0783]	36.188 [0.0000] **	0.61838 [0.6505]
LCP 64	1.4999 [0.1974]	64.356 [0.0000] **	0.95242 [0.5613]
LER 64	0.64131 [0.6687]	2.4931 [0.2875]	1.1361 [0.3256]
	AR 1-5 F(5, 93)	Normality $\chi^2(2)$	ARCH 4 F(4, 90)
LPM 65	1.888 [0.1038]	105.22 [0.0000] **	0.09965 [0.9823]
LPD 65	2.3796 [0.0544]	27.732 [0.0000] **	1.0999 [0.3616]
LCP 65	3.4226 [0.1770]	28.677 [0.0000] **	0.42158 [0.7927]
LER 65	1.468 [0.2078]	0.01371 [0.9932]	1.0086 [0.4830]
	AR 1-5 F(5, 93)	Normality $\chi^2(2)$	ARCH 4 F(4, 90)
LPM 67	1.4509 [0.2116]	2.3041 [0.0017] **	0.09963 [0.9821]
LPD 67	1.8403 [0.01106]	10.216 [0.0060] **	1.2563 [0.2100]
LCP 67	0.93494 [0.4619]	14.168 [0.0008] **	1.7488 [0.1296]
LER 67	0.69322 [0.6298]	2.7784 [0.2493]	1.0314 [0.4455]
	AR 1-5 F(5, 98)	Normality $\chi^2(2)$	ARCH 4 F(4, 95)
LPM 74	1.0056 [0.4187]	0.96429 [0.6175]	1.6882 [0.1592]
LPD 74	3.1264 [0.2095]	45.205 [0.0000] **	0.95946 [0.5432]
LCP 74	1.7948 [0.1205]	2.121 [0.3463]	0.26976 [0.8968]
LER 74	1.3022 [0.2694]	2.294 [0.3176]	0.87149 [0.6660]
	AR 1-5 F(5, 97)	Normality $\chi^2(2)$	ARCH 4 F(4, 94)
LPM 82	0.8994 [0.4848]	2.6333 [0.2680]	1.7526 [0.1450]
LPD 82	2.1745 [0.0631]	19.404 [0.0001] **	0.94436 [0.4420]
LCP 82	1.2181 [0.3065]	46.954 [0.0000] **	0.24983 [0.9091]
LER 82	0.62297[0.6826]	0.82707 [0.6613]	1.48043 [0.0849]

From Table 4.2, we observed that the residuals are not normally distributed; this might not be unconnected with the presence of excess kurtosis (see the residual density presented in Panel D in Figure 4.3). In sum, given the graphic analysis, actual and fitted values, and the cross plot of actual and fitted as depicted in Panels A and B, we observed that the VAR system performs very well. However, Panel C presents a slight different result as the residual scale test revealed that few of the variables demonstrate some fluctuation for at least one time given our sample frequency.

Figure 4.3: Graphic Analysis

Panel A: Actual and Fitted Values

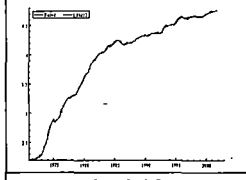
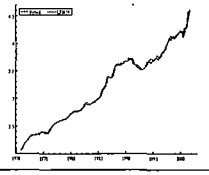
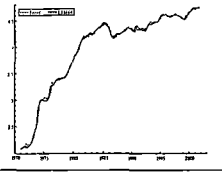
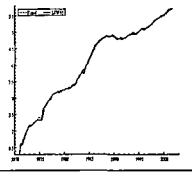
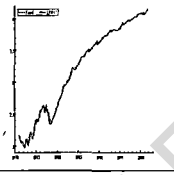
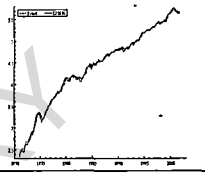
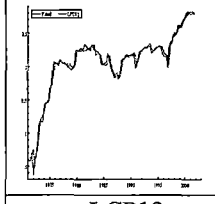
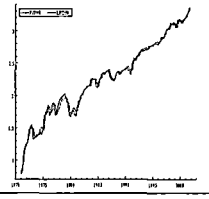
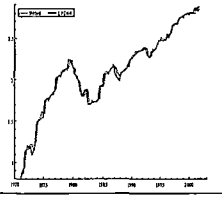
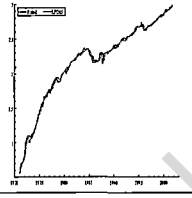
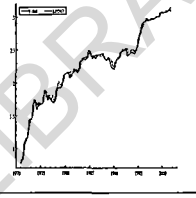
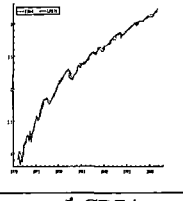
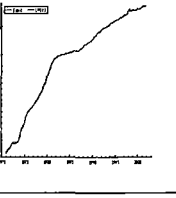
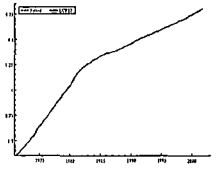
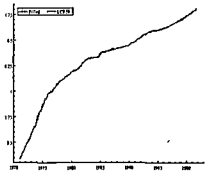
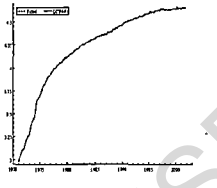
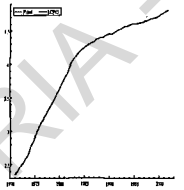
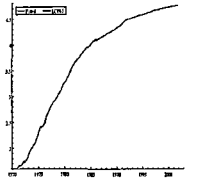
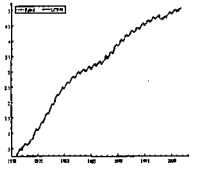
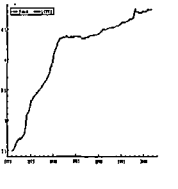
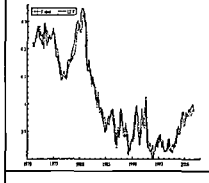
LPM12	LPM59	LPM64	LPM65	LPM67	LPM74	LPM82
						
LPD12	**LPD59**	**LPD64**	**LPD65**	**LPD67**	**LPD74**	**LPD82**
						
LCP12	**LCP59**	**LCP64**	**LCP65**	**LCP67**	**LCP74**	**LCP82**
						
LER						
						

Figure 4.3 (Contd.): Graphical Analysis

Panel B: Cross Plot of Actual and Fitted

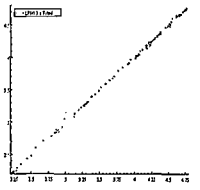
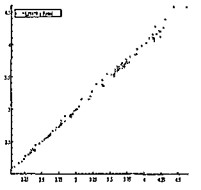
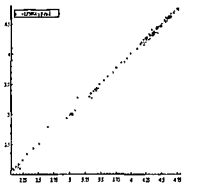
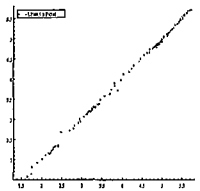
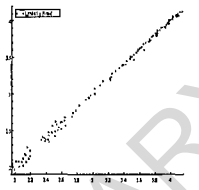
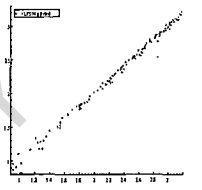
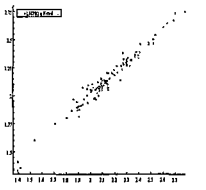
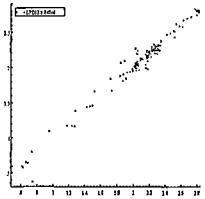
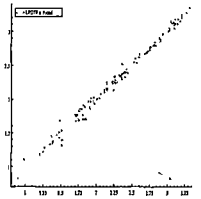
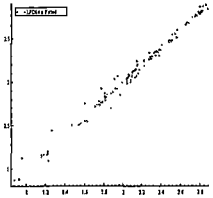
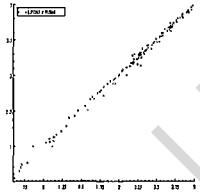
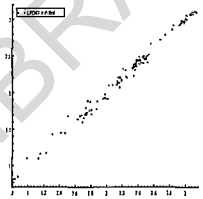
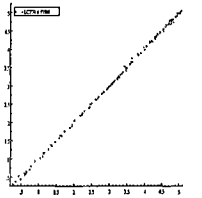
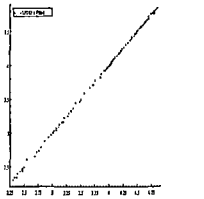
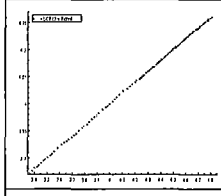
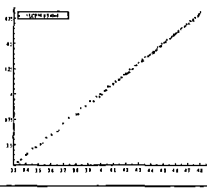
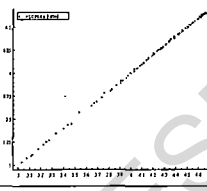
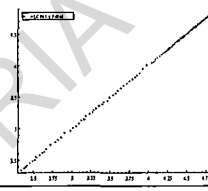
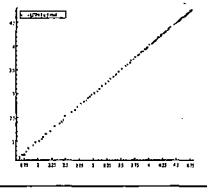
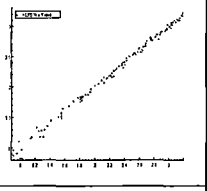
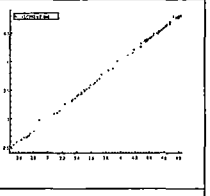
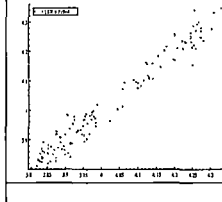
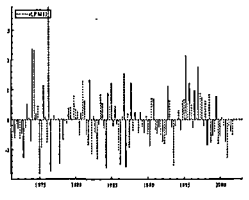
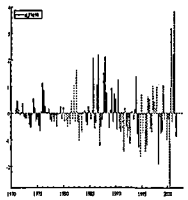
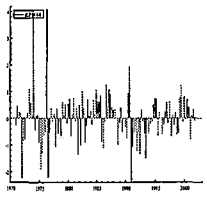
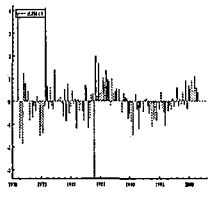
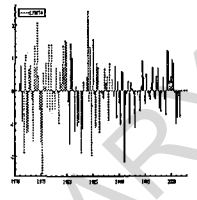
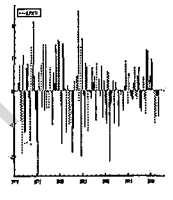
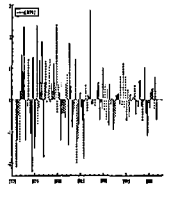
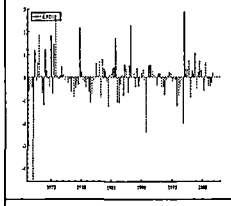
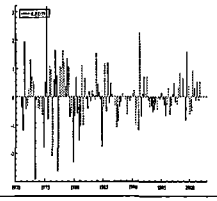
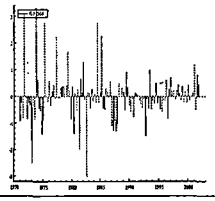
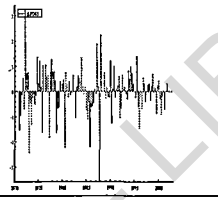
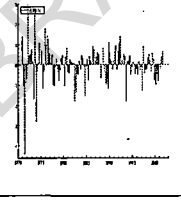
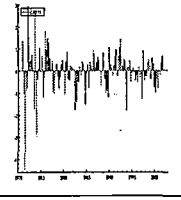
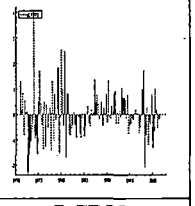
LPM12	LPM59	LPM64	LPM65	LPM67	LPM74	LPM82
						
LPD12	**LPD59**	**LPD64**	**LPD65**	**LPD67**	**LPD74**	**LPD82**
						
LCP12	**LCP59**	**LCP64**	**LCP65**	**LCP67**	**LCP74**	**LCP82**
						
LER						
						

Figure 4.3 (Contd.): Graphical Analysis

Panel C: Residual Scale

LPM12	LPM59	LPM64	LPM65	LPM67	LPM74	LPM82
						
LPD12	**LPD59**	**LPD64**	**LPD65**	**LPD67**	**LPD74**	**LPD82**
						
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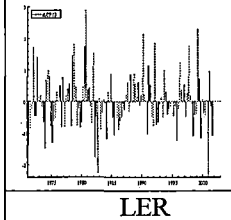	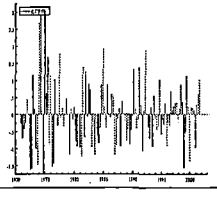	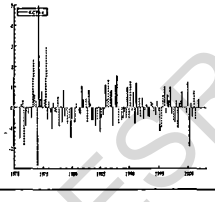	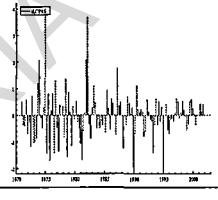	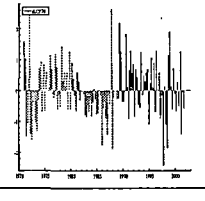	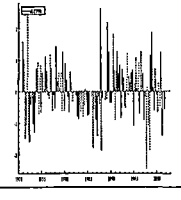	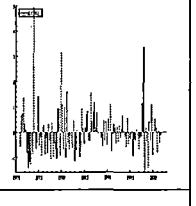
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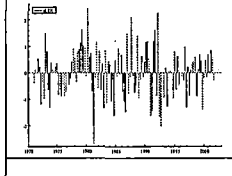
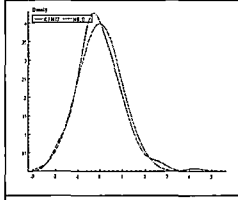
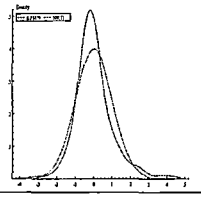
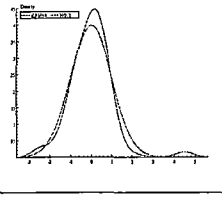
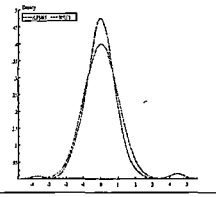
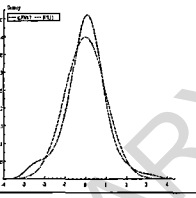
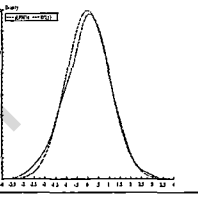
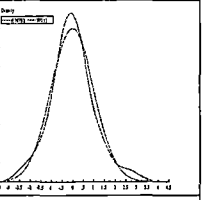
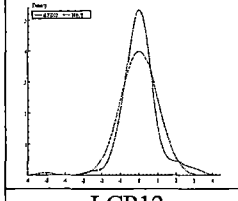
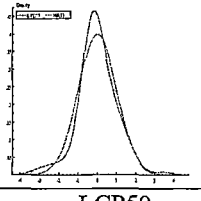
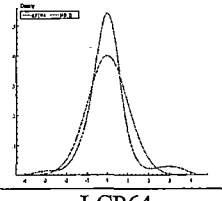
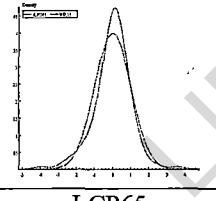
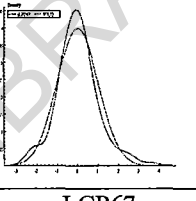
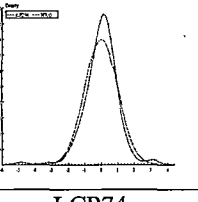
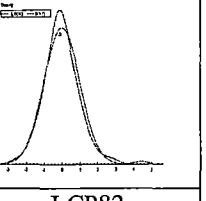
						

Figure 4.3 (Contd.): Graphical Analysis

Panel D: Residual Density Normal

LPM12	LPM59	LPM64	LPM65	LPM67	LPM74	LPM82
						
LPD12	**LPD59**	**LPD64**	**LPD65**	**LPD67**	**LPD74**	**LPD82**
						
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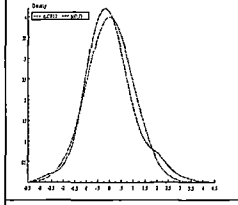	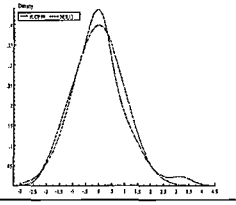	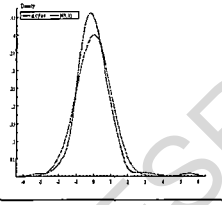	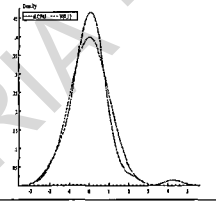	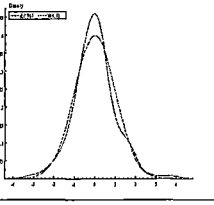	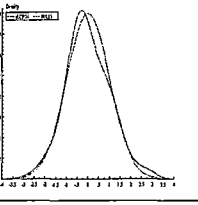	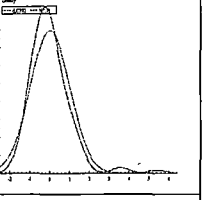
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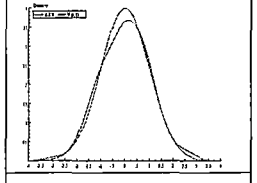
						

Figure 4.4 : The Recursive Analysis

Panel A: One Step Residuals

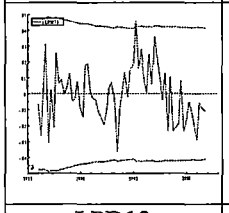
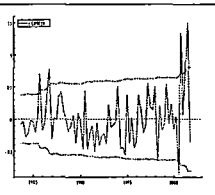
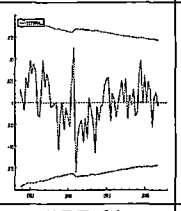
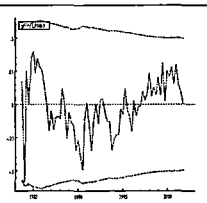
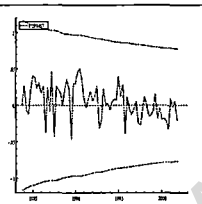
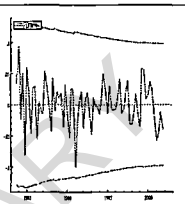
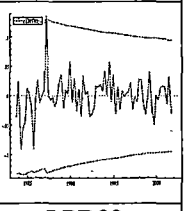
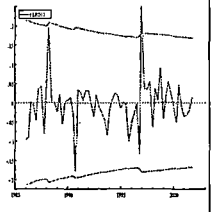
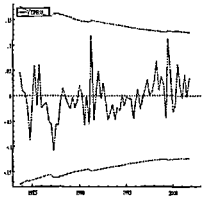
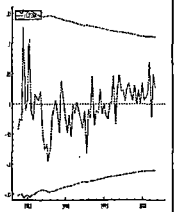
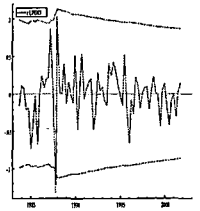
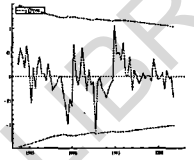
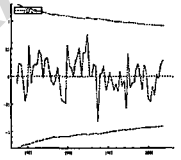
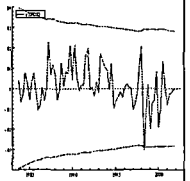
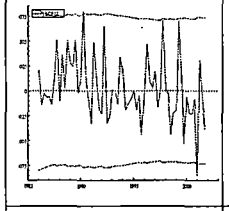
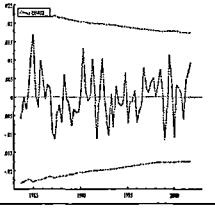
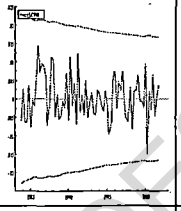
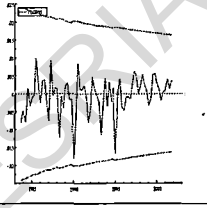
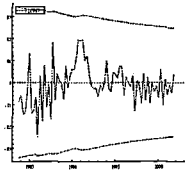
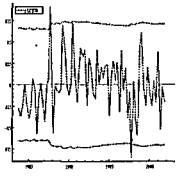
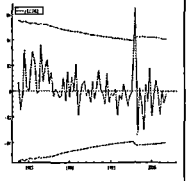
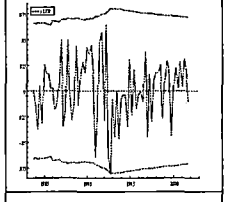
LPM12	LPM59	LPM64	LPM65	LPM67	LPM74	LPM82
						
LPD12	**LPD59**	**LPD64**	**LPD65**	**LPD67**	**LPD74**	**LPD82**
						
LCP12	**LCP59**	**LCP64**	**LCP65**	**LCP67**	**LCP74**	**LCP82**
						
LER						
						

Figure 4.5: The Stability Analysis

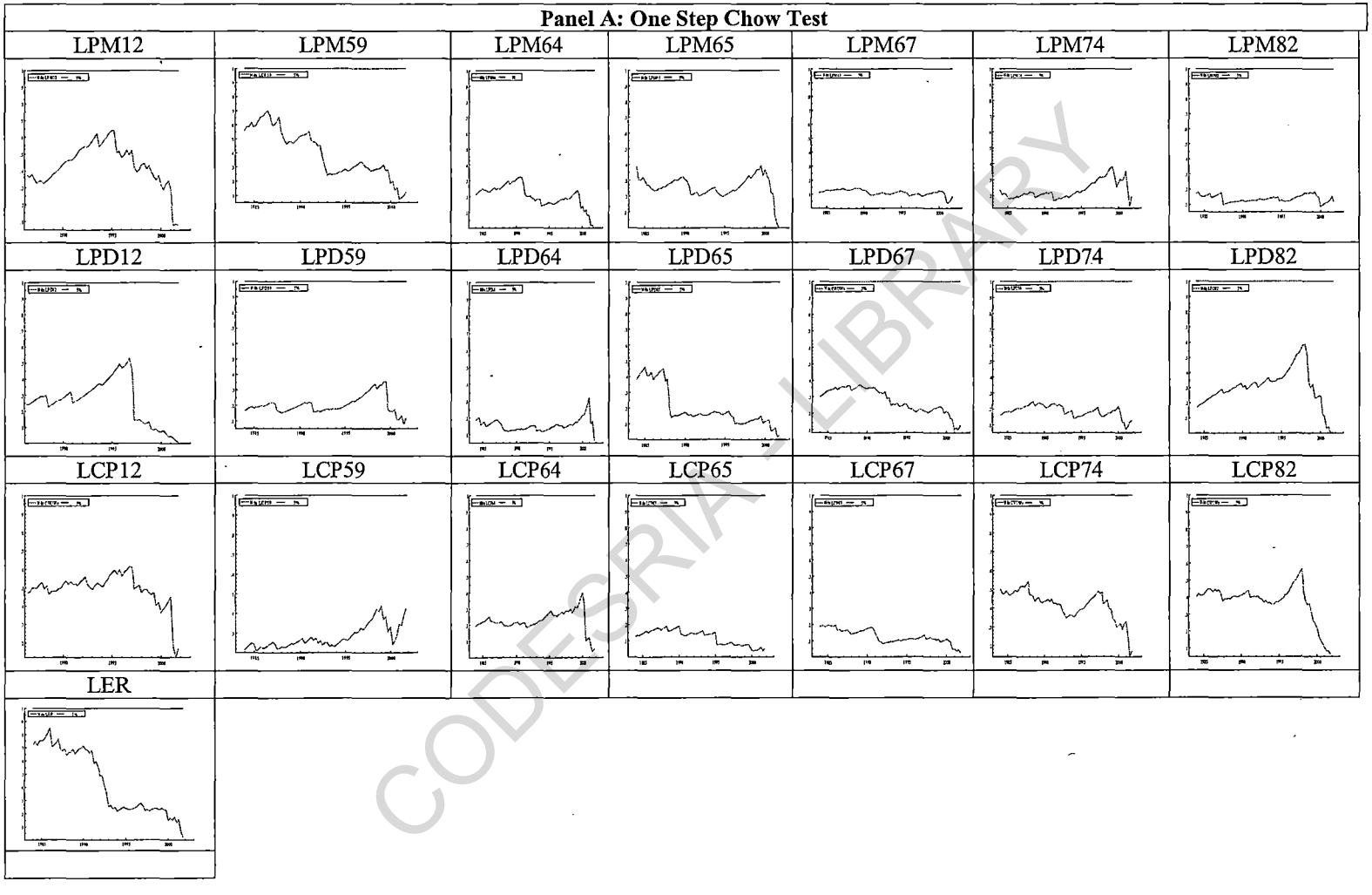
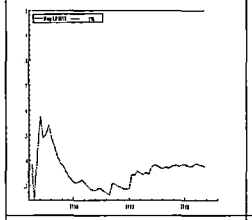
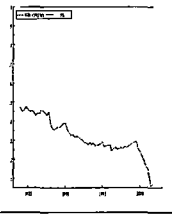
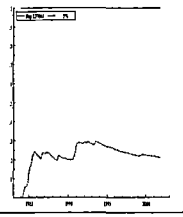
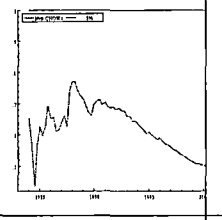
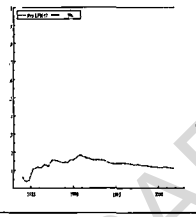
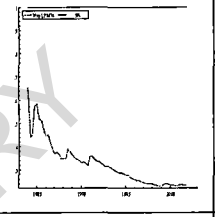
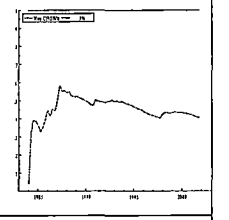
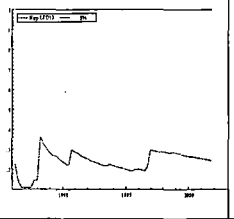
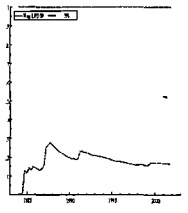
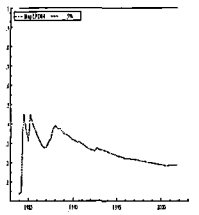
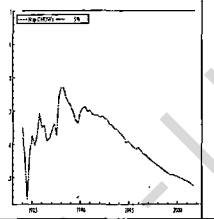
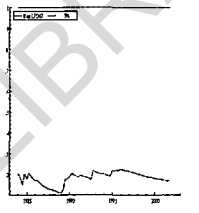
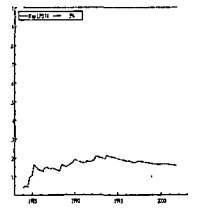
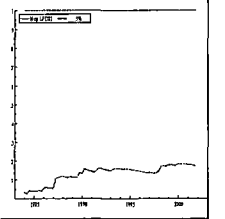
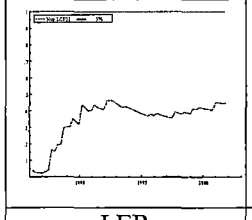
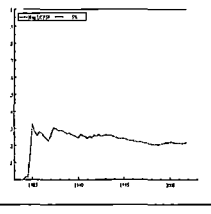
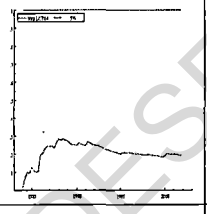
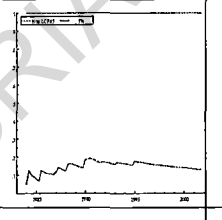
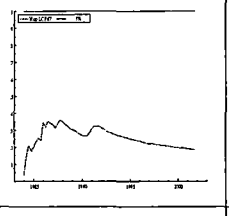
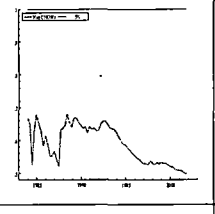
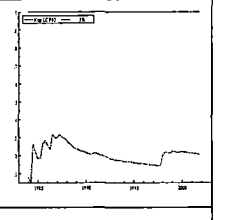
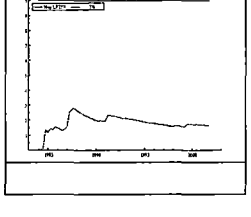


Figure 4.5 (Contd.): The Stability Analysis

Panel B: Forecast Chow Tests

LPM12	LPM59	LPM64	LPM65	LPM67	LPM74	LPM82
						
LPD12	**LPD59**	**LPD64**	**LPD65**	**LPD67**	**LPD74**	**LPD82**
						
LCP12	**LCP59**	**LCP64**	**LCP65**	**LCP67**	**LCP74**	**LCP82**
						
LER						
						

Also, the recursive analysis (one step residuals) as depicted in Panel A of Figure 4.4, shows that the data performed very well as revealed by our results (the results are good for all the variables where the series are all within the 5 percent band) but with the exception of LPD12, and LCP82 (due to fluctuation as a result of economic liberalization)[85] . Further, the Break Point Chow tests as presented by Panel A in Figure 4.5 indicate that for the equations the parameter can be taken as constant given the estimation period. Also, the results of the Forecast Chow tests as presented in Panel B illustrate relative stability.

Finally, we can therefore infer that not all our tests as presented in Figures 4.3, 4.4 and 4.5 above indicate perfect results, (especially the normality of the residuals which are mainly due to the presence of excess kurtosis), but the key mathematical and statistical results are fulfilled by our VARs, thus, we argue that our VARs are acceptable channel to investigate the presence of long run relationships and the nature of impulse responses.

[85] Section 12 is food, beverage and tobacco while section 82 is wood and wood products including furniture.

4.3.4 Cointegration Tests Results

We followed the procedure employed in chapter 3 of this thesis in testing for cointegration. We present our co-integration results in Table 4.3.

Table 4.3: The Co-integration Test Results Using Model 3 of Johansen (1995)

(a) Section 12: Manufacture of food beverage and tobacco

Series: LPM12 LPD12 LER LCP12
Lags interval (in first differences): 1 to 4

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.204336	56.56752	47.21	54.46
At most 1	0.122172	28.45240	29.68	35.65
At most 2	0.078451	12.42490	15.41	20.04
At most 3	0.019131	2.375923	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 1 cointegrating equation(s) at both 5% and 1% levels

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None *	0.204336	28.11512	27.07	32.24
At most 1	0.122172	16.02751	20.97	25.52
At most 2	0.078451	10.04897	14.07	18.63
At most 3	0.019131	2.375923	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Max-eigenvalue test indicates 1 cointegrating equation(s) at the 5% level
Max-eigenvalue test indicates no cointegration at the 1% level

Table 4.3 (Contd.): The Co-integration Test Results Using Model 3 of Johansen (1995)

(b) Section 59: Manufacture of chemicals and chemical, rubber and plastic products

Series: LPM59 LPD59 LER59 LCP59
Lags interval (in first differences): 1 to 4

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.219129	57.02266	47.21	54.46
At most 1	0.127848	26.59919	29.68	35.65
At most 2	0.075155	9.773782	15.41	20.04
At most 3	0.001331	0.163877	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 1 cointegrating equation(s) at both 5% and 1% levels

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None *	0.219129	30.42347	27.07	32.24
At most 1	0.127848	16.82541	20.97	25.52
At most 2	0.075155	9.609906	14.07	18.63
At most 3	0.001331	0.163877	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Max-eigenvalue test indicates 1 cointegrating equation(s) at the 5% level
Max-eigenvalue test indicates no cointegration at the 1% level

(c) Section 64: Paper and paper products (including printing and publishing)

Series: LPD64 LMP64 LER64 LCP64
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.317082	84.04906	47.21	54.46
At most 1 **	0.161777	37.13929	29.68	35.65
At most 2 *	0.087595	15.43337	15.41	20.04
At most 3 *	0.033238	4.157779	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 4 cointegrating equation(s) at the 5% level
Trace test indicates 2 cointegrating equation(s) at the 1% level

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.317082	46.90977	27.07	32.24
At most 1 *	0.161777	21.70592	20.97	25.52
At most 2	0.087595	11.27559	14.07	18.63
At most 3 *	0.033238	4.157779	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Max-eigenvalue test indicates 2 cointegrating equation(s) at the 5% level
Max-eigenvalue test indicates 1 cointegrating equation(s) at the 1% level

Table 4.3 (Contd.): The Co-integration Test Results Using Model 3 of Johansen (1995)

(d) Section 65: Textile, wearing apparel and leather industries

Series: LPM65 LPD65 LER65 LCP65
Lags interval (in first differences): 1 to 4

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.276090	74.76372	47.21	54.46
At most 1 *	0.162119	35.02386	29.68	35.65
At most 2	0.079113	13.26770	15.41	20.04
At most 3	0.025129	3.130323	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 2 cointegrating equation(s) at the 5% level
Trace test indicates 1 cointegrating equation(s) at the 1% level

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.276090	39.73986	27.07	32.24
At most 1 *	0.162119	21.75616	20.97	25.52
At most 2	0.079113	10.13738	14.07	18.63
At most 3	0.025129	3.130323	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Max-eigenvalue test indicates 2 cointegrating equation(s) at the 5% level
Max-eigenvalue test indicates 1 cointegrating equation(s) at the 1% level

(e) Section 67: Iron and steel bars, and angles shapes industries

Series: LPM67 LPD67 LER67 LCP67
Lags interval (in first differences): 1 to 4

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.223771	62.06454	47.21	54.46
At most 1 *	0.153176	30.90771	29.68	35.65
At most 2	0.067979	10.45743	15.41	20.04
At most 3	0.014514	1.798264	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 2 cointegrating equation(s) at the 5% level
Trace test indicates 1 cointegrating equation(s) at the 1% level

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None *	0.223771	31.15683	27.07	32.24
At most 1	0.153176	20.45028	20.97	25.52
At most 2	0.067979	8.659170	14.07	18.63
At most 3	0.014514	1.798264	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Max-eigenvalue test indicates 1 cointegrating equation(s) at the 5% level
Max-eigenvalue test indicates no cointegration at the 1% level

Table 4.3 (Contd.): The Co-integration Test Results Using Model 3 of Johansen (1995)

(f) Section 74: Manufacture of fabricated metal products, machinery and equipment

Series: LPM74 LPD74 LER74 LCP74
Lags interval (in first differences): 1 to 3

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.347480	101.8430	47.21	54.46
At most 1 **	0.228612	48.90572	29.68	35.65
At most 2 *	0.074656	16.71976	15.41	20.04
At most 3 **	0.055639	7.098658	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 4 cointegrating equation(s) at the 5% level
Trace test indicates 2 cointegrating equation(s) at the 1% level

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.347480	52.93728	27.07	32.24
At most 1 **	0.228612	32.18596	20.97	25.52
At most 2	0.074656	9.621102	14.07	18.63
At most 3 **	0.055639	7.098658	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Max-eigenvalue test indicates 2 cointegrating equation(s) at both 5% and 1% levels

(g) Section 82: Wood and wood products including furniture

Series: LPM82 LPD82 LER82 LCP82
Lags interval (in first differences): 1 to 3

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.197666	55.57240	47.21	54.46
At most 1	0.125682	28.26384	29.68	35.65
At most 2	0.063384	11.60926	15.41	20.04
At most 3	0.027749	3.489540	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 1 cointegrating equation(s) at both 5% and 1% levels

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None *	0.197666	27.30856	27.07	32.24
At most 1	0.125682	16.65458	20.97	25.52
At most 2	0.063384	8.119716	14.07	18.63
At most 3	0.027749	3.489540	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Max-eigenvalue test indicates 1 cointegrating equation(s) at the 5% level
Max-eigenvalue test indicates no cointegration at the 1% level

According to our results in Table 4.3, in all cases evidence is found for at least one and not more than two co-integrating relationship (however, we observed that for few sections specifically, sectors 59, 64, 65, 67, and 74, it is difficult to make case for two co-integrating relationship given the graphical representation of the relationship as depicted in Figure 4.6 below.

Figure 4.6: Graphical Representations of Cointegration Relationships and Eigenvalues

Section 12 (Food Beverage and Tobacco)

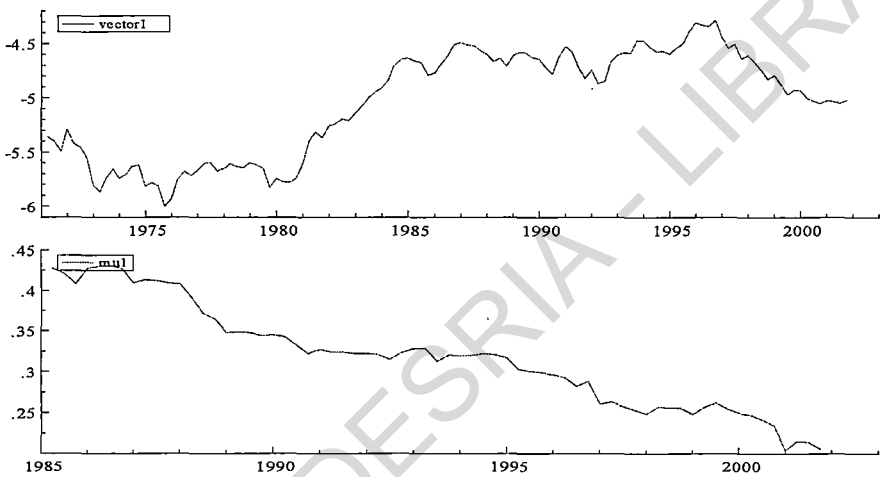
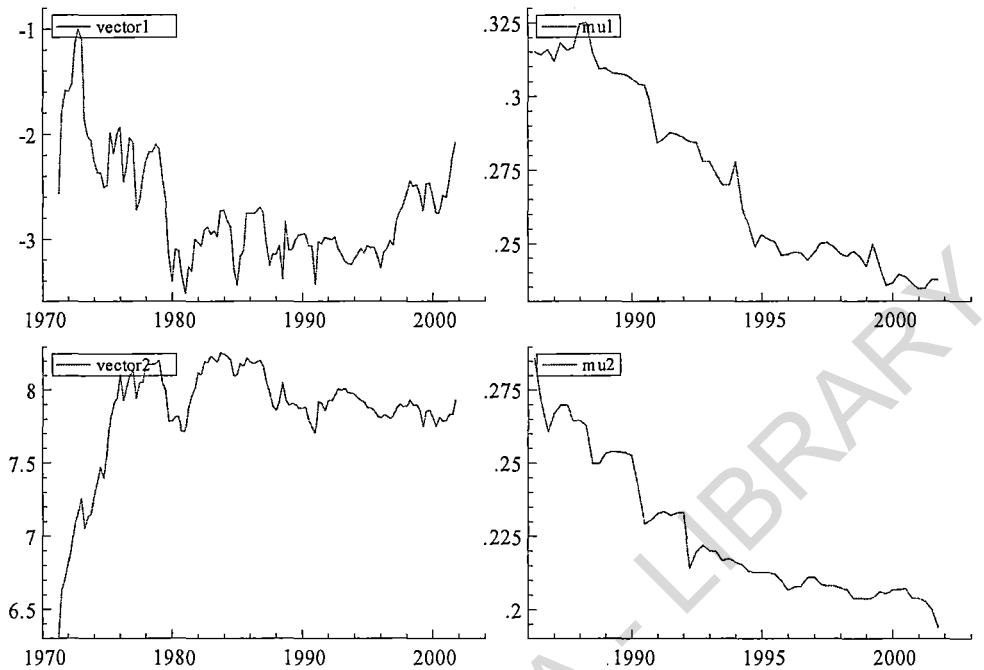


Figure 4.6 (Contd.): Graphical Representations of Cointegration Relationships and Eigenvalues

Section 59 (Chemicals and Chemical, Rubber and Plastic Products)



Section 64 (Paper and Paper Products including Printing and Publishing)

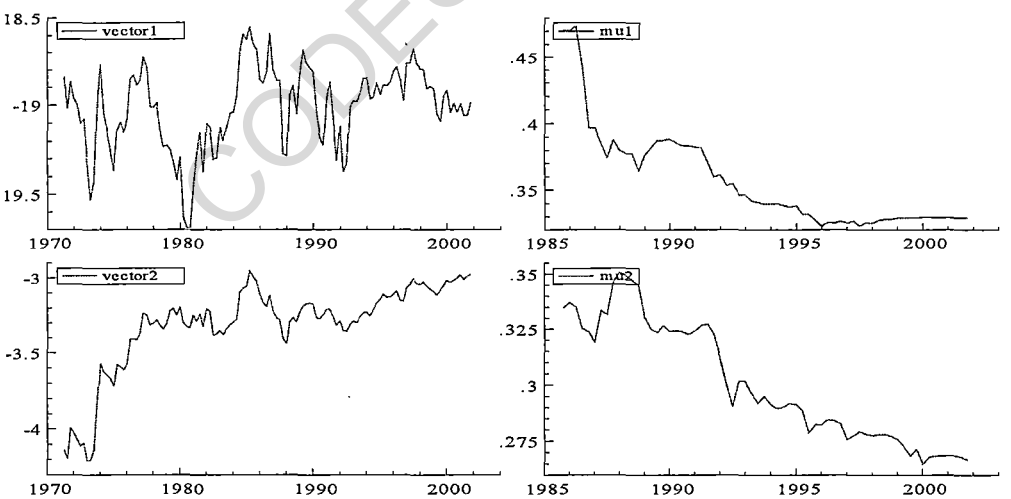
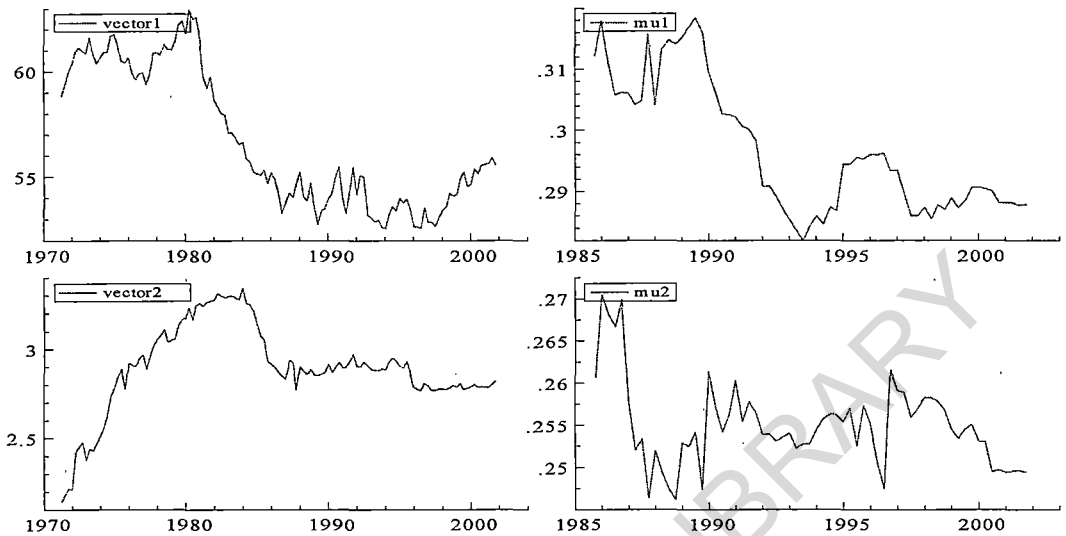


Figure 4.6 (Contd.): Graphical Representations of Cointegration Relationships and Eigenvalues

Section 65 (Textile, Wearing Apparel and Leather)



Section 67 (Iron and Steel Bars, and Angles Shapes)

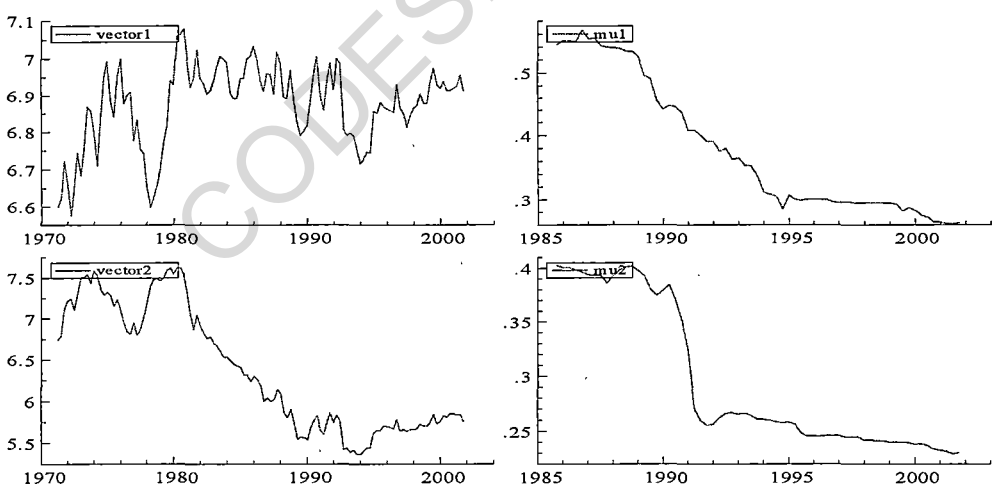
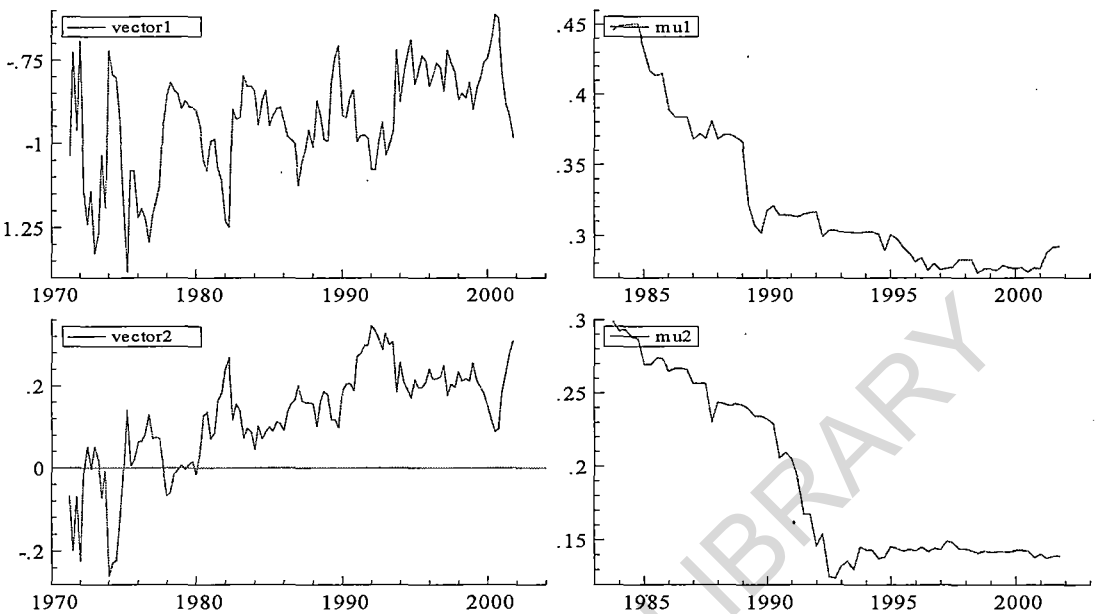
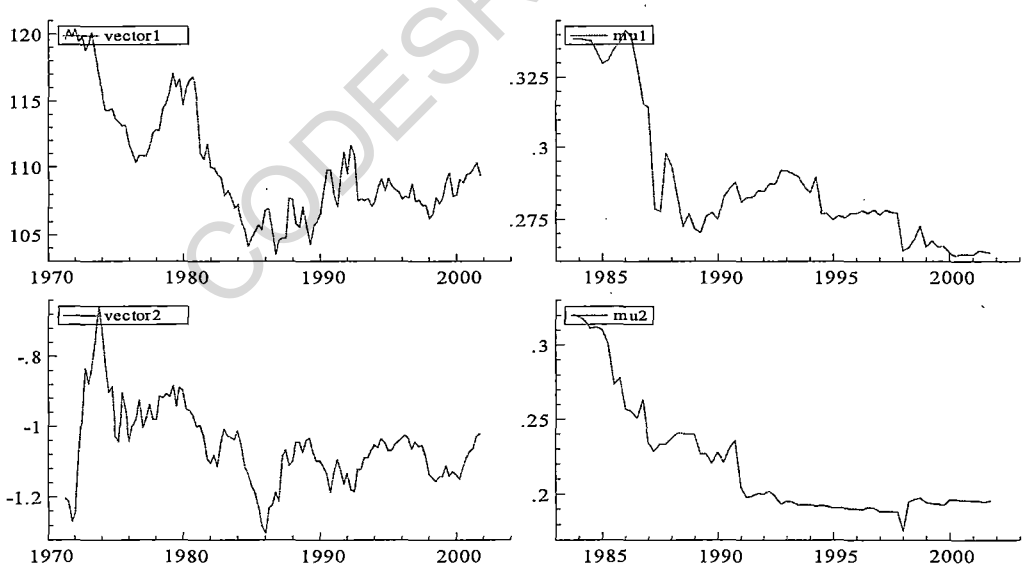


Figure 4.6 (Contd.): Graphical Representations of Cointegration Relationships and Eigenvalues

Section 74 (Fabricated Metal Products, Machinery and Equipment)



Section 82 (Wood and Wood Products including Furniture)



Next, the tests of the restrictions on the co-integration vectors were conducted jointly with a test of the hypothesis that LPD, LCP and LER are weakly exogenous[86]. Testing for weak exogeneity entails imposing restrictions on α that the α_{ij}'s are different from zero, that is, $\alpha_{ij} \neq 0$. Thus, testing for weak exogeneity in the system as a whole requires the test of the hypothesis that $H: \alpha_{ij} = 0$, for $j = 1, \ldots\ldots, r$, that is, row i contains zeros only. The test is conducted by imposing row restrictions on α to yield a new restricted model. Also, we test for cross coefficient restrictions to ascertain if the coefficient on Nigerian exporters production costs and the exchange rate are equal. In Table 4.4 below we presented the estimated co-integrating vectors.

Table 4.4: Estimates of Pass-Through

$LPM_{12} = 1.00\,LCP + 1.00\,LER + 0\,LPD$	$\chi^2(6) = 26.96[0.0001]$
$LPM_{59} = 1.00\,LCP + 1.00\,LER + 0\,LPD$	$\chi^2(6) = 31.221[0.00]$
$LPM_{64} = 1.00\,LCP + 1.00\,LCP + 0\,LPD$	$\chi^2(6) = 67.913[0.00]$
$LPM_{65} = 1.00\,LCP + 1.00\,LER + 0\,LPD$	$\chi^2(6) = 71.71[0.00]$
$LPM_{67} = 1.00\,LCP + 1.00\,LER + 0\,LPD$	$\chi^2(6) = 55.09[0.00]$
$LPM_{74} = 1.00\,LCP + 1.00\,LER + 0\,LPD$	$\chi^2(6) = 37.01\,[0.00]$
$LPM_{82} = 1.00\,LCP + 1.00\,LER + 0\,LPD$	$\chi^2(6) = 53.57\,[0.0000]$

The rejection of exclusion restriction in all the cases under consideration implies that the import unit values for each of the sectors (sectors 12 to 82), the hypothesis of full

[86] The tests for weak exogeneity was conducted to ensure that it is valid to condition on the LPD, LCP and LER variables and use single equation estimation of the dynamic relationship. Thus, the test for weak exogeneity for LPD, LCP, and LER requires restrictions to be placed on the weighting matrix, the standardized α eigenvectors.

pass-through from Nigeria's trading partners' production costs and exchange rate changes cannot be accepted. The χ^2 statistics refer to the exclusion restrictions on domestic prices and weak exogeneity, where p- value is in bracket.

4.3.5 Estimated Vector Error Correction Model

We examine the effect of the exchange rate movement, exporters foreign cost of production, and domestic output prices on import prices by estimating an error correction model (i.e. the dynamics to the long-run equilibria). As mentioned in chapter 3, this is of interest because it indicates the behaviour of the changes in import unit values over time, providing addition information on pass-through. The variables included are 3 lags of $\Delta LPM_{it}, \Delta LCP_{it}$, ΔLER_t and ΔLPD_{it} for sections 74 and 82; while we included 4 lags for sectors 12, 59, 64, 65 and 67. The equilibrium correction term generated from the co-integration equations was included as an additional channel through which the speed of pass-through can be estimated (denoted as *ecm*).

The results from the vector error correction (VECM) were subjected to a number of diagnostic checks, including stability, within equation residual serial correction, heteroscedasticity, and normality tests. Also, a Chow test for parameter constancy was graphed following recursive estimations.

For all the sectors under investigation, we confirmed that the movement of the exchange rate have positive effect on sectoral import prices. Specifically, focusing on food, beverage and tobacco (sector 12), in the short run, 1 percent depreciation leads to 13 percent increase in import prices, so one can say that part of the exchange rate shocks, though not substantial given this sector, are passed on to import prices (see Table 4.5 below). A cursory look at the other sectors represented by sectors 59; 64; 65; 67; 74 and 82 reveals that 1 percent depreciation leads to 0.13, 0.50, 0.14, 0.48,

0.18, 0.54, and 0.34 percentage increases respectively in import prices. From these results we can infer that the sectoral response as a due to the movement of the exchange rate differs across sectors. Specifically, for some sectors, such as sectors 59 and 74, above 50 percent of the movement in exchange rate are passed on to import prices.

From our results in Table 4.5, we observe that the response of foreign costs of production vary across sectors with respect to sign and degree. Specifically, the exporter's foreign costs of production have positive effect on import prices for some sectors while the results from sections 64, 65 and 74 look mixed as reported in Table 4.5. This implies that for some sectors, the suppliers of imports pass on additional costs by selling their products at higher prices.

Specifically, for sectors 12, 59, 64, 65, 67 and 82, a 1% increase in foreign costs of production results in 0.91, 0.39, 0.73, 1.26, 0.59, and 0.91 percentage increases in import prices, suggesting that suppliers pass on additional costs by selling their products at higher prices, all things being equal. A decrease in the price of an import competing good (domestic manufacturing output prices in this case) was expected to increase competition, induce supplier of imports to reduce their mark-up and sell their products (imports) at lower prices. This is supported in the estimation, as domestic manufacturing output prices for some sectors, though not significant, has positive effect. We included a dummy variable to capture the effect of liberalisation. Liberalisation has a positive effect on import prices, though not highly significant. A possible explanation is that, though the adjustment programme was introduced in 1986, the policies were introduced slowly and to date some of the policies are still not

fully implemented. This might not be unconnected with the political uprising in 1989 and 1992 due to loss of jobs and economic hardship that followed some of the policies implemented.

Table 4.5: The Results E-Views Estimates of the Adjustment to the Long Run Equilibrium Relationships

Section 12 (Food, Beverage and Tobacco)

Dependent Variable: DLPM12
Method: Least Squares
Date: 10/10/05 Time: 19:03
Sample(adjusted): 1971:1 2001:4
Included observations: 124 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.173098	0.053208	-3.253217	0.0015
DLPM12(-1)	0.194408	0.091717	2.119655	0.0363
DLPM12(-2)	0.244883	0.093474	2.619810	0.0100
DLPM12(-3)	-0.101470	0.091093	-1.113921	0.2677
DLPD12(-1)	0.008562	0.026112	0.327884	0.7436
DLPD12(-2)	0.032963	0.026015	1.267078	0.2078
DLPD12(-3)	-0.032624	0.026271	-1.241854	0.2169
DLCP12(-1)	0.062077	0.477237	0.130075	0.8967
DLCP12(-2)	0.010434	0.477122	0.021869	0.9826
DLCP12(-3)	0.905030	0.461363	1.961645	0.0523
DLER(-1)	0.128530	0.060075	2.139490	0.0346
DLER(-2)	0.001674	0.057754	0.028987	0.9769
DLER(-3)	0.046238	0.058534	0.789931	0.4313
ECM(-1)	-0.042126	0.013060	-3.225421	0.0017

R-squared	0.433657	Mean dependent var	0.020927
Adjusted R-squared	0.366726	S.D. dependent var	0.028641
S.E. of regression	0.022792	Akaike info criterion	-4.618798
Sum squared resid	0.057143	Schwarz criterion	-4.300379
Log likelihood	300.3655	F-statistic	6.479135
Durbin-Watson stat	2.058492	Prob(F-statistic)	0.000000

Table 4.5 (Contd.): The Results E-Views Estimates of the Adjustment to the Long Run Equilibrium Relationships

Section 59 (Chemicals and Chemical, rubber and plastic products)

Dependent Variable: DLPM59
Method: Least Squares
Date: 10/10/05 Time: 19:21
Sample(adjusted): 1971:2 2001:4
Included observations: 123 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.146956	0.103418	1.420990	0.1583
DLPM59(-1)	0.011756	0.095881	0.122614	0.9026
DLPM59(-2)	0.219660	0.106067	2.070951	0.0408
DLPM59(-3)	0.095762	0.108480	0.882769	0.3794
DLPM59(-4)	-0.135441	0.111050	-1.219644	0.2253
DLPD59(-1)	0.007010	0.060829	0.115238	0.9085
DLPD59(-2)	-0.029891	0.059390	-0.503303	0.6158
DLPD59(-3)	0.247895	0.088860	2.789741	0.0062
DLPD59(-4)	0.021568	0.058635	0.367838	0.7137
DLCP59(-1)	0.389058	0.367201	1.059523	0.2918
DLCP59(-2)	0.124056	0.060210	2.060404	0.0417
DLCP59(-3)	0.014756	0.345590	0.042698	0.9660
DLCP59(-4)	0.267925	0.342841	0.781485	0.4363
DLER59(-1)	0.499424	0.274789	1.817479	0.0718
DLER59(-2)	0.037089	0.105770	0.350654	0.7266
DLER59(-3)	0.019493	0.105659	0.184488	0.8540
DLER59(-4)	0.214189	0.107553	1.991470	0.0490
ECM(-1)	-0.025044	0.008263	-3.030881	0.0030

R-squared	0.114317	Mean dependent var	0.020522
Adjusted R-squared	-0.029079	S.D. dependent var	0.039466
S.E. of regression	0.040036	Akaike info criterion	-3.463640
Sum squared resid	0.168299	Schwarz criterion	-3.052101
Log likelihood	231.0139	F-statistic	0.797213
Durbin-Watson stat	2.003904	Prob(F-statistic)	0.692744

Section 64 (Paper and paper products, including printing and publishing)

Dependent Variable: DLMP64
Method: Least Squares
Date: 10/10/05 Time: 19:41
Sample(adjusted): 1971:2 2001:4
Included observations: 123 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.557885	0.303452	-1.838462	0.0688
DLMP64(-1)	0.420001	0.093729	4.480997	0.0000
DLMP64(-2)	0.040594	0.106873	0.379838	0.7048
DLMP64(-3)	0.019041	0.107394	0.177303	0.8596
DLMP64(-4)	-0.259267	0.103935	-2.494500	0.0142
DLPD64(-1)	0.095826	0.068524	1.398438	0.1649
DLPD64(-2)	0.009705	0.069154	0.140337	0.8887
DLPD64(-3)	0.032354	0.069083	0.468339	0.6405
DLPD64(-4)	0.122537	0.069192	1.770978	0.0795
DLCP64(-1)	-0.113584	0.259406	-0.437861	0.6624
DLCP64(-2)	0.477168	0.258354	1.846953	0.0676
DLCP64(-3)	0.729673	0.246046	2.965600	0.0037
DLCP64(-4)	0.152025	0.225267	0.674869	0.5012
DLER64(-1)	0.165288	0.102031	1.619976	0.1082
DLER64(-2)	0.002796	0.105204	0.026579	0.9788
DLER64(-3)	0.136914	0.065664	2.085055	0.0393
DLER64(-4)	0.027092	0.104228	0.259928	0.7954
ECM(-1)	-0.007572	0.004087	-1.852787	0.0667

R-squared	0.391726	Mean dependent var	0.021788
Adjusted R-squared	0.293243	S.D. dependent var	0.046134
S.E. of regression	0.038785	Akaike info criterion	-3.527128
Sum squared resid	0.157946	Schwarz criterion	-3.115589
Log likelihood	234.9184	F-statistic	3.977615
Durbin-Watson stat	2.195968	Prob(F-statistic)	0.000005

Table 4.5 (Contd.): The Results E-Views Estimates of the Adjustment to the Long Run Equilibrium Relationships

Section 65 (Textile, wearing apparel and leather)

Dependent Variable: DLPM65
Method: Least Squares
Date: 10/10/05 Time: 19:56
Sample(adjusted): 1971:2 2001:4
Included observations: 123 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.161285	0.127981	1.260219	0.2104
DLPM65(-1)	0.101431	0.081254	1.248317	0.2147
DLPM65(-2)	0.061526	0.080634	0.763033	0.4472
DLPM65(-3)	0.099058	0.080449	1.231320	0.2210
DLPM65(-4)	0.256727	0.081105	3.165350	0.0020
DLPD65(-1)	0.109689	0.097302	1.127304	0.2622
DLPD65(-2)	9.59E-05	0.096526	0.000994	0.9992
DLPD65(-3)	-0.134594	0.096505	-1.394691	0.1661
DLPD65(-4)	0.111832	0.091215	1.226021	0.2229
DLCP65(-1)	0.446253	0.485721	0.918743	0.3603
DLCP65(-2)	-0.237012	0.481091	-0.492655	0.6233
DLCP65(-3)	1.259827	0.469759	2.681860	0.0085
DLCP65(-4)	-0.074371	0.459880	-0.161718	0.8718
DLER65(-1)	0.104104	0.121268	0.858464	0.3926
DLER65(-2)	0.477168	0.258354	1.846953	0.0676
DLER65(-3)	0.044995	0.119251	0.377312	0.7067
DLER65(-4)	0.187964	0.120977	1.553723	0.1233
ECM(-1)	-0.049473	0.020293	-2.437890	0.0163

R-squared	0.273708	Mean dependent var	0.033929
Adjusted R-squared	0.156118	S.D. dependent var	0.047321
S.E. of regression	0.043470	Akaike info criterion	-3.299018
Sum squared resid	0.198415	Schwarz criterion	-2.887478
Log likelihood	220.8896	F-statistic	2.327648
Durbin-Watson stat	1.928559	Prob(F-statistic)	0.004758

Section 67 (Iron and steel bars, and angles shapes)

Dependent Variable: DLPM67
Method: Least Squares
Date: 10/10/05 Time: 20:22
Sample(adjusted): 1971:2 2001:4
Included observations: 123 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.012937	0.007099	1.822441	0.0712
DLPM67(-1)	0.182217	0.098685	1.846456	0.0676
DLPM67(-2)	-0.051698	0.100599	-0.513905	0.6084
DLPM67(-3)	0.057499	0.109037	0.527334	0.5991
DLPM67(-4)	0.139515	0.106600	1.308772	0.1935
DLPD67(-1)	-0.088654	0.071542	-1.239193	0.2180
DLPD67(-2)	-0.119016	0.071510	-1.664329	0.0990
DLPD67(-3)	0.078548	0.071218	1.102923	0.2726
DLPD67(-4)	0.011490	0.070589	0.162775	0.8710
DLCP67(-1)	0.597953	0.175559	3.405989	0.0009
DLCP67(-2)	0.432149	0.293857	1.470611	0.1444
DLCP67(-3)	0.050295	0.279833	0.179734	0.8577
DLCP67(-4)	-0.248416	0.273605	-0.907938	0.3660
DLER67(-1)	0.113184	0.105111	1.076802	0.2840
DLER67(-2)	0.182217	0.098685	1.846456	0.0676
DLER67(-3)	0.003433	0.103300	0.033234	0.9736
DLER67(-4)	0.027951	0.103869	0.269095	0.7884
ECM(-1)	-0.026899	0.017157	-1.567835	0.1199

R-squared	0.171723	Mean dependent var	0.015954
Adjusted R-squared	0.037621	S.D. dependent var	0.040660
S.E. of regression	0.039887	Akaike info criterion	-3.471056
Sum squared resid	0.167055	Schwarz criterion	-3.059517
Log likelihood	231.4700	F-statistic	1.280540
Durbin-Watson stat	2.002451	Prob(F-statistic)	0.219488

Table 4.5 (Contd.): The Results E-Views Estimates of the Adjustment to the Long Run Equilibrium Relationships

Section 74 (Fabricated metal products, machinery and equipment)

Dependent Variable: DLPM74
Method: Least Squares
Date: 10/10/05 Time: 20:38
Sample(adjusted): 1971:1 2001:4
Included observations: 124 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.073287	0.042087	-1.741343	0.0844
DLPM74(-1)	0.067883	0.097554	0.695849	0.4880
DLPM74(-2)	0.089254	0.098058	0.910221	0.3647
DLPM74(-3)	-0.031898	0.099629	-0.320169	0.7494
DLPD74(-1)	0.012487	0.106345	0.117417	0.9067
DLPD74(-2)	0.219826	0.099522	2.208808	0.0293
DLPD74(-3)	-0.107330	0.090458	-1.186521	0.2380
DLCP74(-1)	0.087985	0.088483	0.994369	0.3222
DLCP74(-2)	0.097589	0.078682	1.240287	0.2175
DLCP74(-3)	-0.028585	0.091236	-0.313303	0.7546
DLER74(-1)	0.052512	0.135053	0.388824	0.6982
DLER74(-2)	0.540203	0.301775	1.790085	0.0762
DLER74(-3)	0.064292	0.135149	0.475712	0.6352
ECM(-1)	-0.053800	0.021522	-2.499750	0.0139

R-squared	0.431762	Mean dependent var	0.020927
Adjusted R-squared	0.375953	S.D. dependent var	0.028641
S.E. of regression	0.022625	Akaike info criterion	-4.647714
Sum squared resid	0.057334	Schwarz criterion	-4.374784
Log likelihood	300.1583	F-statistic	7.736405
Durbin-Watson stat	2.042124	Prob(F-statistic)	0.000000

Section 82 (Wood and wood products including furniture)

Dependent Variable: DLPM82
Method: Least Squares
Date: 10/10/05 Time: 20:45
Sample(adjusted): 1971:1 2001:4
Included observations: 124 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.597953	0.175559	-3.405989	0.0009
DLPM82(-1)	0.066879	0.094922	0.704571	0.4826
DLPM82(-2)	0.150554	0.092616	1.625574	0.1069
DLPM82(-3)	0.037027	0.094438	0.392078	0.6958
DLPD82(-1)	0.609285	0.432817	1.407720	0.1620
DLPD82(-2)	1.059018	0.425463	2.489093	0.0143
DLPD82(-3)	0.904100	0.424383	2.130387	0.0354
DLCP82(-1)	0.913677	0.294798	3.099335	0.0025
DLCP82(-2)	0.540203	0.301775	1.790085	0.0762
DLCP82(-3)	0.184577	0.289185	0.638266	0.5246
DLER82(-1)	0.341118	0.140779	2.423071	0.0169
DLER82(-2)	0.046476	0.122705	0.378758	0.7056
DLER82(-3)	0.051200	0.127982	0.400053	0.6899
ECM(-1)	-0.019915	0.010649	-1.870168	0.0640

R-squared	0.324551	Mean dependent var	0.011452
Adjusted R-squared	0.244725	S.D. dependent var	0.056438
S.E. of regression	0.049048	Akaike info criterion	-3.086023
Sum squared resid	0.264629	Schwarz criterion	-2.767605
Log likelihood	205.3335	F-statistic	4.065743
Durbin-Watson stat	2.074649	Prob(F-statistic)	0.000019

The deviations from the co-integrating relationships measured by ECM_t are statistically significant with the exception of section 67 (Table 4.5). The coefficients are correctly signed for all the sectors, which provide support to the validity of the co-integrating relationship estimated, which lies in a range 0.01 to 0.05. In particular, we note that approximately 5 percent of previous disequilibrium is corrected each quarter in the case of section 65 import unit values, while in the case of section 64 about 1 percent of past disequilibrium is eliminated each quarter. Notably, the speed of adjustment is higher in the case of section 65 (textile, wearing apparel and leather). This signifies the role played by incomplete pass-through especially in the short run in each of these sectors. Therefore, based on the coefficient of –0.05 for section 65 import unit values, it implies that when import unit values exceed their long run relationship with the trading partners' production costs and the exchange rate, they adjust downwards at a rate of 5 percent each quarter.

All things being equal, a decrease in price of an import competing good was expected to increase competitive pressure, induce suppliers of imports to reduce their mark-up and sell their products (imports) at lower prices. This is not supported in the estimation in section 59, as manufacturing output prices instead have negative effect; however, we observed mixed results from section 67 and 74, though the coefficients are all significant but the exception of section 12 which is almost significant.

At varying degrees, our result reveals that the estimates indicate that exchange rate movement and foreign costs of production account for some of changes in import prices as reported in Table 4.5. Specifically, these sectors are sections 12, 59, 64, 65

and 82. Table 4.6 reports the variance decomposition. The estimates indicate that the weight of the exchange rate shocks on import prices progressively increases.

Table 4.6: Variance Decomposition of Import Prices

Section 12 (Food, Beverage and Tobacco)

Period	S.E.	LPM12	LPD12	LER	LCP12
1	0.022925	100.0000	0.000000	0.000000	0.000000
2	0.034594	99.08867	0.176073	0.618667	0.116589
3	0.046590	98.09560	1.146698	0.657788	0.099909
4	0.054825	97.61827	1.672541	0.622580	0.086613
5	0.061588	96.22660	2.499790	0.690048	0.583566
6	0.066269	94.62394	3.928296	0.606098	0.841668
7	0.069817	92.57762	5.872075	0.684048	0.866255
8	0.072713	89.70785	8.288546	1.184096	0.819510
9	0.075469	86.07412	11.02063	2.143901	0.761350
10	0.078127	81.94582	13.43386	3.808029	0.812290

Section 59 (Chemicals and Chemical, rubber and plastic products)

Period	S.E.	LPM59	LPD59	LER59	LCP59
1	0.040273	100.0000	0.000000	0.000000	0.000000
2	0.057210	99.40901	0.335355	0.009804	0.245833
3	0.076008	99.05817	0.508412	0.106363	0.327052
4	0.093335	98.85419	0.495683	0.249973	0.400155
5	0.106389	98.44001	0.676947	0.250959	0.632081
6	0.119162	97.78538	1.101253	0.221068	0.892302
7	0.130313	97.06739	1.675888	0.191066	1.065652
8	0.141079	95.94314	2.648536	0.215498	1.192829
9	0.151650	94.65713	3.835996	0.228778	1.278091
10	0.161617	93.49255	4.959193	0.238901	1.309354

Section 64 (paper and paper products, including printing and publishing)

Period	S.E.	LMP64	LPD64	LER64	LCP64
1	0.036864	100.0000	0.000000	0.000000	0.000000
2	0.059721	98.13993	1.069679	0.393505	0.396887
3	0.076622	97.48036	1.756659	0.314976	0.448000
4	0.090208	97.49240	1.954927	0.228778	0.323892
5	0.098482	97.77208	1.640776	0.310165	0.276977
6	0.103658	97.26053	1.624898	0.861743	0.252825
7	0.107214	95.95345	1.885703	1.906873	0.253977
8	0.110277	93.78338	2.434772	3.389658	0.392191
9	0.113168	91.05142	3.010716	5.433857	0.504012
10	0.115800	88.19992	3.358366	7.871467	0.570249

Table 4.6 (Contd.): Variance Decomposition of Import Prices

Section 65 (textile, wearing apparel and leather)

Period	S.E.	LPM65	LPD65	LER65	LCP65
1	0.042631	100.0000	0.000000	0.000000	0.000000
2	0.062175	97.67519	1.335592	0.724984	0.264236
3	0.078648	96.04658	2.134928	1.647805	0.170682
4	0.092579	95.03208	1.761992	2.024435	1.181493
5	0.107760	94.93435	1.983172	1.580058	1.502415
6	0.120457	94.01547	2.245109	1.934353	1.805073
7	0.132247	92.46443	2.808311	2.779975	1.947285
8	0.142854	90.68999	3.291961	3.707136	2.310913
9	0.152197	89.12144	3.797928	4.458710	2.621922
10	0.160441	87.33043	4.274814	5.528554	2.866201

Section 67 (iron and steel bars, and angles shapes)

Period	S.E.	LPM67	LPD67	LER67	LCP67
1	0.038014	100.0000	0.000000	0.000000	0.000000
2	0.054613	99.51612	0.096905	0.286173	0.100801
3	0.063228	98.62235	0.867284	0.351530	0.158836
4	0.069677	98.66712	0.777612	0.292019	0.263247
5	0.077540	97.18681	1.579804	0.249851	0.983539
6	0.083772	95.50935	2.845655	0.215720	1.429270
7	0.087641	93.71277	4.198703	0.433416	1.655109
8	0.091501	91.08486	6.123945	1.168601	1.622599
9	0.095863	88.10211	8.218915	2.138160	1.540812
10	0.099569	85.47797	9.905987	3.165600	1.450443

Section 74 (fabricated metal products, machinery and equipment)

Period	S.E.	LPM74	LPD74	LER74	LCP74
1	0.050997	100.0000	0.000000	0.000000	0.000000
2	0.069926	99.17458	0.129190	0.087290	0.608940
3	0.084279	97.47539	0.863669	0.154136	1.506806
4	0.093306	96.84294	1.453464	0.126166	1.577429
5	0.099368	97.10885	1.362787	0.118127	1.410233
6	0.104298	97.33995	1.241981	0.107873	1.310198
7	0.108243	97.40493	1.198624	0.108420	1.288024
8	0.111274	97.37213	1.256911	0.134175	1.236787
9	0.113871	97.18129	1.434277	0.198877	1.185560
10	0.116152	96.83578	1.713922	0.299346	1.150953

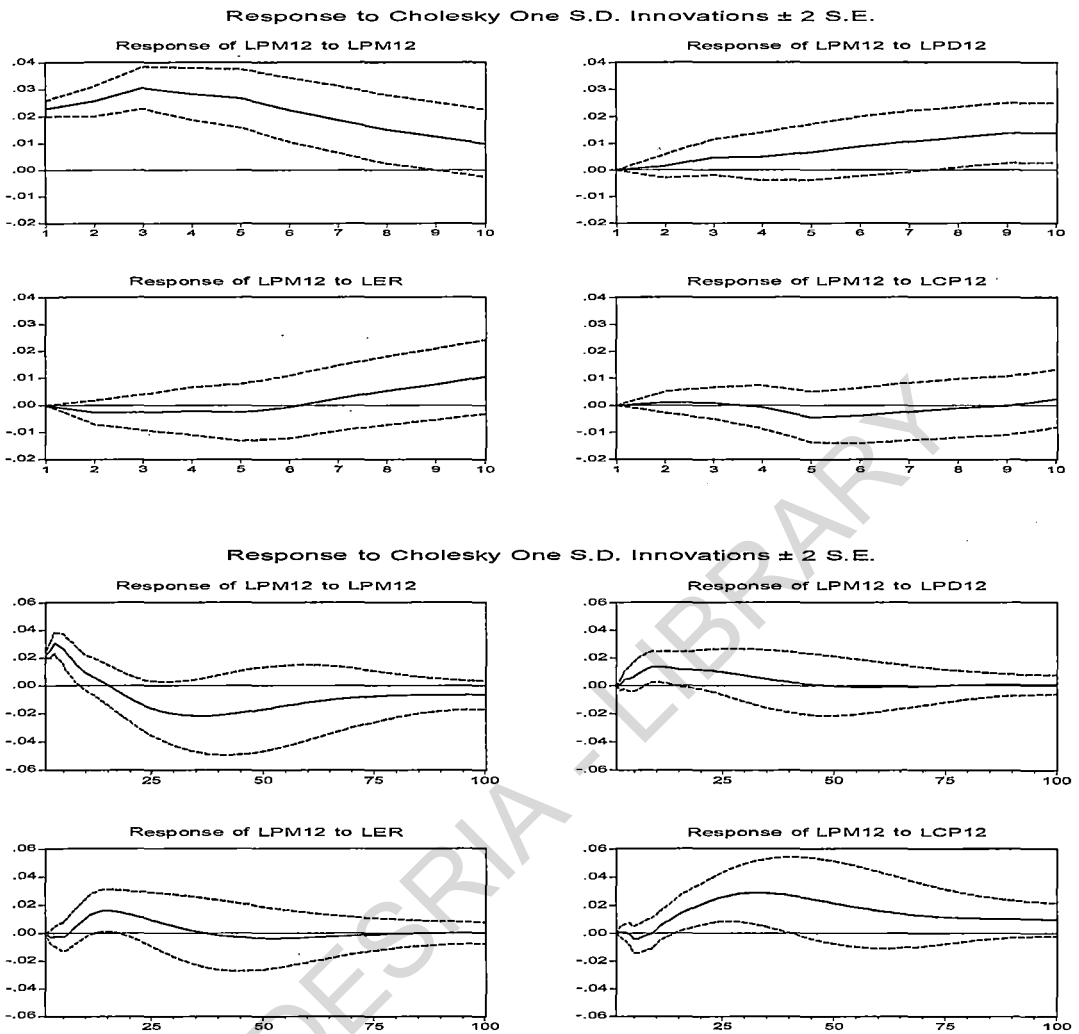
Section 82 (wood and wood products including furniture)

Period	S.E.	LPM82	LPD82	LER82	LCP82
1	0.048345	100.0000	0.000000	0.000000	0.000000
2	0.072304	96.41307	0.121147	0.591381	2.874402
3	0.092479	94.18961	1.439496	1.994148	2.376747
4	0.112164	90.69513	3.203251	4.394615	1.707007
5	0.130082	87.56373	4.823040	6.070386	1.542843
6	0.145356	84.99351	6.200049	7.192523	1.613921
7	0.157966	82.48502	7.151677	8.674920	1.688383
8	0.168402	80.06268	7.802159	10.33919	1.795973
9	0.176835	77.89299	8.210809	11.89658	1.999622
10	0.183502	75.86399	8.389799	13.47339	2.272823

The impulse response is reported in Figure 4.7 below. The results show that at varying degree movement in the exchange rate and foreign cost of production leads to increase in import prices. For sectors 12, 64, 67 and 82 the results show that an exchange rate shock leads to a sharp increase in import prices, most especially in the first quarter before they gradually dissipate. The exceptions are impulse responses for sectors 59 and 67 which take persistent over a longer period.

Figure 4.7: The Impulse Response

Section 12 (Food, Beverage and Tobacco)



Section 59 (Chemicals and Chemical, rubber and plastic products)

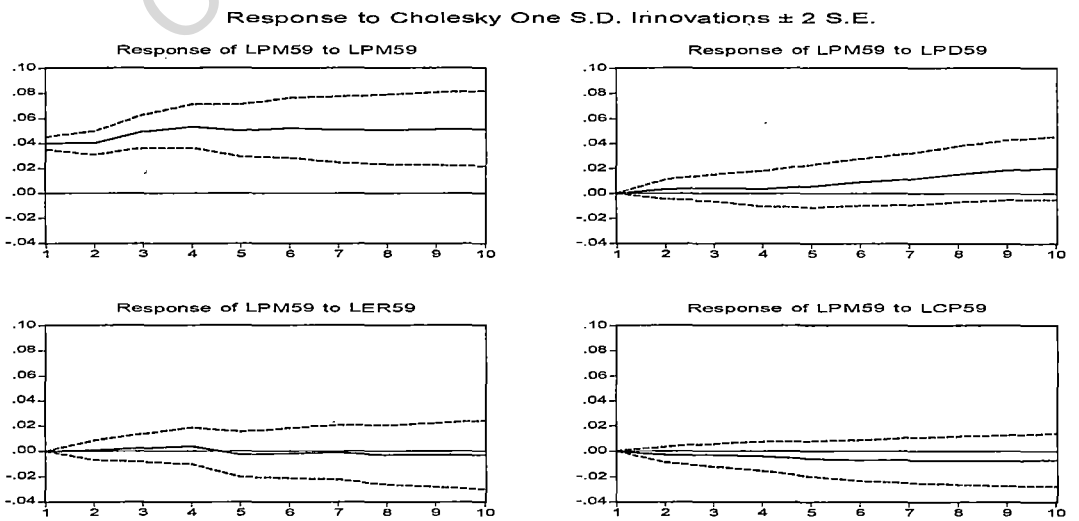
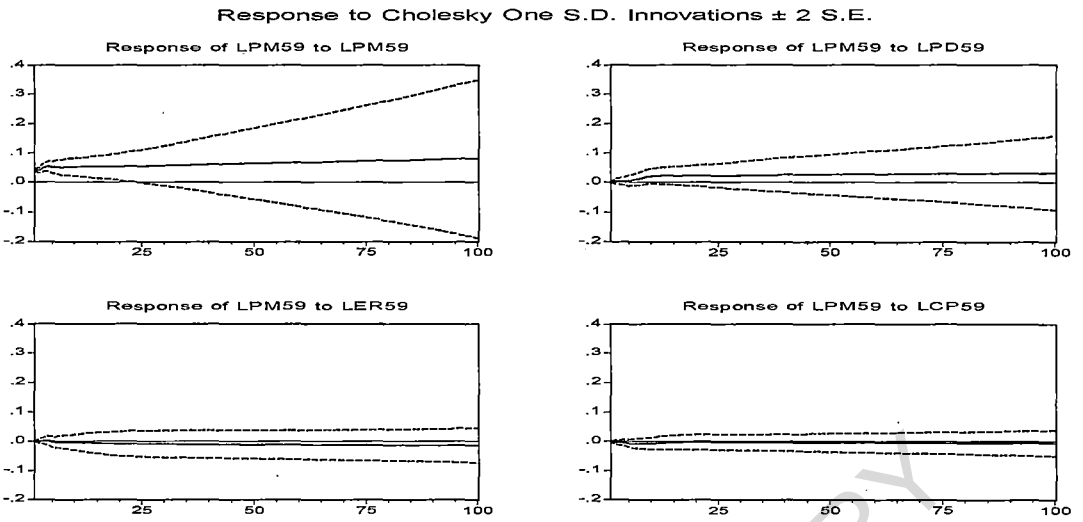
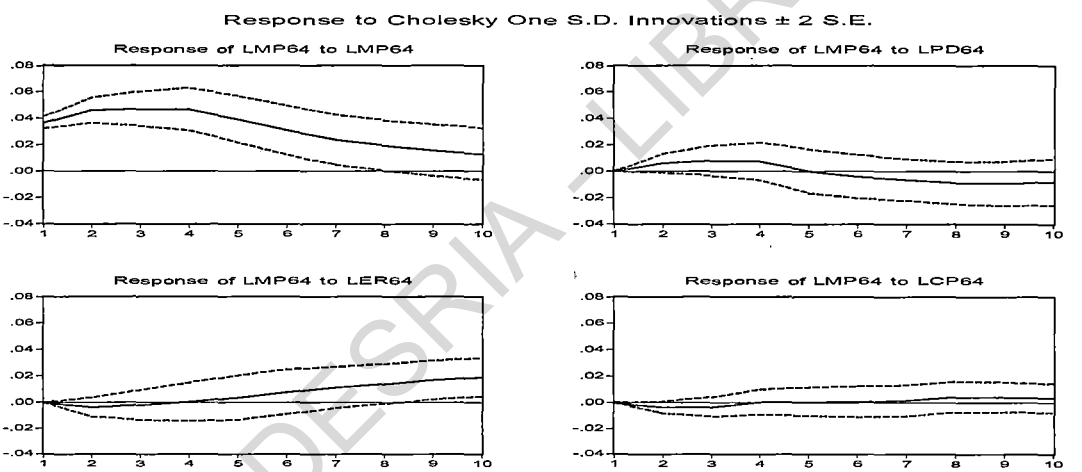


Figure 4.7 (Contd.): The Impulse Response



Section 64 (Paper and paper products, including printing and publishing)



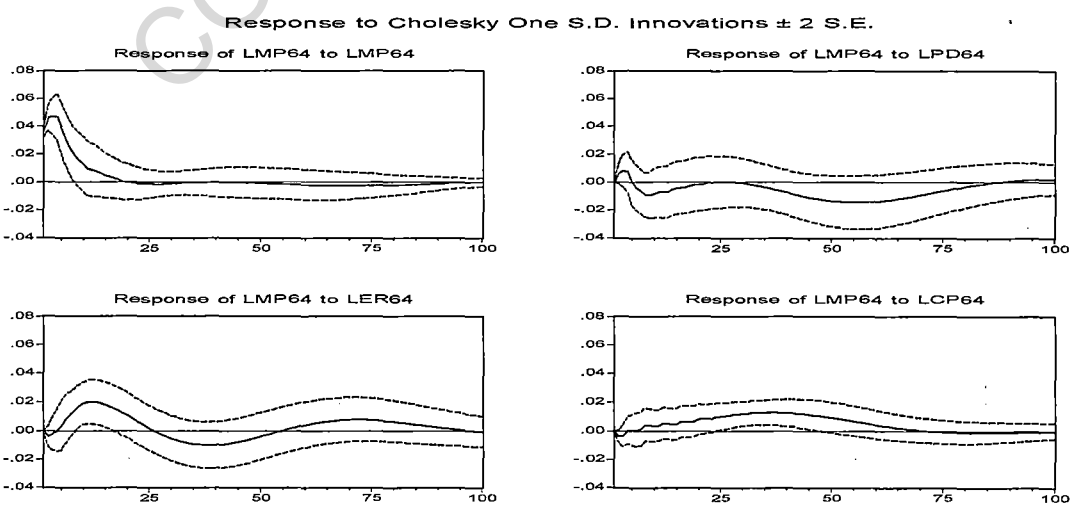
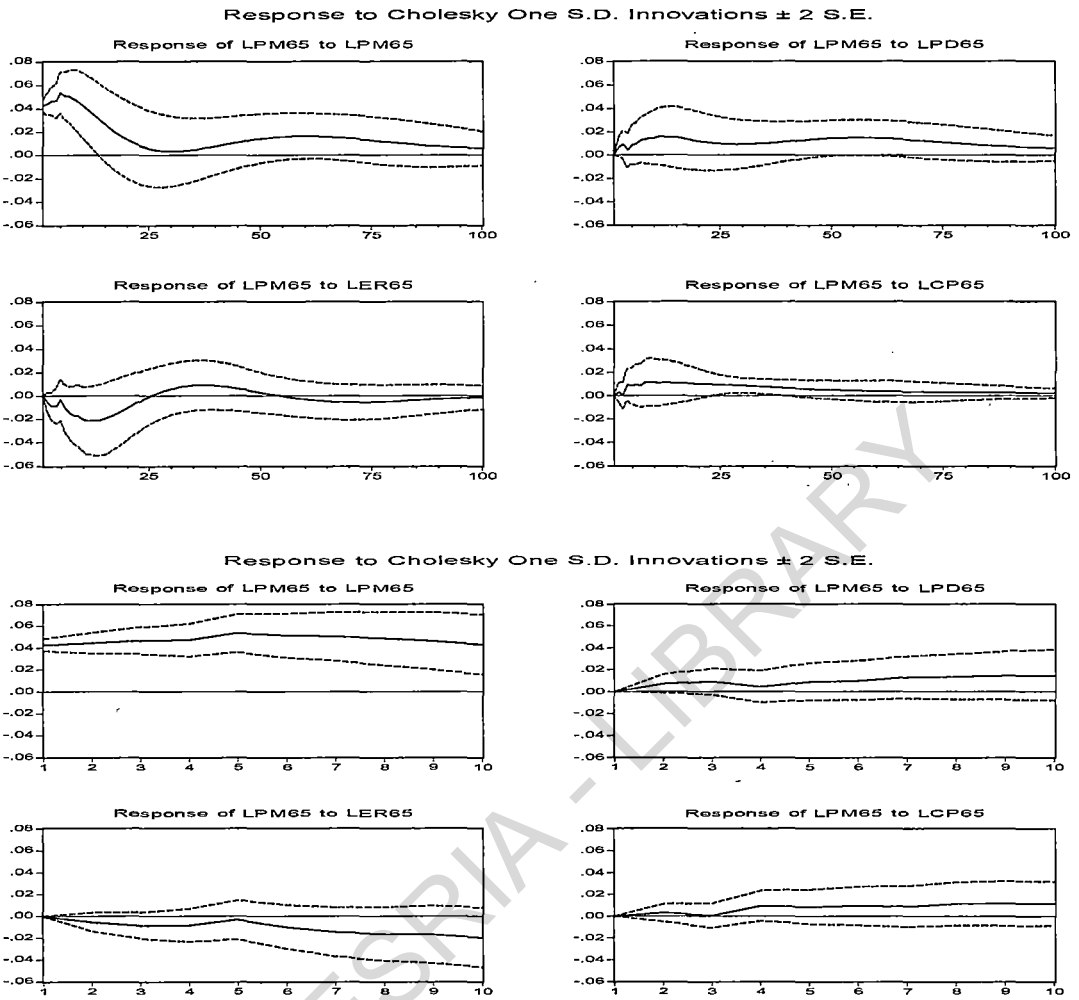


Figure 4.7 (Contd.): The Impulse Response

Section 65 (Textile, wearing apparel and leather)



Section 67 (Iron and steel bars, and angles shapes)

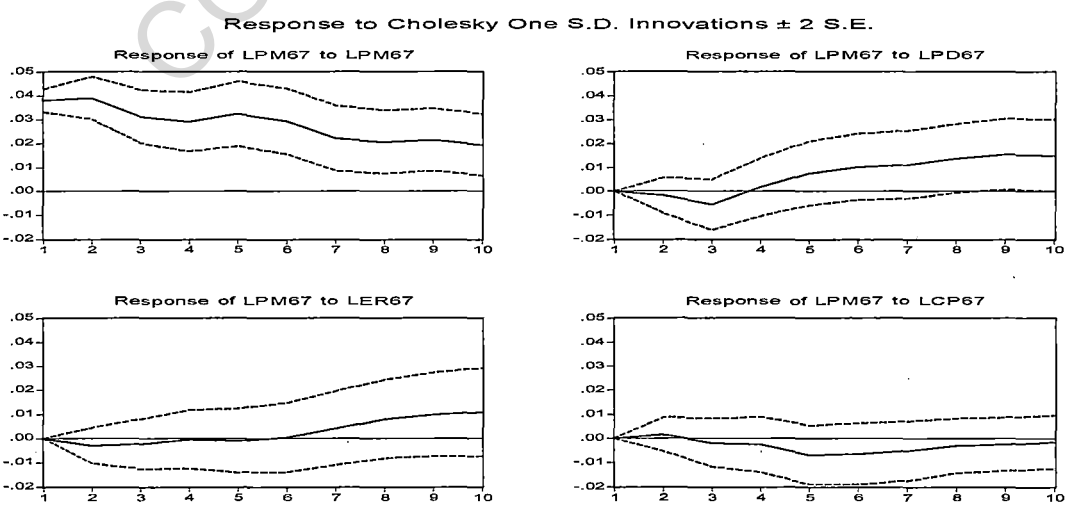
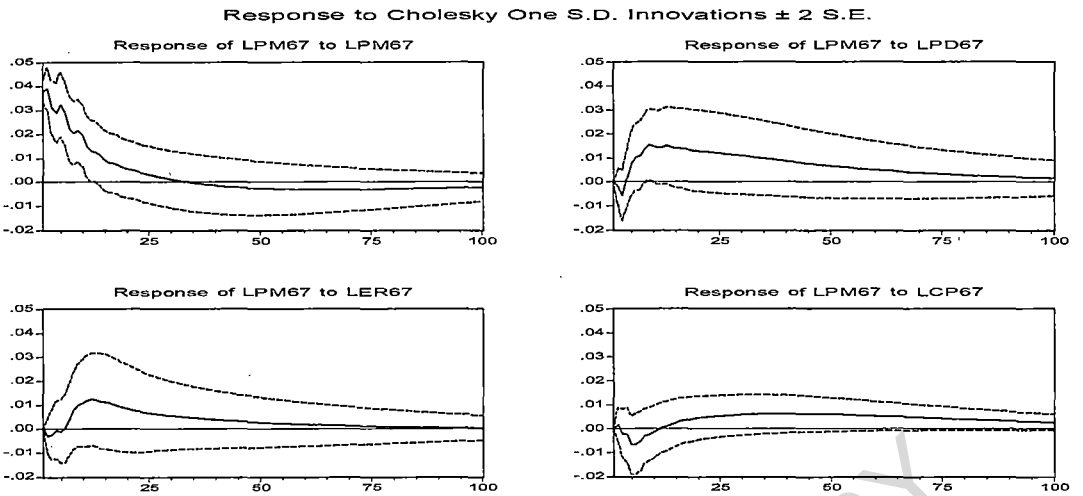


Figure 4.7 (Contd.): The Impulse Response



Section 74 (Fabricated metal products, machinery and equipment)

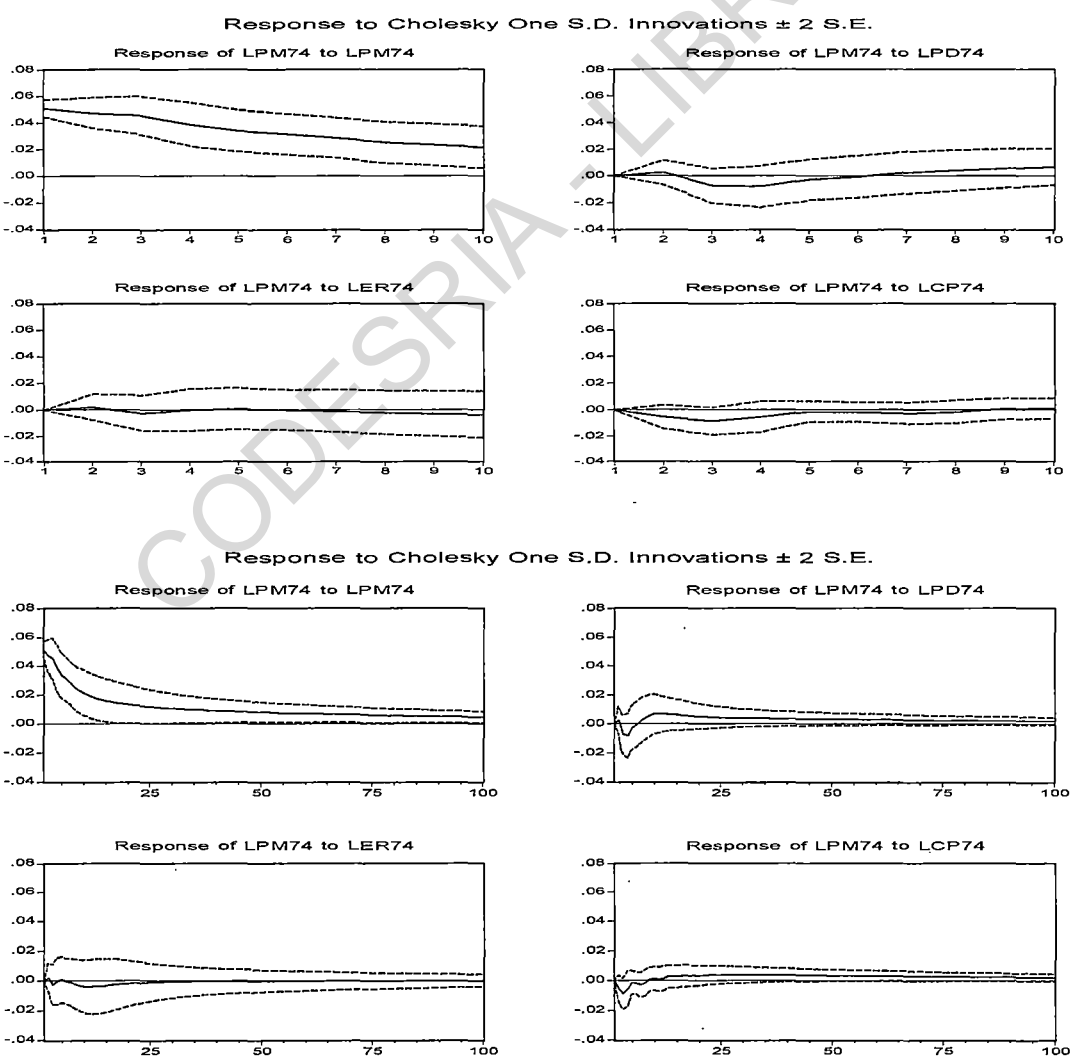


Figure 4.7 (Contd.): The Impulse Response

Section 82 (Wood and wood products including furniture)

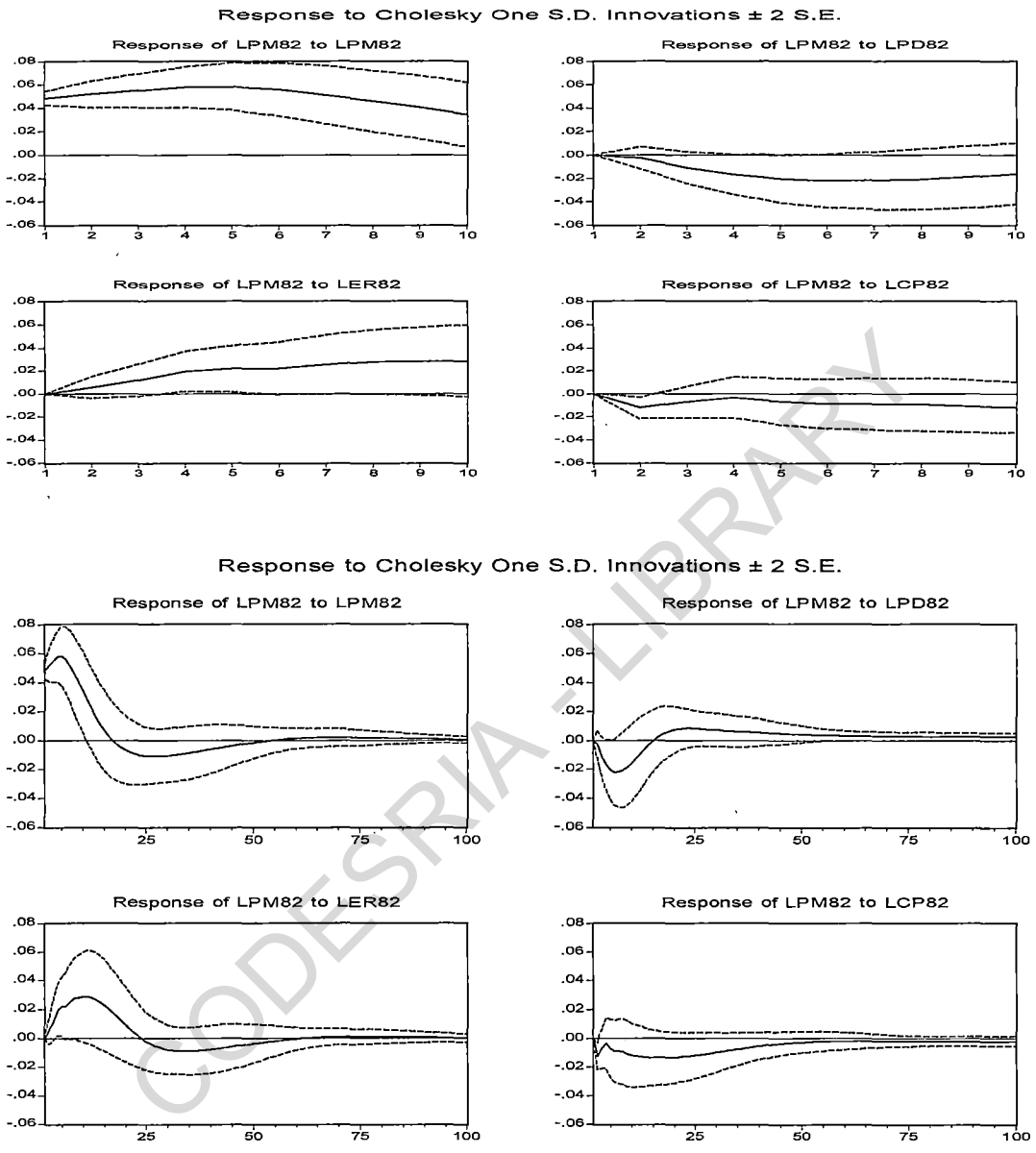
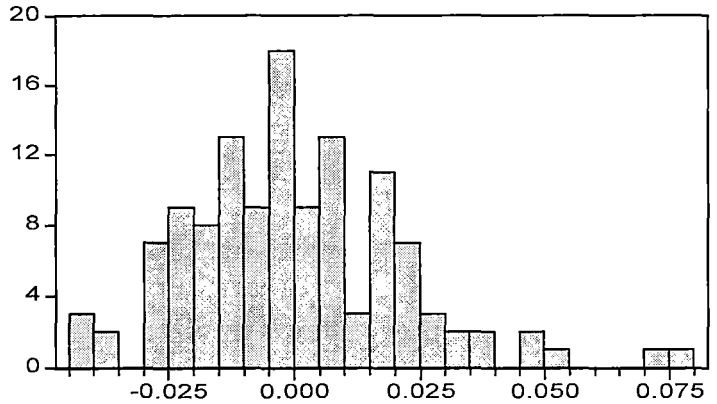


Table 4.7 below shows the diagnostics for the sectoral data. For almost all the sectors, the error correction model passed all the diagnostic tests. The Jargue-Bera statistic, however, suggests that the residuals are not normally distributed, except sectors 59, 64,and 67. The serial correlation LM statistics errors show no evidence for autocorrelated errors, whilst the ARCH LM statistics show the absence of

autoregressive conditional heteroscedasticity in the residuals. In addition, the White's statistic shows that the null hypothesis of no heteroscedasticity cannot be rejected and the RESET shows that the model is correctly specified. Also, a plot of the recursive residuals, as depicted in Table 4.7, shows that the residuals are inside the standard error bands suggesting no evidence of structural breaks.

Table 4.7: Results of the Diagnostic Tests

Section 12 (Food, Beverage and Tobacco)



Series: Residuals	
Sample 1971:1 2001:4	
Observations 124	
Mean	6.50E-17
Median	-0.001945
Maximum	0.078320
Minimum	-0.044132
Std. Dev.	0.021554
Skewness	0.727404
Kurtosis	4.194840
Jarque-Bera	18.31122
Probability	0.000106

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.903875	Probability	0.099836
Obs*R-squared	10.30745	Probability	0.066978

ARCH Test:			
F-statistic	0.940425	Probability	0.457782
Obs*R-squared	4.753974	Probability	0.446637

White Heteroskedasticity Test:			
F-statistic	1.438844	Probability	0.104007
Obs*R-squared	34.51257	Probability	0.122599

Ramsey RESET Test:			
F-statistic	1.936686	Probability	0.166862
Log likelihood ratio	2.183859	Probability	0.139464

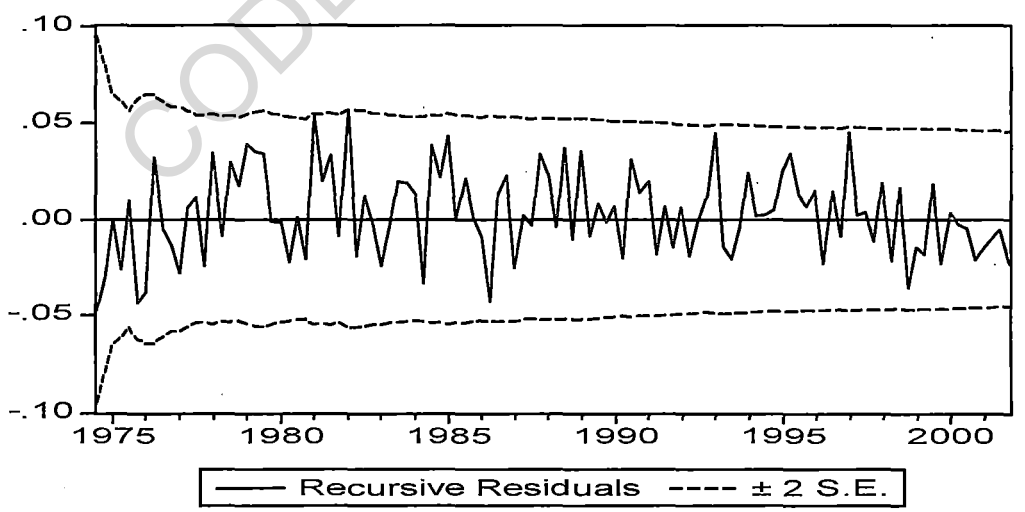
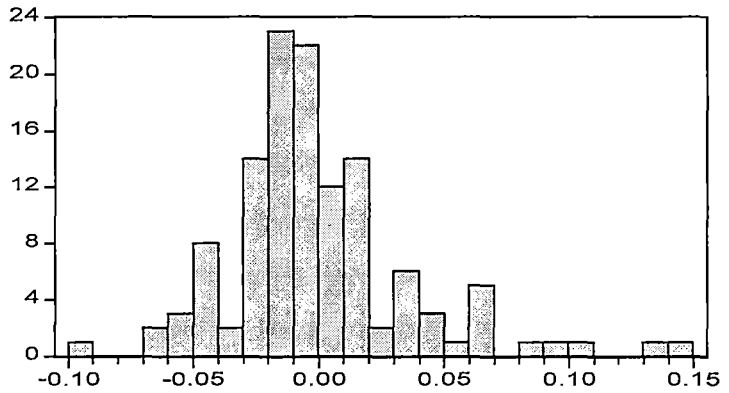


Table 4.7 (Contd.): Results of the Diagnostic Tests

Section 59 (Chemicals and Chemical, rubber and plastic products)



Series: Residuals	
Sample 1971:2 2001:4	
Observations 123	
Mean	3.20E-17
Median	-0.007071
Maximum	0.145148
Minimum	-0.099267
Std. Dev.	0.037142
Skewness	1.143166
Kurtosis	5.786039
Jarque-Bera	66.57031
Probability	0.000000

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.483919	Probability	0.747488
Obs*R-squared	2.312982	Probability	0.678406

ARCH Test:			
F-statistic	12.75123	Probability	0.000000
Obs*R-squared	36.78427	Probability	0.000000

White Heteroskedasticity Test:			
F-statistic	1.801633	Probability	0.014869
Obs*R-squared	50.48006	Probability	0.034195

Ramsey RESET Test:			
F-statistic	0.000259	Probability	0.987195
Log likelihood ratio	0.000306	Probability	0.986041

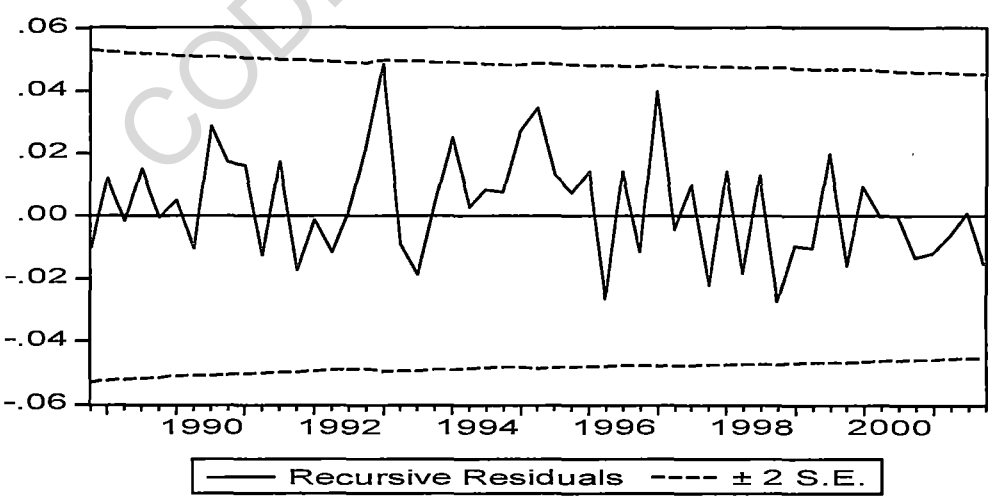
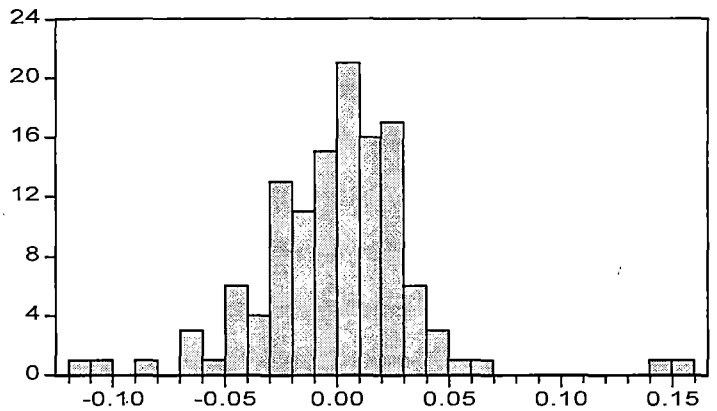


Table 4.7 (Contd.): Results of the Diagnostic Tests

Section 64 (Paper and paper products, including printing and publishing)



Series: Residuals
Sample 1971:2 2001:4
Observations 123

Mean	5.14E-17
Median	0.001311
Maximum	0.155202
Minimum	-0.115785
Std. Dev.	0.035981
Skewness	0.518731
Kurtosis	7.899762
Jarque-Bera	128.5555
Probability	0.000000

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	3.350750	Probability	0.007698
Obs*R-squared	17.65006	Probability	0.003419

ARCH Test:			
F-statistic	1.620795	Probability	0.160258
Obs*R-squared	7.962008	Probability	0.158342

White Heteroskedasticity Test:			
F-statistic	2.562252	Probability	0.000228
Obs*R-squared	61.18974	Probability	0.002874

Ramsey RESET Test:			
F-statistic	0.231171	Probability	0.631667
Log likelihood ratio	0.273101	Probability	0.601259

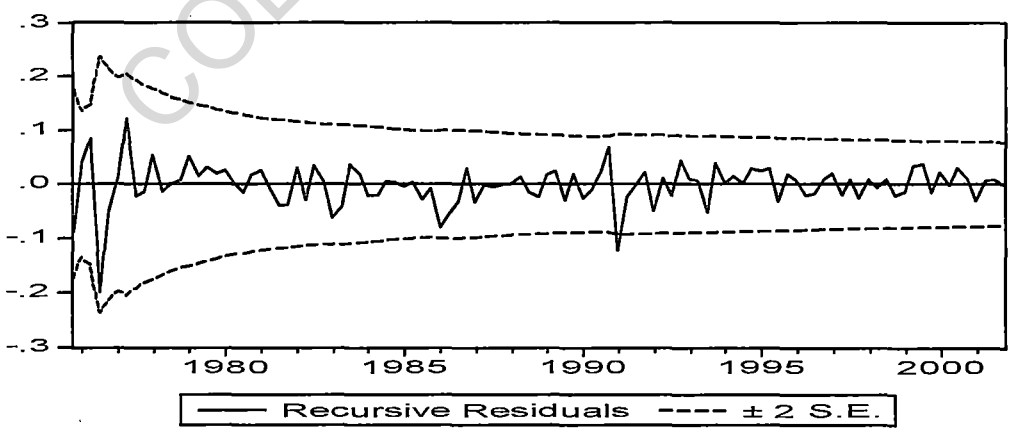
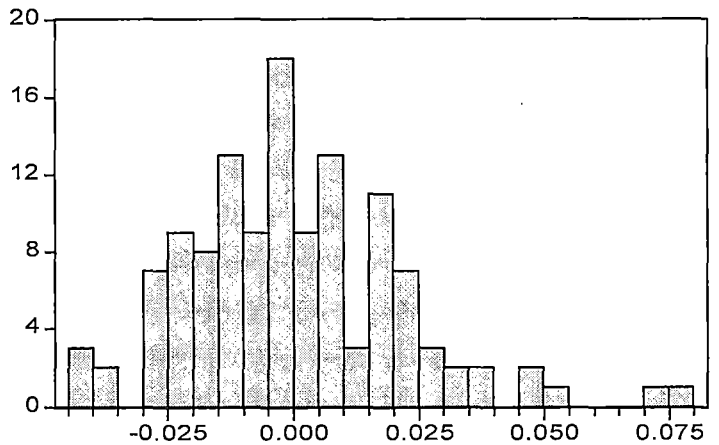


Table 4.7 (Contd.): Results of the Diagnostic Tests

Section 65 (Textile, wearing apparel and leather)



Series: Residuals	
Sample 1971:1 2001:4	
Observations 124	
Mean	6.50E-17
Median	-0.001945
Maximum	0.078320
Minimum	-0.044132
Std. Dev.	0.021554
Skewness	0.727404
Kurtosis	4.194840
Jarque-Bera	18.31122
Probability	0.000106

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.240162	Probability	0.296095
Obs*R-squared	7.181674	Probability	0.207476

ARCH Test:			
F-statistic	0.173955	Probability	0.971797
Obs*R-squared	0.909310	Probability	0.969544

White Heteroskedasticity Test:			
F-statistic	2.207920	Probability	0.001646
Obs*R-squared	56.62330	Probability	0.008767

Ramsey RESET Test:			
F-statistic	10.81182	Probability	0.001376
Log likelihood ratio	12.16514	Probability	0.000487

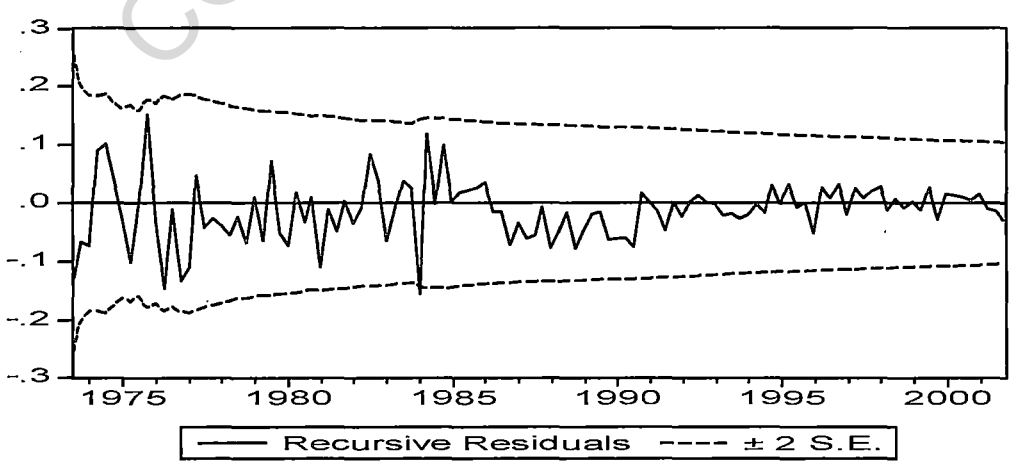
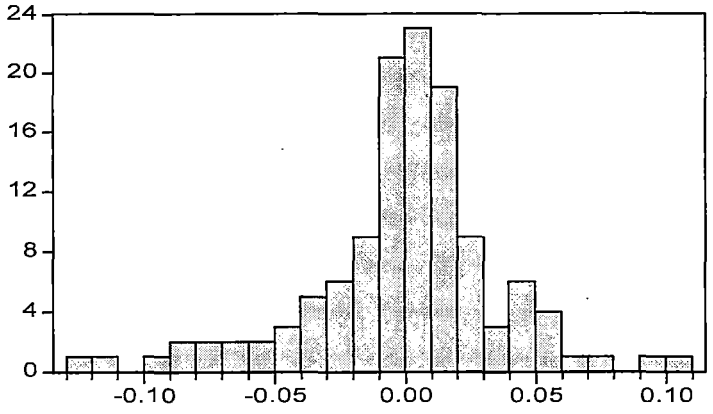


Table 4.7 (Contd.): Results of the Diagnostic Tests

Section 67 (Iron and steel bars, and angles shapes)



Series: Residuals	
Sample 1971:2 2001:4	
Observations 123	
Mean	-2.10E-18
Median	0.003301
Maximum	0.106225
Minimum	-0.125332
Std. Dev.	0.037004
Skewness	-0.559913
Kurtosis	4.862141
Jarque-Bera	24.19809
Probability	0.000006

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	8.219300	Probability	0.000002
Obs*R-squared	35.82562	Probability	0.000001

ARCH Test:			
F-statistic	7.564829	Probability	0.000004
Obs*R-squared	29.78992	Probability	0.000016

White Heteroskedasticity Test:			
F-statistic	2.439465	Probability	0.000453
Obs*R-squared	59.68021	Probability	0.004192

Ramsey RESET Test:			
F-statistic	3.163267	Probability	0.078234
Log likelihood ratio	3.685404	Probability	0.054891

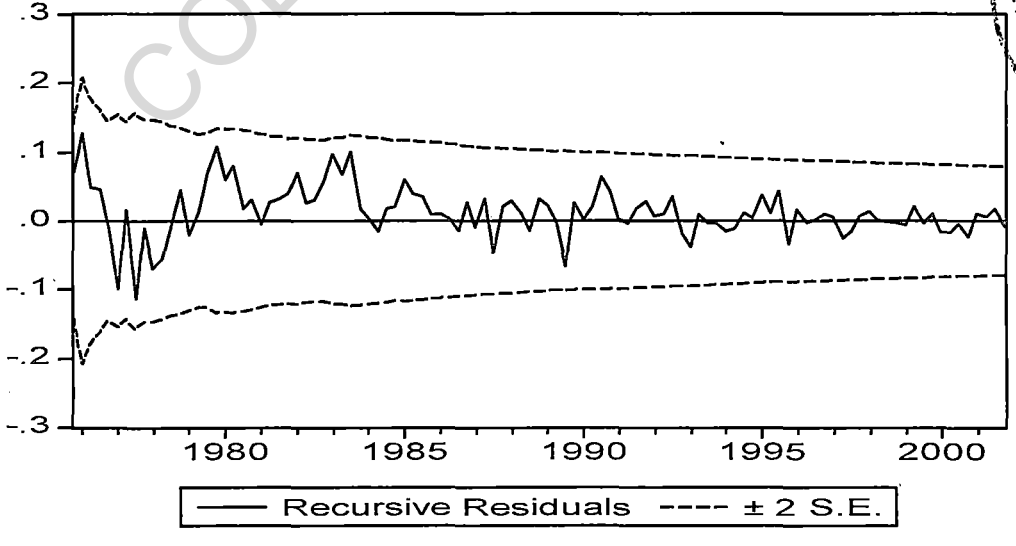
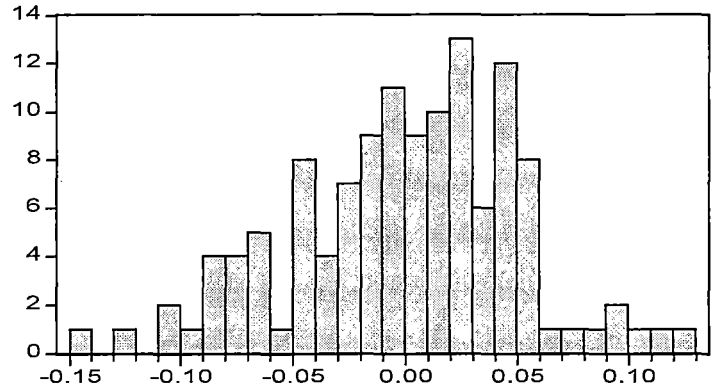


Table 4.7 (Contd.): Results of the Diagnostic Tests

Section 74 (Fabricated metal products, machinery and equipment)



Series: Residuals	
Sample 1971:1 2001:4	
Observations 124	
Mean	1.07E-17
Median	0.003400
Maximum	0.120617
Minimum	-0.141077
Std. Dev.	0.049606
Skewness	-0.276024
Kurtosis	3.100152
Jarque-Bera	1.626408
Probability	0.443435

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.855676	Probability	0.493222
Obs*R-squared	3.878677	Probability	0.422674

ARCH Test:			
F-statistic	2.587213	Probability	0.040519
Obs*R-squared	9.907249	Probability	0.042019

White Heteroskedasticity Test:			
F-statistic	1.747587	Probability	0.026788
Obs*R-squared	39.55581	Probability	0.043105

Ramsey RESET Test:			
F-statistic	0.164205	Probability	0.686109
Log likelihood ratio	0.186661	Probability	0.665710

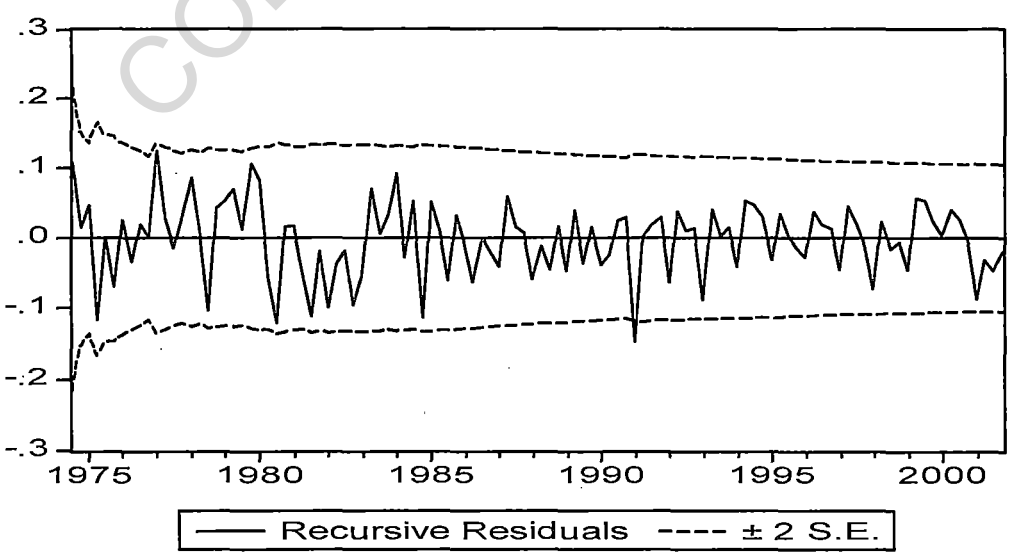
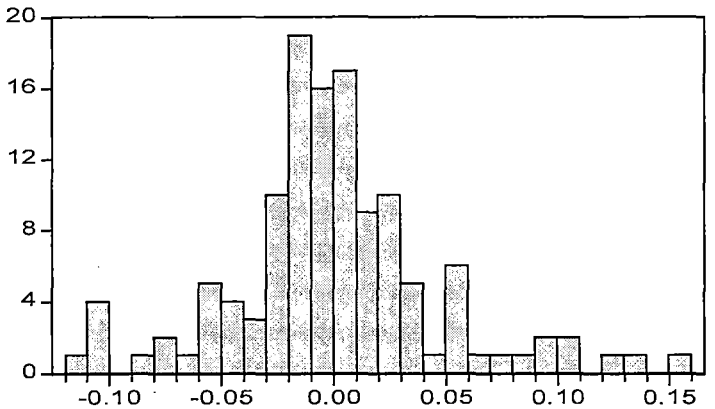


Table 4.7 (Contd.): Results of the Diagnostic Tests

Section 82 (Wood and wood products including furniture)



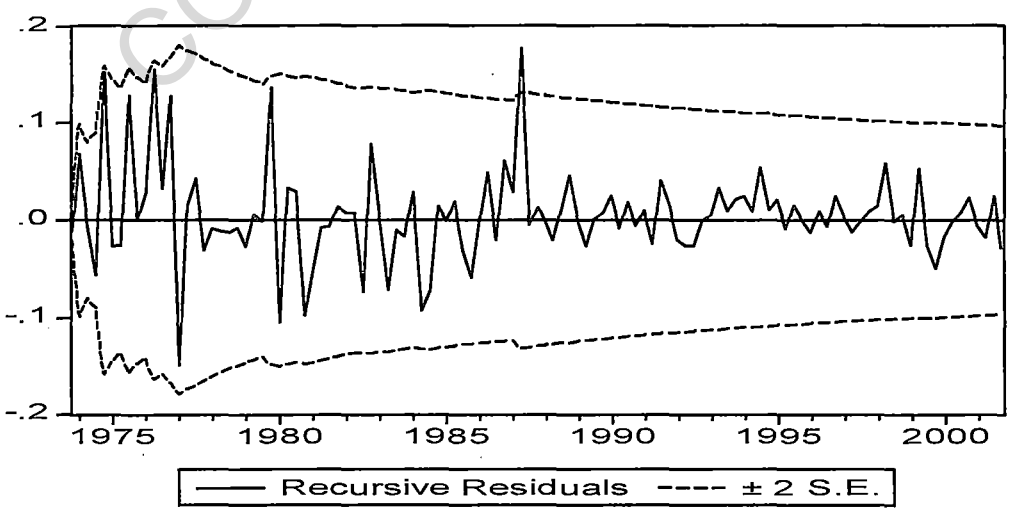
Series: Residuals	
Sample 1971:1 2001:4	
Observations 124	
Mean	2.54E-16
Median	-0.003264
Maximum	0.151700
Minimum	-0.112807
Std. Dev.	0.046384
Skewness	0.458149
Kurtosis	4.474952
Jarque-Bera	15.57793
Probability	0.000414

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	4.594254	Probability	0.001845
Obs*R-squared	18.32131	Probability	0.001068

ARCH Test:			
F-statistic	1.303297	Probability	0.272990
Obs*R-squared	5.203943	Probability	0.267004

White Heteroskedasticity Test:			
F-statistic	1.317242	Probability	0.168274
Obs*R-squared	32.35691	Probability	0.181583

Ramsey RESET Test:			
F-statistic	0.528938	Probability	0.468613
Log likelihood ratio	0.600273	Probability	0.438474



4.4 Summary of Findings and Conclusion

As in chapter 3, this chapter examines the degree of pass-through from producers' costs and the exchange rate to the prices of Nigeria imports from her major trading partners but using quarterly disaggregated sectoral data. We employed the Vector Autoregressive (VAR) approach to investigate the pass-through of the exchange rate fluctuations to import prices using cointegration analysis, an error correction model, impulse response functions and variance decompositions.

The results suggest no evidence of full pass-through from the exchange rate and the major trading partners' producer costs for the dis-aggregated import unit values and for all sectors under consideration for the sample period 1970q1 to 2001q4. Sectoral speeds of adjustment are similar for sectors 12, 64, 67 and 74 at -0.01. The speed of adjustment to equilibrium for sector 65 estimated as -0.19 implies a quicker adjustment rate, which is attributable to the importance of this sector for total Nigerian imports. In fact, from early 1970s there has been consistent increase in imports for products within this sector.

The policy implication of our results, i.e. incomplete pass-through, is that exchange rate policy may be a blunt instrument when used to restore external balance since relative price adjustments will be limited[87]. Also, the incomplete pass-through suggests that exchange rate changes are likely to lead to smaller real effects on the economy through lower changes in both the terms of trade and import volumes and finally, the extent of inflation (deflationary) effects of exchange rate depreciation (appreciation) operating through changes in the prices of imported goods will be moderated.

[87] This is connected with the fact that the variations in the exchange rate are not completely reflected in domestic prices of imports in Nigeria.

CHAPTER 5

THE INPUT – OUTPUT MODEL

5.1 Introduction

It is widely believed in government circles that the growing dominance of oil in the Nigeria sector may have encouraged a decline in other sectors of the economy, particularly agriculture, and in consequence altered the pattern of inter-sectoral flows within the economy. As a first step towards realizing the much desired diversification of the economy, the government introduced the structural adjustment programme (SAP) in July 1986. As mentioned earlier, the adjustment programme was designed to restructure the production and consumption pattern of the economy, remove distortions, and enhance the role of the market in resource allocation. To achieve these objectives, the government embarked on monetary, fiscal, trade, interest rates and exchange rate reforms as a means to removing bureaucratic control and other inhibiting factors on the economy.

Given the reforms, the germane questions are, what is the chain reaction caused by the reforms on the inter-sectoral flow in the entire economy? Specifically, what is the nature of inter-sectoral relationship, which existed before and after the introduction of the adjustment programme in Nigeria? If the export of Nigerian agricultural products rises as a result of the depreciated naira, what is the impact on other domestic industries? What is the impact of imports, intermediate and final, on sectoral output? Finally, how has the movement in prices and exchange rate affected inter-sectoral relationship?

In chapter 3, we estimated exchange rate pass-through using time series data; however, our primary objective in this chapter is to ascertain if there are changes in

the inter-sectoral relationship since the introduction of the SAP[88]. Also, we intend to examine the influence of prices and exchange rate on sectoral output using the Input-Output technique (i.e. pass-through). We believe this study would provide useful guide as to what areas of economic activity need to be reactivated in the pursuit of the current drive towards diversification of the economy away from over-dependence on oil production.

Ever since the development of the input-output models by Wassily Leontief (1951), input–output (henceforth, I-O) models have been given a great deal of attention by economists, as well as national and regional planning authorities throughout the world. These authorities, both in developed and developing countries, have recognised the potential usefulness of the I-O tool in simplifying and guiding the planning process. Indeed, the increased interest brought about significant advances, both methodologically and empirically, which extends the range of areas and problems that could be handled by I-O models far beyond those originally intended by Leontief.

An I-O model simulates the flow of goods and services between the different sectors of an economy based on certain internal and external parameters. The model in its working can be compared to a piano. A piano key when pressed emits a corresponding sound. More than one key can be pressed at the same time and a key could be pressed in various sequences with each leading to different outcomes, which could either be melodious or jarring.

[88] This, we assume, might be due to exchange rate and price movements.

Similarly, the I-O model has certain key decision variables. A particular variable, a few variables or a combination or sequence of variables can be assigned values (corresponding to economic, business or policy decisions) and the I-O model will simulate what will happen to the economy. The result might be beneficial (melodious) or harmful (jarring) depending upon the decisions taken (keys pressed) and the values of the society (tastes of the audience).

Unlike the piano model, there is not one player but a host of them. Thus, the I-O model approximates a whole orchestra, rather than a single instrument. Next, we briefly discuss the historical development of the I-O model.

5.2 Brief Historical Development of the Input – Output Model

The basic framework for I-O analysis originated about 250 years ago when Francois Quesenay published *Tableau Economique* in 1758. Quesenay's 'tableau' graphically and numerically portrayed the relationships between sales and purchases of the various industries of an economy. More than a century later Quesenay's description of the relationships between sales and purchases was adopted by Leon Walras (1877) who advanced I-O modelling by providing a concise theoretical formulation of an economic system[89].

It is not until the twentieth century, however, that economists advanced and tested

[89] The Walrasian system explains the interdependence among productive sectors of the economy in terms of the competing demands of each industry for factors of production and the substitutability among their outputs in consumption. Walras' model contains sets of equations for consumer income and expenditure, production cost in each sector, and total demand and supply of commodities and factors of production. For further details see Balderston (1954); Kuenne (1954); Dorfman, Samuelson and Solow (1958) chapter 13.

Walras's work. Wassily Leontief, simplified Walras's theoretical formulation by assuming that both technology and trading patterns were fixed over time[90]. These two assumptions meant that the pattern of flows among industries in an area could be considered stable.

Leontief used this technique in 1936 when he developed a model of the 1919 and 1929 US economies to estimate the effects of the end of World War 1 on national employment. His model illustrates how the outputs of various industries and the prices of their products react to changes in productivity and savings. Since the work of Wassily Leontief, the I-O models have achieved a level of popularity and many nations now publish I-O tables. The I-O tracks intermediate purchases (industry to industry) and final purchases (industry to households and industry to government); and intermediate and final sales.

[90] Although, Wassily Leontief was credited with creating the field of Input-Output economics, he also made fundamental contributions to other areas of economics. His empirical research on the pattern of trade in the United States led to the well-known Leontief paradox, which contradicts the Heckscher-Ohlin prediction that a country abundant in a factor input should export the good, which uses that factor input more intensively. For details see Leontief (1947).

5.3 Input – Output Model: Definitions; Data Sources; and Classification of Industry/Sector

5.3.1 Definitions of Input-Output Model

The I-O model has been defined in various ways. One of the pioneering definitions of I-O model was given by Chenery and Clark (1959), who defined it as the quantitative analysis of the interdependence of producing and consuming units in a modern economy. Specifically, it studies the interrelations among producers as buyers of each others' output, as users of scarce resources, and as sellers to final consumers. Miernyk (1965) regards the I-O model as an economic model that represents the economy as a set of sales and purchases between sectors, final demands and payments to labour, capital, profits and indirect business taxes. Chen and Wu (1990) define the I-O model as a linear, inter-sectoral model of output determination.

From these definitions, we infer that the I-O model shows how production levels in one sector generate successive rounds of demand for the products of other sectors. Thus, the emphasis of the I-O model is on the linkages between sales and purchases of inputs. Recently, but in broad terms, Emerson (2002) defines the I-O model as a quantitative framework of analysis for examining the complicated interdependence within the production system of an economy. This implies that the I-O analysis is a method of systematically quantifying the mutual interrelationships among the various sectors of a complex economic system. It shows a balanced and complete picture of the flows of products in the economy and illustrates the relationships between

producers and consumers of goods and services. Next, we provide definition of technical concepts in the I-O table.

5.3.2 Definition of Concepts in the Input-Output Table

5.3.2.1 Final Demand

This is made up of private final consumption and the government final consumption expenditures. The private final consumption expenditures reflect the purchases of goods and services by individuals and by private non-profit institutions serving households. The government final consumption expenditure consist of current expenditure on goods and services which government produced for its own use on current account.

5.3.2.2 Change in Stocks

This is equal in principle to the market value at the owning establishment of the physical change during a period of account in stocks of materials, supplies, work-in-progress except on construction projects, finished products, livestock raised for slaughter and merchandise held by resident industries and in stock of strategic material and emergency stocks of important products held by the government services. The increase in stocks covered in this research includes the inventories of finished goods, semi-finished goods, work-in-progress, and inventories of raw materials. The stock changes recorded were mainly for the manufacturing and mining establishments. The stocks held by households were entered into the corresponding private consumption row, and not treated as stocks.

5.3.2.3 Gross Fixed Capital Formation

According to the United Nations System of National Accounts (UNSNA, 1968), the gross fixed capital formation consists of 'addition to the assets of producers of tangible reproducible goods which have an expected lifetime of use of one year or more'. The producers in question may be industries, producers of government services and producers of private non-profit services to households. Gross fixed capital formation here covers the following items: acquisitions by producers for civilian use of tangible assets which have an estimated lifetime of use of one year or more, except land and similar non-reproducible tangible assets. However, government outlays on construction and machinery and durable equipment primarily intended for military use, are classified in the study as intermediate consumption rather than gross fixed capital formation.

5.3.2.4 External Transactions

This entails both exports and imports of goods and services. Adjustments for illegal transactions and for undervaluation of legal export are sometimes difficult to make. Nevertheless, the CBN made some adjustments for coverage and valuation for such exports of goods and services[91].

The competitive imports were classified according to the various sectors, and as such may be regarded as additions to local production. However, in the final demand

[91] The data for the exports of goods and services can be found in the *Review of External Trade* published by the FOS and from *Statistical Bulletin* published by the CBN.

column, all entries in the import column were shown as negative.

5.3.2.5 Final Output

From basic National Income Accounting, one of the three approaches to measuring national output is the product method or the value added approach. The 'value added' approach entails adding up the value added by the producers of goods and services. However, in various studies value added has been defined in several ways.

According to the U.S department of Agricultural, Rural Business and Cooperative Service (2002), 'value added is a change in the physical state or form of the product (such as milling wheat into flour or making strawberries into jam); or the production of a product in a manner that enhances its value, as demonstrated through a business plan (such as organically produced products); or the physical segregation of an agricultural commodity or product in a manner that results in the enhancement of the value of that commodity or product (such as an identity preserved marketing system)'.

However, for the purpose of this research, we defined value added as the difference between the gross output and the intermediate purchases. Though a number of countries estimate this by relying on tax and other income statistics for their national accounts, the components of value added are wages and salaries, capital consumption allowance, indirect business tax less subsidy, and operating surplus in the case of the industries. In the I-O transactions table, the entries at the end of each column represent the total outputs of each sector.

5.3.2.6 Firm and Industry

A transactions table consists of a collection of industries and sectors. According to Tiebout (1962) 'industries refer to aggregate of firms producing similar products while sectors refer to the kinds of market that industries serve'. Thus, all firms engaged in production of similar goods, or providing similar services make up an industry.

However, as used in the I-O model, the concept of the industry is fuzzy because of the problem of overlapping production. Many large manufacturing firms, as an illustration, produce more than one product. The same firm might manufacture automobiles, refrigerators, television sets and perhaps a wide range of other products. Generally, in this research, a firm is classified on the basis of its *principal* product. If a firm is engaged primarily in the manufacture of automobiles, it is included in the automobile industry.

Therefore, the classification of industries and sectors in an I-O table raises a number of technical problems. The aggregation problem or the 'index number problem' is as old as the science of economic statistics. A useful method for solving the problem of overlapping production in defining an industry was developed by Florence (1948) though this is not relevant in our context. So, for the present purpose, and as mentioned earlier, the industries are classified on the basis of their *principal* products and it is assumed that within any industry the products are relatively homogeneous.

5.3.2.7 Technical Coefficient

After an Input-Output table has been constructed for a given year, the next step is to derive a table of input or technical coefficients from it. By definition, technical

coefficients describe the amount of inputs required from each industry to produce one naira worth of output of a given industry. It shows how many kobo of each producing industry's goods or services are required to produce one naira of the consuming industry's production[92]. Technical coefficients are usually calculated for processing industries/sectors and are usually expressed either in monetary or physical terms. In this study, the I-O table is expressed in kobo per naira of direct purchases. However, obtaining technical coefficient entails two main steps.

Theoretically, the first step involves adjustment of gross output, by subtracting inventory depletion for the year the table is constructed. The second step in the calculation of technical coefficients consists of dividing all the entries (inputs) in each industry's column by the adjusted gross output for that industry.

5.3.3 Data Sources

Our major sources of data are the National Accounts, the Annual Abstract of Statistics, the Digest of Statistics and Economic Indicators, all published by the Federal Office of Statistics (FOS) and unpublished FOS Industrial Census data. Other sources include the Statistical Bulletin, the Annual Report and Statement of Accounts, and the Economic and Financial Review[93], published by Central Bank of Nigeria (CBN). In some instance, especially where further clarity is essential, the author contacted some government agencies and departments for further relevant information[94].

[92] Note, 100 kobo is equivalent to ₦1
[93] Various issues of these publications by the FOS and the CBN were consulted.
[94] In this regard, the author would like to thank the Deputy Head, Research Department, Central Bank of Nigeria (CBN), Lagos, not only for assistance during the data collection but also for providing useful information on the data collected.

5.3.4 Classification of Industry/Sector

The Nigerian economy is divided into various production sectors according to United Nations International Standard Industrial Classification (1992) scheme, employed by the Federal Office of Statistics in its annual Census of Industrial Establishments and National Income accounting data. We observe that the actual total number of production sectors adopted in summarising the annual industrial census by the FOS varies from year to year, reflecting variability not necessarily in scope but of the pattern of responses by the various production units covered in the annual census. For the purpose of this study, the FOS classification as reported in the National Accounts for 1980, which is the most disaggregated data scheme, was taken as the reference scheme.

Broadly, in this study, the I-O transactions flow table is subdivided into three major economic activities. They are primary, secondary and tertiary economic activities. Further, for ease of analysis, these economic activities have been disaggregated into six , thirteen and sixteen sectors respectively. On that basis we arrived at a level of dis-aggregation that divided the Nigerian economy into thirty-five productive sectors.

As noted earlier, where the number of establishments in an industry turns out to be too few to warrant separate reporting in the Census of Manufacturing Establishments, such an industry is merged with the nearest related industry by the FOS. The thirty-five sectors into which the Nigerian economy was divided were based on the following criteria: conformity with the international standard of industrial classification; and, the level of aggregation used by the FOS in presenting their

summary for industrial surveys. Below we described the general characteristics of the (broadly) classified sectors.

5.3.4.1 Primary Economic Activity

Primary economic activity is disaggregated into six sectors namely, agriculture, livestock and diary, forestry, fishing, crude petroleum and other mining activities. These industries purchased very little from other industries. Below, we provide a short commentary on each sector.

Specifically, the output of the agricultural sector is defined on a commodity rather than on an established basis. The gross output for each product was estimated, and value added was obtained after deduction of cost of all non-factor inputs from the sum of all output values. The output totals covered the major crops such as millet, guinea corn, groundnut, beans, yam, cotton, maize, cassava, rice, melon, beniseed, cocoyam, soya beans, palm produce and plantain. A variety of minor crops were also covered[95]. The intermediate purchases identifiable with this sector are mainly seedlings, fertilizers and insecticides while others are minor farm implements such as hoes, machetes, bags and baskets.

The output of the livestock and diary sector includes the following primary products: hides, beef, dairy milk, skins, meat, mutton, pork products, eggs and poultry. The output of cattle was estimated from the number of cattle slaughtered in the year. Estimates of goats and sheepskins, beef, meat, mutton, and pork products were also

[95] The total output value was obtained from the Agricultural Sample Survey conducted by the Rural Economic Survey Division of the FOS but published in National Accounts.

derived from the slaughtered figures of the animals concerned[96]. On the input side, the total production of animal feeds in the domestic economy, and the import of animal feeds for the year were taken as inputs into this sector.

The output from forestry sector was, as usual, defined on a commodity basis. The commodities included under the sector were logs, firewood, palm wine, and other forest products. The other forest products were mainly made up of piassava fibre, other vegetable fibres except cotton and gum Arabic, other natural gums, resins, and other materials of vegetable origins. The total output was estimated from several sources[97].

Next, the survey by the Federal Department of Fisheries and in collaboration with the Fisheries Division in each State's Ministry of Agriculture and Natural Resources on behalf of the FOS covered the entire fishing sector; the commercial fishing and the pond and artisanal pond. The ponds and artisanal pond involve large areas of water, numerous canoes and a great number of fishermen. The sample designs, as well as the estimation procedure adopted for the survey, were fully described in the Survey Methods of Fisheries Statistics in Nigeria issued by the Federal Department of Fisheries (2003)[98].

The gross output of petroleum sector was obtained as the sum of domestic sales, exports and stock variations. The total output for this sector was based on the total

[96] Though, the output data were obtained from the FOS, they were compiled from the publication of the Nigerian Livestock and Meat Authority in Kaduna. Kaduna city is the capital of Kaduna State in the Northern part of Nigeria. The state is known for rearing of livestock and the production of groundnut.
[97] The output of logs was estimated from the information obtained from the Federal Department of Forestry by the FOS, which was published in the Statistical Bulletin and National Accounts (various issues).
[98] Finally, both input and output data were obtained from the publications of the Federal Department of Fisheries and National accounts published by the FOS.

output of the oil producing companies operating in Nigeria[99]. The input data covered information on various items of materials and supplies, transport costs, electricity purchased, professional fees, rent on non-residential buildings, rent of equipment, repairs and maintenance costs, cost of contract, and a further breakdown of other miscellaneous expenditure. To arrive at total inputs, adjustments were made to exclude capital purchases[100].

The scope of other mining and quarrying is defined to include metaliferous ores, coal, quarrying, and marble and limestones. Also, few other minerals were taken into account and they include Cassiterile, Tantalite, Columbite, Balana, Lead and Gold[101].

In summary, the major inputs into these sectors that constitute the primary economic activity are source from within the domestic economy. Output of some sectors within this group serve as inputs into other sectors within the group, thus, the imported inputs into the primary economic activity is very insignificant when compare with secondary and tertiary economic activities[102].

5.3.4.2 Secondary Economic Activity

The secondary activity covers the processing and manufacturing industries. Manufacturing, the largest component of the secondary activity, consisted mainly of light manufacturing industries. For ease of analysis, and as mentioned earlier,

[99] The major Oil Companies operating in Nigeria are; TotalElfina, Chevron-Texaco, Agip, Shell, and ExxonMobil.
[100] Though the data were obtained from the Annual Abstract of Statistics and National Accounts published by the FOS, and the Statistical Bulletin published by the CBN, they were complied by the Nigerian National Petroleum Corporation (NNPC).
[101] The output of this sector was obtained from the data compiled by the FOS through the Census of Mining Establishments published in the Annual Abstract of Statistics and National Accounts.
[102] See section 4.2 of chapter 4 of this thesis.

industries under the secondary activity were divided into thirteen sectors, namely; food; drink, beverage and tobacco; textiles; footwear and leathers; wood and wood products including furniture; paper and paper products including publishing; drugs and chemicals; refineries; rubber and plastics; iron and steel; fabricated metal; vehicle assembly; and other manufacturing activities.

Gross outputs of these sectors were estimated from the sales data (including indirect taxes) adjusted for variation of stocks of finished goods and work in progress. The estimates of intermediate input for these sectors were obtained from the Annual Industrial Survey published in National Accounts by the FOS. Finally, sectors output as export were obtained from Annual Abstract of Statistics, also a publication of the FOS and Statistical Bulletin published by the CBN.

The FOS in conducting its annual Surveys of Manufacturing Establishments covers units employing ten or more persons and whose annual value added (or gross output) is at least ₦ 200.00. The inputs that either form an insignificant proportion of raw-material costs or which are not used by a majority of the firms were lumped with 'minor raw materials'. In the bakery industry these include colouring materials, butter and other flavouring materials. Other costs incurred by most establishments are in respect of fuels, firewood, gasoline, water purchased, electricity purchased, transport, excises taxes and resales. Below, we provide brief descriptions of sectors that constitute the secondary economic activity.

The output of food sector covers vegetable oil, grain mill products, bakery products, sugar confectionaries, miscellaneous food preparation, and animal feeds. The high

value of intra-industry transactions occurred in this sector because the final foods often emerged from various stages in the production process. An illustrative case is the sale of flour by flour mills to bakeries and other flour-using industries, a transaction that necessarily occurred within the same sector[103].

The drink, beverage and tobacco sector covers the following activities dairy products, fruit canning and preservation, spirit distillery beer, stout, soft drinks and tobacco[104]. On the other hand, activities in the textiles sector include spinning, weaving and finishing of textiles, made-up textile goods, knitted goods, cordage rope and twine and wearing apparel[105]. Activities in the footwear and leathers sector include tanneries, leather, leather footwear and other leathers products. The data were obtained from the Census of Manufacturing Establishments conducted by the FOS but published in the Annual Abstract of Statistics.

The wood and wood products (including furniture) sector covers all manufacturing of wood and wood products, including furniture, sawmill and wood-cork products. The output include the estimated total values of activities such as saw milling, carving and other wood products, wooden furniture and fixtures[106]. The paper and paper products (including printing and publishing) sector is mainly concerned with those establishments engaged in paper and paper products, pulp, paper and paperboard,

[103] The estimated output for this sector was obtained from the Census of Manufacturing Establishments conducted by the FOS. Additional information in respect of some gaps and deficiencies in certain establishment in the sector was however obtained from the Nigeria Enterprise Promotion publications (various issues).

[104] The output total for this sector was obtained from FOS, though it was complied from the annual Census of Manufacturing Establishments. Further, data on export and import commodities were obtained equally from the *Foreign Trade Statistics*, a publication of the FOS.

[105] The data were obtained from the Census of Manufacturing Establishments conducted by the FOS but published in the Annual Abstract of Statistics.

[106] The data for this sector were obtained through the Census of Manufacturing Establishment conducted by the FOS but published in the Annual Abstract of Statistics.

container boxes, other pulp and paper articles, as well as printing and publishing[107]. The drug and chemical sector covers the manufacture of basic industrial chemicals, fertilizers, pesticides, synthetic resins, other chemicals products, paints, vanishes, drugs and medicines, soaps, cleaning agents, toilet goods and the by-products of petroleum, and petrol-chemicals[108].

The basic source of information for the refinery sector was the NNPC, however, the data were complied within the NNPC by the Pipelines and Product Marketing Company (PPMC). Nigeria has four oil refineries. First, one in Kaduna i.e. the Kaduna Refinery and Petrochemical Complex, commissioned in 1988; two in Port Harcourt, i.e. Port Harcourt Refinery Complex, commissioned in 1965 and 1988; and finally, one in Warri i.e. Warri, Refinery and Petrochemical Complex commissioned in 1978[109]. Activities in the rubber and plastic include the manufacturing of rubber products, tyres, tubes, other rubber products, and plastic products. The Census of Manufacturing Establishments survey conducted by the FOS but published in the Annual Abstract of Statistics provides details data for the sector's input and output structure.

The output of the iron and steel sector was obtained from the survey conducted jointly by the Federal Ministry of Solid Minerals Development and Ministry of Power and Steel but published in National Account by the FOS. Nigeria has a 'big' steel company, named Ajaokuta Steel Company and four Steel Rolling Mill Companies

[107] The data for the sector were obtained from the Census of Manufacturing Establishments conducted by the FOS but published in the Annual Abstract of Statistics.
[108] As usual, the data for this sector were obtained from the Census of Manufacturing Establishments conducted by the FOS but published in the Annual Abstract of Statistics.
[109] The data for the sector were obtained from Annual Report and Statement of Accounts and Statistical Bulletin published by the CBN and Abstract of Statistics published by the FOS (various issues).

located in the following cities in Nigeria: Osogbo (Southwest), Katsina (Northeast), Delta (Southeast) and Jos (Southeast).

The activities of the fabricated metal, machinery and equipment sector covers the manufacturing of pottery, glass products, bricks and tiles, cement, concrete products, basic metal products, cutlery, hand tools, general hardware, structural products and metal furniture and fixtures. Others include fabricated metal products, agricultural machinery and equipment, other machinery and equipment, electrical, radio, television and communication apparatus, household appliances, other electrical apparatus[110]. Next on the list is the vehicle assembly sector. There are two main car assembly plants in Nigeria; the Volkswagen Nigeria Limited (VWON) and Peugeot Automobile Nigeria (PAN). Located in Nigeria's commercial cities, Lagos and Kaduna, VWON was established in 1973 in a joint venture while PAN was established in 1977 respectively. The outputs of this sector include production and assembly of car and light commercial vehicle, motor vehicle body building, motor cycles and bicycles[111].

Finally, activities in the other manufacturing sector comprised miscellaneous manufacturing products not elsewhere classified. The data for this sector were obtained from the Census of Manufacturing Establishments conducted by the FOS but published in the Annual Abstract of Statistics. Also, included in this sector were the small-scale establishments employing less than ten people, the data were obtained from the Survey of Small Establishments.

[110] The data for this sector were obtained from the Census of Manufacturing Establishments conducted by the FOS but published in the Annual Abstract of Statistics and National Accounts.
[111] The data for this sector was obtained from Annual Abstract of Statistics (various issues) published by the FOS.

In summary, most sectors classified as secondary economic activity relied on inputs from sectors within the group, i.e. the outputs of wood and wood products constitute inputs into paper and paper products sector, and the sectors that constitute the primary and tertiary economic activities. However, the reliance of the secondary economic activity is higher than the primary economic activity. Specifically, some sectors within the secondary economic activity relied on import intermediate inputs and this has implications for pass-through.

5.3.4.3 Tertiary Economic Activity

The tertiary economic activity comprises the service sectors.

The tertiary economic activity, as mentioned earlier, is disaggregated into sixteen distinct sectors, namely, electricity, water, building and construction, railway transport, land transport, water transport, air transport, communication, distributive trade, hotel and restaurants, banking and finance, insurance, real estate and business services, housing, community social and personal services, and finally, producer of government services.

First, the utilities were grouped into two main sectors, namely electricity and water. The electricity sector covers the generation and distribution of electric power for sale to households, industrial and government users. The basic data relating to the generation of electricity and the input requirement were obtained from the accounts of the Nigerian Electricity Power Authority (NEPA). The electricity generated for own use by other establishments and organisations for which data cannot be separated

from the parent enterprises were not included in the Annual Abstract of Statistics published by the FOS.

Similarly, the output figures did not include those from the small generators used privately as stand-bys. Purchases of electricity by the other sectors were used in allocating the output of electricity. Sales to households were then derived as residual after all other allocation were made.

The value of total revenues from the Water Corporations and Water Boards operating in Nigeria constitute the gross output for water sector. Any income originating from the water departments of various government ministries however is not included. For consistency, such direct governmental activities have been treated along with the Producer of Government Services. The annual accounts of Water Corporations and Water Boards provide the detailed input structure. The intra-industry transaction in this sector is explained by the services flowing between electricity supply and water supply.

The survey for the building and construction sector covered the construction of residential buildings, non-residential buildings, highways, streets, bridges, feeder roads, reclamation and all other forms of construction whether undertaken by the private or government bodies. Inputs of materials by type of construction were obtained based on the categories enumerated above. For certain types of construction, information was available on the aggregate for costs of materials. In such instances, the author had extensive discussions with consultants and professionals in the

construction industry with respect to various inputs. These contacts yielded an additional source of data for input allocation.

In allocating the output of the sector, the value of all new construction was attributed to final demand, and in particular to gross fixed capital formation. Minor repairs and maintenance were distributed as intermediate output to other sectors, which in effect represented the inputs from the Building and Construction sector to the sectors concerned[112].

For ease of analysis, the transport sector was divided into four distinct sectors; railway transport, other land transport (road transport), water transport, and air transport. Outputs data were obtained for each of these sectors. First, in the case of road transport, the data obtained from the FOS covered activities of operators engaged in freight and passenger transport by road. The main types of vehicles taken into consideration were buses, lorries, trailers, and saloon cars used as taxis. Second, the output of rail transport was obtained from the railway operating revenues as reported by the Nigerian Railway Corporation (NRC). Third, the activities covered for air transportation were those of the Nigeria Airways[113], private airline and the air charter companies serving the oil companies. Fourth, in the case of water transportation and of harbours, the activities of the Nigerian Ports Authority and other supporting services to water transport (such as the clearing and forwarding agents) were covered by the FOS in arriving at the gross output. The FOS obtained analyses of the input of materials, supplies and services to each of the sectors from the Accounting and

[112] The data for the output of building and construction were obtained from the survey of Building and Construction conducted annually by the FOS.
[113] The Nigeria Airways was privatized in 2000 and its name has been changed to Virgin Nigeria with Virgin Atlantic as the technical partner.

Operation Reports of the government agencies and private companies mentioned above[114].

The communication sector deals with the communication services rendered to the public. Included here are postal services and telecommunications, broadcasting and television services. In the case of postal services and telecommunication, data for broad categories of revenue and expenses were obtained from the accounts of the Federal Department of Posts and Telecommunications and of the Nigerian External Telecommunication Company published by FOS. These accounts contained breakdown of various expenses from which useful input data were derived.

The distribution of the output of postal services and telecommunication was done by making allocation on the basis of data from the input estimates of other sectors. In the case of broadcasting and television services, output includes receipts for commercial services and miscellaneous earnings.

The distributive trade sector covered wholesale and retail trade of goods to industrial, commercial, institutional and household users. For the purpose of preparing the estimates, the FOS divided this sector into the following categories: imported goods, locally manufactured goods, agricultural products, fishery products, livestock products and other products. On the basis of this, the FOS estimates within the calculated total supply of commodities in these categories the value of margins. It should be pointed out that the output of wholesale and retail trade is defined as being equal to gross trade margins. However, appropriate trade margins were worked out

[114] The data for the respective output and input were obtained from the Annual Abstract of Statistics (various issues).

based on the Survey of Distributive Trade conducted by the FOS. The Survey also provided the guidelines in deriving the various inputs into the sector.

We also note that the transactions between the original producer and the ultimate buyer were valued at producers' prices. The trade margin formed part of the payments made by final buyers to the Distributive sector. It also included transport costs from the producer to the buyer. Therefore, transport costs were entered into the working expenses of the Distribution sector.

The hotel and restaurant sector covers the operation of hotels, tourism and restaurants. The data for this sector were collected by FOS for organised and registered hotels and restaurants but published in the Annual Abstract of Statistics. The activities in the finance and insurance were divided into two sectors: Banking and Finance, and Insurance. The Banking and Finance data covered monetary institutions such as the Central Bank, the commercial banks, and other financial institutions while the Insurance covered insurance of all kinds such as life and casualty insurance. The basic data for the banking institutions and insurance were obtained from the Annual Report and Statement of Accounts published by the CBN.

The procedure used for estimating the gross output of financial institutions was different from that used in estimating the output of most other sectors. The reason being that if the transactions of financial institutions were conceptually treated like the transactions of other activity sectors the gross output would be very small. In most cases, the operating surplus would be little, and indeed the value added would be negative.

Hence, the output of financial institutions was made to include the value of services for which monetary incomes were received but the FOS took into account the imputed service charges. These latter charges represented the excess of the property incomes received on loans and other investments made from the deposits they hold, over the interest, which they paid out on those deposits. The estimates of inputs in the financial institutions were obtained from the CBN. Also, their gross output was distributed partly along the direct purchases made by other activity sectors and partly on the basis of the information on loans and advances (classified by purpose) in the Annual Report and Statement of Accounts.

In the case of casualty insurance, the service charge constituted the gross output. The service charge was estimated as the difference between the premiums received and the claims paid. Service charge in respect of casualty insurance was treated as intermediate consumption in the case of producers and as final consumption in the case of households. For life insurance, the gross output was also service charge. The service charge with respect to life insurance was estimated to be equivalent to the excess of premiums received over the sum of claims paid, and the net addition to the actuarial reserves, excluding the interest on these reserves which accrued to policy holders. The gross output was distributed as final consumption expenditure to households.

The real estate sector includes real estate agents and societies and the owner of real estates. The professional services included in this sector were defined on an activity basis. They cover such fields as medical doctors, dentists, and lawyers. Other

professional services covered include accounting, auditing, book keeping services, advertising business, architectural practice, engineering and economic consultants. The output levels were generally measured by total receipts. The housing sector covered rental of buildings and owner occupied. The output of this sector covered the rental homes for office buildings and residential accommodation, including owner occupied houses. The input of the sector usually consisted mostly of repairs directly supplied by the construction sector. Also, the FOS in preparing and allocating inputs for the sector considered various expenses of home ownership.

The community, social and personal services sector entails heterogeneous group of business activities such as business services, recreational services, personal services, maintenance and repair services, film rental services, rental of equipment and other marginal activities not elsewhere classified. Gross output was generally determined as the sum of input values of each which was obtained from National Accounts, a publication of FOS.

Finally, the producer of government services sector. The activities of this sector differ in character, cost structure and source of finance from other activities of all other sectors. The purpose of 'producer of government services' is to supply those services, which normally, would not be provided by the rest of the economy. The sector is subdivided into four sections, namely, the Federal Government, the State Governments, the Local Governments and the Public Non-Profit Institutions. They are engaged in a wide range of activities such as defence, general administration, education, health, social security and welfare services, and other miscellaneous social services.

The data for the sector were obtained from the Annual Abstract of Statistics a publication of FOS and Annual Report and Statement of Accounts, a publication of CBN. The FOS obtained the Federal Government component of the sector from the Accountant-General's Report for the Federation, which contained the actual revenue and expenditure of the Federal Government. Similarly, the FOS used the 36 States Accountant-General's Reports to obtain the relevant data for the State governments. Also, the books of the 774 local councils provided the basis for FOS data on the local government[115].

The fourth category in this sector is the set of Public Non-Profit Institutions. These are organisations, which serve households, business enterprises and government units. They are wholly controlled and financed by public authorities. Included are the Universities, the various Research Institutes, the Nigeria Institute for Yrypanosomiasis, the Livestock and Meat Authority, the Sport Councils, the Civil Aviation Training Centre, the Medical Research Council and specialised extra-departmental agencies. In general, the government financed the activities of the 'producer of government services'. They are final consumers of most of the goods and services which they produce.

However, it is important to point out that this sector, as defined, excludes the industries of government[116]. The public-sector industrial and commercial enterprises are really agencies of government established for the general purpose of engaging in the production and distribution of the kinds of goods and services, which are often not

[115] We recognized the fact that some State Governments have created new local councils awaiting the approval of the National Assembly.
[116] These industries are been privatised by the government, in fact, some had already been privatised.

produced by private business establishments because of the initial high cost. Examples of such public enterprises are the operation of transport services, electricity, manufacturing plants, and general trading. Such activities are, of course, classified along with their appropriate functional sectors, and not with the 'producer of government services'.

In summary, sectors within the tertiary economic activity relied not only on some sectors within the group for inputs, but also relied on the sectors that constitute the primary and secondary activities and imported intermediate inputs.

5.4 Previous Attempts at Constructing Input-Output Model for Nigeria

Since the pioneering attempt by Carter (1966) to construct an input-Output table for Nigeria, there have been four other attempts. These are the work of Clark (1970), Aboyade (1981), Olayide, Olofin, Iyaniwura and Adeniyi (1981)[117] and recently of the Nigerian Institute for Social and Economic Research (1990), henceforth NISER (1990)[118].

We observe that the I-O table is not frequently constructed for the Nigerian economy due to the considerable expense and time involved in constructing an I-O table. Another major drawback observed from the previous I-O tables constructed for the Nigerian economy is that each was designed more or less as a once and for all effort aimed at some specific application with little or no thought given to regular up-dating requirements.

Specifically, Carter's table was designed to provide a basis for further work in the area of National Accounts while Clark's potential technology was developed as an input into an import substitution planning model. Aboyode's table appears to have been a once and for all effort carried out within the context of preparing Nigerian Accounts for 1973 - 1975.

The primary objective of the Olayide, Olofin, Iyaniwura and Adeniyi (1981) study was to provide an operational I-O analytical framework for the Nigerian economy,

[117] This research was conducted by a team based at the University of Ibadan, Nigeria, under the auspices of an interdisciplinary research programme, headed by S.O. Olayide.

[118] This research was not only supported by the FOS but also enjoyed funding from United Nations Development Programme (UNDP), specifically, for the printing of the report under the National Statistical and Information System (NSIS) programme.

which would satisfy two criteria: relative ease of compilation and potential for relative up-dating and re-estimation[119]. Finally, the input-output table for 1985 was constructed by the NISER (1990) for the purpose of providing the general public with comprehensive statistical data on the inter-relationship of the various sectors of the economy and also aimed at the improvement and up-dating the system of National Accounts for the period.

5.4.1 Earlier Input-Output Tables for Nigeria and Their Characteristics

Carter constructed a 20 x 20 I-O table for 1959 based on Okigbo's 1950 – 1957 National Accounts of Nigeria (see Table 5.1 in appendix). The construction of the transaction matrix was facilitated through data collected from the publication of the FOS, the estimates of the Economic Planning Unit, other secondary sources and personal observations. Thus, a major amount of estimation was done by extrapolation of trends and ratio projections. Further, in many cases the desired figure was obtained as a residual, especially true of distributive margins.

Using Carter's transaction table as a guide, Clark embarked on a disaggregated 86 x 86 I-O table derive in the following way. First, he aggregated Carter's 1959 table into eleven aggregate sectors. From these aggregate sectors, fourteen additional possible import substitution industries were further disaggregated, and their coefficients independently specified to give a total of twenty-five actual producing sectors describing the structure of the Nigerian economy for 1959 (see Table 5.2 in appendix).

[119] Such ease of compilation can be facilitated by the availability of secondary data sources, making the construction of tables feasible without reliance on time consuming surveys and Census.

Employing international trade statistics as a guide, a set of 61 new 'potential sectors' representing competitive imports were added to the original transaction matrix to produce a massive 86 x 86 transaction matrix. These new sixty-one production relations for the potential industries were added wherever possible from feasibility studies of potential Nigerian industries. In effect, Clark's 86 x 86 transaction table was not an empirical matrix wholly based on Nigerian data, rather it was derived as a by-product of an attempt at specifying a potential technology for promoting planned import substitution.

In 1973, Aboyade's team was commissioned by the Federal Government to conduct a National Accounts survey for the purpose of designing a suitable, comprehensive and integrated system of national accounts for Nigeria. The survey was also expected to establish a series of such nature and character that would be useful in the formulation and execution of national policies and development plans[120]. Thus, Aboyade's team produced an empirical I-O table for 1973, as an accompaniment to the 1973 – 1975 National Accounts for the Nigerian economy (see Table 5.3a and 5.3b in appendix).

The major data source for the Aboyade's transaction table was the FOS census of manufacturing establishments for 1973 and 1974. Further, data from various government departments, special survey on rural economy and other FOS sources were used as supplements[121]. Finally, they were able to construct a transaction flow matrix comparable in size of disaggregation to Clark's disaggregation of Carter's transaction table into a 25 x 25 transaction matrix.

[120] The need for such an exercise became apparent during the preparation of the Second National Development Plan, 1970 – 1974, when it was found that the available income statistics was unsuitable for grappling with the new planning and policy changes of post civil war Nigeria.
[121] Also, in some instances they conducted their own surveys of industrial production.

Olayide, Olofin, Iyaniwura and Adeniyi (1981) constructed a 40 x 40 I-O table for 1970. They relied on secondary sources of information, mainly FOS census of industrial establishments, government departments and other FOS sources. Also, they supplemented their I-O table with entries from Aboyade's table wherever comparable industrial classification made this possible. Equally, NISER (1990) constructed a 30 x 30 I-O table for Nigerian economy for 1985[122] (see Table 5.4a, 5.4b and 5.4c in appendix).

A close observation of Carter's and Clark's I-O tables revealed that both their transaction flow matrices as well as their corresponding technology matrix appear to have been derived independently of earlier tables. As an illustration, the figure under column one, row one in Clark's table is identical with the comparable figure of 0.0481 in column one, row one of Aboyade's table (i.e. Tables 5.2 and 5.3B respectively)[123].

Also, we observe that the level of disaggregation employed by Aboyade's team and NISER are similar, except that NISER further disaggregated the manufacturing economic activities to include vehicle assembly, iron and steel while textiles and footwear and leather were separated[124].

[122] The main sources of data for this I-O table were the FOS Rural Agricultural Sample Survey, Government Departments, Census of Industrial Establishment and supplementary information were obtained from the CBN Annual Report and Statement of Accounts.

[123] We deduce from these similarities between entries, the fact that a large proportion of differences between the entries in the technological matrices may be due to differences in industrial or sectoral classification schemes, and less to changes in technological relations in the time interval between the different tables. Our argument is supported by the fact that Olayide, Olofin, Iyaniwura and Adeniyi (1981) supplement their technology matrix with entries from Aboyade's table, most especially, situations where comparable industrial classification exist.

[124] These detailed sub-sectors included in the manufacturing sector followed closely the International Standard of Industrial Classification (1984).

This chapter attempts to improve on the earlier I-O tables constructed for the Nigerian economy in a number of ways. There is a consensus from the previous studies that the construction of an I-O table, especially for a developing economy like Nigeria, is quite an expensive and demanding exercise in terms of resource requirements. Thus, we commence this study with the major handicap of not having at our disposal resources comparable in any way with previous researchers, particularly Aboyade (1981); Olayide, Olofin, Iyaniwura and Adeniyi (1981); and NISER (1990). The possibility of being able to embark on primary data collection through surveys and censuses as was done by Aboyade's team and partly by Olayide's team was ruled out entirely. However, irrespective of the above constraints, the major areas of improvement of this study over previous studies are quite important.

First, through limiting this research to secondary sources of information, mainly publications of FOS, CBN and other supplementary sources, such as ministries and State Departments, we seek to demonstrate that an I-O table for Nigerian economy can be constructed on the basis of existing data without recourse to primary data collection. Second, the study demonstrates that an I-O table can be computed within a reasonable length of time and at less than the prohibitive costs that reliance on primary data collection would entail. Third, we disaggregate transport activities which was aggregated in all previous studies into rail transport, other land transport (road transport), water transport, and air transport; utilities into electricity and water; and finance and insurance into banking and finance and insurance. It is expected that this higher level of disaggregation would enable us to see clearly the importance of each and their respective contributions to the economy.

5.4.2 A Brief Comparison of the Previous and Recently Constructed I-O Tables for Nigeria

Apart from the above mentioned major areas of improvements over the previously constructed I-O tables for Nigeria, we succeeded in constructing a 35 x 35 I-O tables for Nigeria for the year 1981, 1985, 1990 and 2000[125]. As mentioned earlier, we followed the International Standard of Industrial Classification (1992) in classifying the production sectors.

Therefore, in comparison with the first I-O table for Nigeria, (i.e. Carter's I-O table), we followed the laid down International Standard of Industrial Classification (1992) and extended the I-O table from 20 x 20 to 35 x 35. Specifically, Carter aggregated livestock, fishing and forestry into a sector but in the newly constructed four I-O tables, we have disaggregated this sector into three sub-sectors: livestock, fishing, and forestry. Also, other sectors disaggregated include transport sector which has been disaggregated into four sub-sectors i.e. road, rail, air and water transport; utilities was disaggregated into electricity and water sub-sectors; and finally, the manufacturing activities were disaggregated to include fabricated metal, vehicle assembly, iron and steel, rubber and plastics and refineries[126].

Next, when we compared the newly constructed I-O tables with Clark's I-O table for Nigeria, though Clark constructed a 86 x 86 I-O table for Nigeria, however, his transaction table was not a matrix wholly based on Nigerian data. The newly

[125] The four newly constructed I-O tables are designed to reflect sectoral behaviour before (1981 and 1985) and after (1990 and 2000) the implementation of the adjustment programme in Nigeria.
[126] We recognised the fact that activities in some sectors came to 'live' in the late 1970s and therefore might be impossible to capture in Carter's study.

constructed I-O tables relied mainly on Nigerian data and are constructed based on ISIC (1992). Though, Aboyade's transaction table was based mainly on Nigerian data, however, in the newly constructed I-O tables, we have disaggregated some aggregated sectors in Aboyade's I-O table to reveal details about the influence of the exchange rate .i.e. pass-through. These sectors are transport, finance and insurance, and utilities. Thus, this further disaggregation would enable us to bring into sharp focus, the important contribution of these sub-sectors. Specifically, the manufacturing activities have been disaggregated to show the importance of sub-sectors like vehicle assembly, refineries, footwear and leathers. The beauty of this disaggregation is that it would enable us to have deep insight about the influence of the exchange rate on these sectors.

Olayide, Olofin, Iyaniwura and Adeniyi (1981) constructed a 40 x 40 I-O table for Nigeria. Though, they constructed an I-O table for 1970, which was three years earlier than Aboyade's 1973 tables, they demonstrated that a higher level of disaggregation was realisable as early as 1970 using secondary data sources only. However, a closer observation revealed duplication of sectors which is tantamount to deviation from ISIC (1992).

Recently, NISER (1990) constructed a 30 x 30 I-O tables for the Nigerian economy for 1985. In comparison with all the previous I-O tables constructed for Nigeria, this is regarded as the most disaggregated I-O tables mainly from the Nigerian data. However, in our study, we have demonstrated that a higher level of disaggregation can further be achieved without duplication of sectors and even with conformity with the ISIC (1992). Finally, the I-O tables constructed for Nigeria in this study is not

only the most recent I-O tables but also the most disaggregated I-O tables for the Nigerian economy to the best of our knowledge.

5.5 Input – Output Model for Nigeria

The I-O model is a system of linear equations that describes the purchases of inputs and the sale of output of an industry throughout the economy. The model represents all production and consumption in the economy and is sometimes referred to as a 'general equilibrium model'. The partial equilibrium system of Marshall aims to explain the reactions of producers and consumers of a given commodity to each other's behaviour and thereby determine price and output levels in a given market. Thus, partial equilibrium analysis specifies the relations between each industry and its suppliers and consumers through sets of supply and demand functions.

On the other hand, the Leontief system is primarily concerned with this variation in element that are taken as fixed in partial analysis. Thus, supply and demand in each market are equated, not through changes in price and resulting movements along supply and demand curves, but through a horizontal shift in the demand function of each industry resulting from changes in production levels in other sectors. The assumption of *maximising behaviour*, which is central to partial equilibrium analysis, plays no explicit role in the Leontief system. It is assumed that producers have little or no choice as to factor proportions in the short run and react to demand changes by changing output rather than price.

Also, the basic difference between I-O models and more aggregate models is the explicit recognition in the I-O model of specific commodities having different production requirements and uses. The I-O model, therefore, is able to show the differing effects on the rest of the economy of an increase in demand for individual

commodities, which in a Keynesian model would be indistinguishable parts of production and consumption. Finally, the assumptions underlying the I-O model depict an economic world where supply is assumed to respond to demand.

5.5.1 Valuation of Transaction in the Input-Output Model

Before drawing up an I-O transactions table, it is necessary to decide how to record the flow of goods and services. But in any way it is decided, the I-O transactions flows have in the end to be valued in monetary terms. The aggregation of similar but not identical flows, as well as the fact that some flows (such as services) cannot be expressed in quantities, makes it necessary to value the I-O relations in monetary terms. Four different kinds of monetary valuation can be used in preparing I-O tables[127]. They are:

- Basic Value – In this case the value of output as well as input are excluded from indirect taxes.
- Appropriate Basic Values – This is a situation where the value of output excludes indirect taxes but the input includes indirect taxes.
- Producers' Values – The output as well as the inputs include indirect taxes in this system of valuation.
- Purchasers' Values – In this case the value of transactions include trade and transport margins in addition to the indirect taxes on output and inputs.

[127] For detail see Bulmer-Thomas (1982), p87.

Conceptually, the utility of the I-O table varies directly with the method of valuation. The first method of valuation, the basic value, is considered as the best for the stability of the coefficients, however, the huge resources required is the main discouragement for countries to employing this method of valuation. Second, the appropriate basic value method is not yet in use due to the fact that the data on commodity taxes are not being currently tabulated by type and uses. The third method and perhaps the most widely use method at present is the valuation at producers' value while the fourth method, valuation at purchasers' value, is used by very few countries.

It is important in I-O analysis, as in national accounting, that all transactions are valued in the same way. The purchase of a particular commodity by any buyer is assumed in I-O analysis to stimulate demand to the same extent. This might not occur if the valuations are different for different buyers. Findings from the literature revealed that there are two main problems in ensuring uniform valuation. First, where taxes are levied on outputs, purchase may be valued by either including or excluding the tax i.e. either at producers' value or at basic values. Second, there is the effect of trade and transport margins and the choice between producers' values and purchasers' values.

The method of valuation underlying our I-O table is the producers' value. As mentioned earlier, producers' prices are defined to exclude distribution margins, which are considered to be payments for services rendered by the distribution sector to the buying industries or final sectors.

5.5.2 The Structure of the Input-Output Model

The I-O model consists of three basic tables, which are; the flow or transactions table, a table of technical coefficients or direct requirements and finally a table of total interdependence coefficients or (direct and indirect) requirements. The transaction table is the basic data table of the model while the direct requirements and total requirements tables are analytical tables derived from the transaction table. Next, we examine the construction of each of the three basic tables below in details.

5.5.2.1 The Transaction Table

In a nutshell, the flow or inter-industry transaction table is divided broadly into four main parts as depicted in the table 5.5 below[128]:

[128] The separation between intermediate and final demand (use) for output and between produced and primary inputs leads to four type of transactions.

Table 5.5: Input-Output Accounting System

		Purchasing Sectors											
		Intermediate Use				Final Demand							
		Sector 1. .....j .....n			TIU	I	C	G	E	M	TFU	Total Prod.
Producing sector	1	q_{11}	.....	q_{1j} ..... q_{1n}	W_1	I_1	C_1	G_1	E_1	M_1	Y_1	Q_1
	2	.										.
	.	.										.
	.	.		(*Quadrant I*)				(*Quadrant II*)				.
	i	q_{i1}	.....	q_{ij} ..... q_{in}	W_i	I_i	C_i	G_i	E_i	M_i	Y_i	Q_i
	.	.										.
	.	.										.
	.	.										.
	n	q_{n1}	.....	q_{nj} ..... q_{nn}	W_n	I_n	C_n	G_n	E_n	M_n	Y_n	Q_n
Total produced inputs		U_1		U_j U_n								
Primary inputs (Value Added)		V_1		V_j V_n		V_I	V_C	V_G	V_E			V
		(*Quadrant III*)				(*Quadrant IV*)						
Total Production		Q_1		Q_j Q_n		I	C	G	E	M	Y	Q

Key: I represents investment, C consumption, G government expenditure, E exports, M imports, TIU represents Total Final Use and TFU, Total Final Use

The first quadrant, i.e. quadrant I, is the matrix of inter-industry transactions, which shows purchases by industry of products in order to produce their output, these purchases form intermediate consumption. Specifically, from table 5.5 above, each entry, q_{ij}, indicates the amount of commodity i used by sector j. The total intermediate use of any commodity is identified as W_i and total purchases from other sectors by a given industry as U_j. Next, the second quadrant, i.e. quadrant II, of the I-O table contains summaries of purchases of each sector's output. This implies that it shows final demand categories such as private final consumption and the values of the products going to these categories. Thus, quadrants I and II are regarded as purchases at purchasers' prices.

The third quadrant, i.e. quadrant III, shows the costs of each industry in terms of factor costs, for instance wages and salaries paid to employees, operating surplus, subsidies, and capital consumption. This quadrant also displays industries' sales by final demand, taxes on expenditure less subsidies and gross output[129]. Finally, the fourth quadrant, i.e. quadrant IV, contains the direct input of primary factors to final demand, of which the main examples are government employment and domestic service. These transactions do not enter into most inter-industry models, but they should be recorded to make the total consistent with national aggregates.

The basic elements in the formal structure of I-O accounts as contained in table 5.5 are defined as follows:

[129] The total payment for primary inputs by each sector therefore corresponds approximately to the value added in production, being the difference between the value of output and cost of inputs produced outside the given establishment.

Q_1, represents total production of commodity i,

M_i, denotes imports of commodity i,

q_{ij}, denotes the amount of commodity i used in sector j, or sales from sector i (row) to sector j (column).

Y_i, represents final demand for commodity i

W_i, denotes total intermediate use of commodity i $\left(\sum_j q_{ij}\right)$[130]

U_j, represents total use by sector j of inputs purchased from other industries $\left(\sum_i q_{ij}\right)$.

V_j, represents total use of primary inputs (value added) in sector j

From the notation above we can now deduce the two balance equations. The first applies to rows in Table 5.5, which states that for each commodity total supply is equal total demand, and comprises of intermediate demand plus final demand.

$$M_i + Q_i = \sum_j q_{ij} + Y_i = W_i + Y_i \qquad (i = 1 \ldots\ldots\ldots n) \qquad \textbf{(5.1)}$$

The second equation applies to columns in Table 5.5, which equally states that the total production in each sector is equal to the value of inputs purchased from other sectors plus value added in that sector. Thus, we have:

[130] $\sum_j q_{ij}$, indicates a summation for all values of j, i.e. the row sum, $q_{i1} + q_{i2} + \ldots\ldots\ldots + q_{in}$. Similarly, $\sum_i q_{ij}$ is the column sum, $q_{1i} + q_{2i} + \ldots\ldots\ldots + q_{nj}$.

$$Q_i = \sum_i q_{ij} + V_j = U_j + V_j \qquad (j = 1 \ldots\ldots n) \qquad \textbf{(5.2)}$$

As its name implies, the inter-industry transaction table is constructed in such a way as to identify the transactions that occur among major sectors of the Nigerian economy. Each producing sector within the Nigerian economy has a certain amount of output, which is used within the sector, sold as inputs to other producing sectors or sold for final demand to consumers. The transaction table summaries the annual value of these sales. In this study, and as mentioned earlier, the Nigerian economy has been divided into 35 producing sectors. The sectors in aggregate include all firms and industries in the Nigerian economy.

The final demand sector includes the value of goods and services used by households, government and exports to Nigeria's trading partners. The final demand sector is known as an exogenous sector because change in demand for products in this sector occur autonomously and its repercussions are transmitted through the rest of the economy. Changes in final demand occur because of political decisions or consumer preferences. Tracing the direct and indirect effects of a change in exogenous, final demand sector on the producing (endogenous) sectors is one of the primary objectives of the I-O model.

The final payment sector accounts for the direct payments for such item as wages and salaries, other labour income including profits, payment made for goods and services imported. Final payments, such as imports, are considered to be leakages from the domestic economy. In all, the I-O transactions table must be balanced in that for the industries, inputs equals' outputs while for the products, supply equals demand. This

is an accounting requirement so that no economic activity is lost (or gained) in the organisation of the transactions table and it accounts for all income and outlays.

The main task in constructing an inter-industry transaction table involves the filling in of the cells in quadrant *I* of Table 5.5. Each row vector in quadrant *I* of Table 5.5 describes the way in which the total sales of each sector are allocated to other sectors, while each column vector represents the inputs or purchases side of each sector in relation to all other sectors. The cells in quadrant *I* can be filled column-wise or row-wise.

5.5.2.2 Direct Requirements Table

While the inter-industry transaction table provides an interesting and useful 'snapshot' of the structure of the Nigerian economy, it is only descriptive of the current situation. Of course, to use I-O analytically to examine how production in each sector would change in response to a change in the demand for final products, we must first derive the technical coefficients or direct requirements table.

The technical coefficients table shows the value of inputs purchased from all sectors in the economy per naira of output in a particular sector. These are, however, based on three simplifying, but important assumptions:

- Each sector produces only a homogeneous commodity
- Each sector has a fixed input ratio
- Each sector operates under condition of constant returns to scale.

An I-O table is usually represented as a system of linear equations and expressed in matrix form. Using the above assumptions, the direct requirements table is derived by dividing all entries in each sector's column by the total outlay of that sector. From the first quadrant, i.e. quadrant I in Table 5.5 q_{ij} symbolises the value of sales from sector i to sector j and Q_i the total output of sector j, the direct requirement of each sector j for the entire of sector i is defined as:

$$a_{ij} = \frac{q_{ij}}{Q_j} \qquad \textbf{(5.3)}$$

The technical coefficients or direct requirements allow us to determine how large the annual outputs of each sector must be in order to satisfy not only given direct demand by the final users, the households, but also the intermediate demand, depending in its turn on the total level of output in each of the thirty-five productive sectors. The technology matrix or direct requirements table is the heart of I-O analysis. The aim of this table is to establish the equilibrium conditions under which industries in the Nigerian economy have just enough output to satisfy each other's demands in addition to final outside demands. Given the internal demands for each industry's output, we proceed further to determine the output levels for the various industries that would meet a given final level of demand as well as the internal demand.

5.5.2.3 The Total Requirements or Interdependence Coefficients Table

The total requirements or interdependence coefficients are the most important of the three I-O matrices for economic analysis purposes. The coefficients or elements of this matrix measure the total (direct and indirect) output required of all sectors in order for any particular sector to make a sale of one naira to final demand. In order words, it measures the total impact of a change in final demand in a given sector on the output of all other sectors of the economy after all successive rounds of output increases have been recorded. As we will later find in this section the totals can be found by expressing the transaction table as a set of simultaneous equations and solving the set by means of matrix algebra.

Since the Nigerian economy is an open economy, Y_i includes exports of the $i\,th$ industry as a positive entry and imports of i th industry as a negative. Thus, q_{ij} is the total absorptions of the i th commodity by the j th sector inclusive of imports and the entries in final demand referring to private and public consumption, investment and stock change are also inclusive of imports.

Thus, the total output of each industry (in our case 35) can be stated as:

$$\sum_{j=1}^{35} q_{ij} + Y_i = Q_i \text{ [131]}; \qquad i=1, 2, 3 \ldots\ldots\ldots\ldots 35 \qquad \textbf{(5.4)}$$

[131] For the derivation of this expression see Table 5.5.

Therefore, for our thirty-five sector economy, the structural equations can be written as:

$$
\begin{aligned}
q_{1.1} + q_{1..2} + q_{1.3} + \ldots\ldots\ldots + q_{1.35} + Y_1 &= Q_1 \\
q_{2.1} + q_{2.2} + q_{2.3} + \ldots\ldots\ldots + q_{2..35} + Y_2 &= Q_2 \\
q_{3.1} + q_{3.2} + q_{3.3} + \ldots\ldots\ldots + q_{3.35} + Y_3 &= Q_3 \qquad \textbf{(5.5)} \\
\cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot & \\
\cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot & \\
\cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot & \\
q_{35.1} + q_{35.2} + q_{35.3} + \ldots\ldots\ldots + q_{35.35} + Y_{35} &= Q_{35}
\end{aligned}
$$

The structural equations (equation 5.5) above show the I-O relations in terms of the entries in the inter-industry transaction or flow table. In equation (5.3), we defined the inter-industry relationships among sectors as $a_{ij} = \frac{q_{ij}}{Q_j}$. This expression is rearranged as $q_{ij} = a_{ij} Q_j$ which implies that the level of sales from sector i to sector j depends on the level of output of sector j (Q_j) and the technical coefficient of input requirements of sector j from sector i (a_{ij}). Therefore, substituting equation (5.3) into equation (5.5), we rewrite the equations for the thirty-five producing sectors as:

$$
\begin{aligned}
a_{1.1}Q_1 &+ a_{1.2}Q_2 + a_{1.3}Q_3 + \ldots\ldots + a_{1.35}Q_{35} + Y_1 = Q_1 \\
a_{2.1}Q_1 &+ a_{2.2}Q_2 + a_{2.3}Q_3 + \ldots\ldots + a_{2.35}Q_{35} + Y_2 = Q_2 \\
a_{3.1}Q_1 &+ a_{3.2}Q_2 + a_{3.3}Q_3 + \ldots\ldots + a_{3.35}Q_{35} + Y_3 = Q_3 \qquad \textbf{(5.6a)} \\
&\vdots \\
a_{35.1}Q_1 &+ a_{35.2}Q_2 + a_{35.3}Q_3 + \ldots\ldots + a_{35.35}Q_{35} + Y_{35} = Q_{35}
\end{aligned}
$$

We re-write equation (5.6a) in matrix and vector format to obtain equation (5.6b) defined as:

$$
\begin{bmatrix}
a_{1.1} & a_{1.2} & a_{1.3} & \ldots\ldots\ldots & a_{1.35} \\
a_{2.1} & a_{2.2} & a_{2.3} & \ldots\ldots\ldots & a_{2.35} \\
a_{3.1} & a_{3.2} & a_{3.3} & \ldots\ldots\ldots & a_{3.35} \\
\ldots\ldots & & & & \\
\ldots\ldots & & & & \\
\ldots\ldots & & & & \\
\ldots\ldots & & & & \\
\ldots\ldots & & & & \\
\ldots\ldots & & & & \\
a_{35.1} & a_{35.2} & a_{35.3} & \ldots\ldots\ldots & a_{35.35}
\end{bmatrix}
X
\begin{bmatrix} Q_1 \\ Q_2 \\ Q_3 \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ Q_{35} \end{bmatrix}
+
\begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ Y_{35} \end{bmatrix}
=
\begin{bmatrix} Q_1 \\ Q_2 \\ Q_3 \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ Q_{35} \end{bmatrix}
\qquad \textbf{(5.6b)}
$$

Thus, equation (5.6a) reveals the interdependence of each sector on all other sectors. It indicates that the level of output in any sector is dependent upon the level of output in other sectors, the input requirements of each sector and the level of its final demand. Further, to give the basic I-O accounting equation, equation (5.6b) can be

re-written as:

$$AQ + Y = Q \qquad \textbf{(5.6c)}$$

Equation (5.6c) above is more suitable for model building and economic analysis. Indeed if the level of final demand is assumed, it is quite possible to solve the sets of equations to determine the level of output of various sectors. The array of coefficients so obtained can be used in an I-O model aimed at forecasting levels of output.

As mentioned earlier, since the model under consideration is an open model, the sum of the elements in each column of the input coefficient matrix A must be less than unity, otherwise, if the sum is greater than or equal to unity, production will not be economically justifiable. We treat final demand (Y_i) as exogenous to the sectors and $a_{ij}Q_1$ represent the input requirements from sector i to the jth sector. So, we have

$$(1 - a_{1.1})Q_1, \quad -a_{1.2}Q_2, \quad -a_{1.3}Q_3, \ldots\ldots\ldots\ldots\ldots\ldots, -a_{1.35}Q_{35} = Y_1$$

and, in general:

$$\begin{bmatrix} (1-a_{1.1}) & -a_{1.2} & \ldots & a_{1.35} \\ -a_{2.1} & (1-a_{2.2}) & \ldots & a_{2.35} \\ -a_{3.1} & -a_{3.2} & (1-a_{3.3}) & \ldots & a_{3.35} \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ -a_{35.1} & -a_{35..2} & -a_{35.3} & \ldots & (1-a_{35.35}) \end{bmatrix} X \begin{bmatrix} Q_1 \\ Q_2 \\ Q_3 \\ . \\ . \\ . \\ . \\ . \\ . \\ . \\ Q_{35} \end{bmatrix} = \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ . \\ . \\ . \\ . \\ . \\ . \\ . \\ Y_{35} \end{bmatrix} \quad \textbf{(5.7)}$$

or simply

$$(I - A)Q = Y \quad \textbf{(5.8)}$$

therefore,

$$Q = (I - A)^{-1} Y \quad \textbf{(5.9)}$$

Thus, given Y, we can solve for the vector of gross outputs. Finally, equation (5.9) is the solution to the I-O system. The matrix $(1 - A)^{-1}$ is known as the Leontief inverse or the matrix multiplier[132]. The elements of this matrix measure the direct and indirect output levels from each sector of the Nigerian economy required to satisfy given levels of final demand [133].

[132] The inverse of $(I - A)$ is defined as that matrix which when multiplied by $(I - A)$ gives the identity matrix, *I*, therefore, $(I - A)(I - A)^{-1} = I$. In this case, the order of multiplication does not matter. The inverse is only defined for square matrices provide the matrices are non-singular.

[133] It reveals the linkage between sectors in the economy. Each element in the matrix shows by what factor sector (industry) i sells goods and services to the column sector (industry) j because of changes in final demand –forward linkage; and also by what factor column sector (industry) j

It must be noted that most sectors produce not only final demand goods but also intermediate goods for other sectors while their inputs consist not only of primary inputs but also of intermediate goods produced by other sectors. Therefore, the extensive interdependence involved in the production process gives rise to a very complicated set of inter-relations. Next, we examine the stability conditions for technical and interdependence coefficients.

5.5.3 Technical and Interdependence Coefficients: The Stability Conditions

The table of technical or direct coefficients by itself is of limited usefulness because it shows only the 'first-round' effects of a change in the output of one sector on the other sectors from which it purchases inputs. Therefore, as a result of this, it is important that the table of technical coefficients meet certain stability conditions. These are:

- at lease one column in the table add up to less than unity
- that no column in the table add more than unity

The mathematical proof of these conditions is quite complex but we make no attempt to demonstrate these propositions[134]. Since the technical coefficients tables are expressed in monetary terms, it is intuitively clear that an industry cannot pay more for its inputs than it receives from the sale of its output.

---

purchases goods and services from row sector (industry) i due to changes in final demand – backward linkage.

[134] For proof in the case where all technical coefficients are positive, see Solow (1952).

Of course, for the interdependence coefficients table, there is a fundamental condition that must also be met known as Hawkins-Simon conditions. Basically, the Hawkins-Simon condition states that there can be no negative element in the table of interdependence coefficients. What are the implications of negative elements? In essence, it implies that each time the sector with a negative element expanded its sales to final demand, its direct and indirect input requirements would decline. Further, it implies that the more the sector expands its output, the less it would have to purchase from other sectors. Of course, this is clearly a logical contradiction and an economic absurdity.

Our results revealed that the technical and interdependence coefficients passed the stability conditions. Before proceeding into further details about the technical and interdependence coefficients, it is timely we take a look at the comparison between I-O accounts and the system of national accounts.

5.5.4 The Input-Output Accounts and the System of National Accounts

The I-O table forms part of the broader system of National Accounts which includes, in addition to I-O tables, the Income and Expenditure Accounts, the Indexes of Real Domestic Product by Industry, Productivity Studies, the Financial Flow Accounts, the Balance of International Payments and Balance Sheets showing the assets and liabilities of the economy.

The system of National Accounts was originally developed to satisfy the need for consistent and comprehensive measures of economic activity. As demands for data

for economic analysis have grown over the years, the conceptual framework has been extended and refined, at the same time flows of data have been established to fill in the system through the exploitation of existing sources of information, the development of new sources, and the design of new estimating techniques.

The best known accounts of the system are the Income and Expenditure Accounts which are usually designed to provide current and comprehensive, though relatively aggregative, measures of the output of the economy in two ways. First, as the value of the 'final' expenditure on goods and services by the various sectors of the economy, less total imports of goods and services and, second, as the income accruing to (or costs of) primary factors of production engaged in the production process plus certain non-factor costs such as depreciation and indirect taxes.

The items of final expenditure are identical in both the Income and Expenditure Account of the I-O subsystems. On the Gross Domestic Product side, the I-O breakdown of primary inputs is less detailed. Below is a tabular comparison, Table 5.6, of the components of Gross Domestic Product as calculated from the Income and Expenditure Accounts with the corresponding items in the I-O format.

Table 5.6 Comparison of Components of Gross Domestic Product

GROSS DOMESTIC PRODUCT **Income and Expenditure Accounts** (Consolidated Production Account. Primary expenses arising from Domestic Production)	GROSS DOMESTIC PRODUCT **Input-Output Format**
1. Wages, salaries and supplementary labour income and military pay and allowances.	1. Wages and salaries Supplement labour income
2. Net income of non-farm unincorporated business	2. Net income of unincorporated
3. Accrued net income from farm operators from farm production	
4. Profits and other investment income	4 – 6 other operating surplus
5. Inventory valuation adjustment	
6.Capital consumption allowances and miscellaneous valuation adjustments	
7. Indirect taxes	7. Commodity indirect taxes and other indirect taxes
8. Deduct subsidies	8. Deduct subsidies
9. Residual error of estimate	
Gross Domestic Product at Market Prices	Gross Domestic Products at Market Prices

The I-O table and the estimates of Gross Domestic Product derived from them use somewhat different statistical sources than the Income and Expenditure Accounts.

With reference to Table 5.5 and equation (5.1), adding up the balance for each row and treating imports as a deduction from final demand gives:

$$\sum_i Q_i = \sum_i \sum_j q_{ij} + \sum_i Y_i - \sum_i M_i \qquad \textbf{(5.10)}$$

Also, adding across all the columns gives:

$$\sum_j Q_j = \sum_j \sum_i q_{ij} + \sum_j V_i \qquad \textbf{(5.11)}$$

Since $\sum_i Q_i = \sum_j Q_j$, these equations are equal to each other. Therefore, combining them and eliminating the total of all inter-industry transaction form both side gives the basic national account identity:

$$\sum_i Y_i - \sum_i M_i = \sum_j V_j \qquad \textbf{(5.12)}$$

Notwithstanding the different approaches used, the estimates of Gross Domestic Product for the economy as derived from the I-O Accounts should closely approximate those in the income and expenditure accounts.

5.5.5 Estimation Results

One of the most straightforward uses of the I-O table is the description of economic activity in a country. So, as a prelude to chapter 6 which focuses on uses of the I-O tables, we give a brief description of the inter-industry transaction tables constructed and the derived technical coefficients (direct requirements) and interdependence coefficients (total requirements).

5.5.5.1 Brief Description of the Transaction Tables

The total output (sales) and input (purchases) of each producing sectors of the Nigerian economy was obtained by adding elements in the transaction tables along row and columns respectively. As expected, the value for total output (sales) of each sector along a row equals the value for input (purchases) obtained along a column. Tables 5.7a, 5.7b, 5.7c, and 5.7d contain the inter-industry transaction tables for the Nigerian economy for the year 1981, 1985, 1995 and 2000 respectively[135]. Specifically, for 1981, agriculture total output is valued at ₦ 11,898.52 million, while the total output of crude petroleum oil, building and construction, and distributive sectors are ₦ 10,847.76 million, ₦ 5,360.00 million, and ₦ 8,571.56 million respectively.

With regard to the distribution of agricultural output, estimated sales to other sectors include ₦ 1,116.80 million to itself; ₦ 28.40 million to other mining; ₦ 3,819.12 million to food; ₦ 901.70 million to drink, beverage and tobacco; ₦ 175.72 million to

[135] For these Tables see appendix.

textiles; ₦ 194.40 million to footwear and leather; ₦ 0.12 million to wood and wood products; ₦ 108.20 million to paper and paper products; ₦ 144.23 million to drugs and chemicals; ₦ 20.44 million to rubber plastic; ₦ 22.08 million to iron and steel; ₦ 27.60 million to other manufacturing; ₦ 11.80 million to electricity generation; ₦ 120.38 million to building and construction; and ₦ 101.91 million to hotels and restaurants. Agricultural sector sales to final demand was ₦ 5,105.62 million. Goods and services purchased as inputs to production by agriculture from other sectors of the economy included ₦ 1,116.80 million from itself; ₦ 468.18 million from crude petroleum; ₦ 232.81 million from refineries; ₦ 169.80 million from distributive sector and ₦ 9896 million in value added (wages, interest payment and taxes)[136].

In terms of output contribution (i.e. in value terms) to the Nigerian economy, the inter-industry transaction table for 1981 revealed that the agricultural sector has the largest value of ₦ 11,898.52 million, followed by the oil (petroleum) sector with ₦ 10,847.76 million, distributive sector ₦ 8,571.56 million, producer of government services ₦ 6,680.65 million, building and construction ₦ 5,360.00 million, food ₦ 5,196.12 million and land transport ₦ 4,311.46 million. A cursory examination of the broad classification of the economic activities in terms of output contribution to the Nigerian economy revealed that the primary sector contributed ₦ 15,985.20 million (excluding the oil sector) but when included, we have ₦ 28,185.49 million. Manufacturing activities contributed ₦ 22,210.32 million while tertiary activities contributed ₦ 25,187.59 million (excluding producer of government services sector) but we have ₦ 31,868.24 million when we include producer of government services sector.

[136] The empty cells either show sectors from which very negligible sales were made, and that are too small to merit recording, or sectors from which the agricultural sector made no sales at all.

For 1985, the corresponding total output value for agriculture, crude petroleum oil, building and construction are ₦ 23,654.00 million, ₦ 12,775.59 million, ₦ 2,956.00 million, and ₦ 12,248.86 million respectively. Further, in terms of output contribution to the Nigerian economy, the inter-industry transaction table for 1985 revealed that the agricultural sector again has the largest value of ₦ 23,564.00 million, followed by the oil (petroleum) sector with ₦ 12,775.59 million, distributive sector ₦ 12,248.86 million, land transport ₦ 5,109.23 million, producer of government services ₦ 4,835.50 million, and food ₦ 2,301.23 million. Also, the broad classification of the economic activities in terms of output contribution to the Nigerian economy revealed that the primary sector contributed ₦ 31,378.98 million (excluding the oil sector) but when included, we have ₦ 44,812.11 million. Manufacturing activities contributed ₦ 16,251.32 million while tertiary activities contributed ₦ 30,824.30 million (excluding producer of government services sector) but when included we have ₦ 35,659.80 million.

Our observation of the inter-industry transaction table revealed that for 1981 and 1985, agricultural sector dominated the sectoral contribution though closely followed by the crude petroleum sector. This still confirms the agricultural sector as the mainstay of the Nigerian economy.

In 1995, the total output value for agriculture, crude petroleum, building and construction and distributive sectors are ₦ 629,298.27 million, ₦ 860,887.02 million, ₦ 26,475.60 million, and ₦ 384,269.46 million. In terms of output contribution to the Nigerian economy, the inter-industry transaction table for 1995 revealed that crude

petroleum sector has the largest value of ₦ 860,887.02 million followed by the agricultural sector with ₦ 629,298.27 million, distributive sector ₦ 384,269.46 million, producer of government services ₦ 122,536.90 million, land transport sector ₦ 77,745.24 million, livestock ₦ 72,853.30 million, and drugs and chemicals ₦ 23,920.13 million.

The broad classification of the economic activities in terms of output contribution to the Nigerian economy revealed that the primary sector contributed ₦ 739,012.70 million (excluding the oil sector) but when included, we have ₦ 1,603,091.55. Manufacturing activities contributed ₦ 255,533.42 million while tertiary activities contributed ₦ 590,981.39 million (excluding producer of government services sector) but when included we have ₦ 713,518.29 million.

Finally, for year 2000, the corresponding total output values for these sectors, .i.e. crude petroleum, agricultural, distributive, land transport, housing, and iron and steel sectors are ₦ 2,504,142.49 million, ₦ 1,200,857.71 million, ₦ 775,563.06 million, ₦ 185,210.66 million, ₦ 174,445.66 million, and ₦ 94,057.54 million respectively.

In terms of output contribution to the Nigerian economy, the inter-industry transaction table for 2000 revealed that crude petroleum sector has the largest value of ₦ 2,504,142.49 million followed by the agricultural sector with ₦ 1,200,857.71 million, distributive sector ₦ 775,563.06 million, land transport sector ₦ 185,210.66 million, housing sector ₦ 174,445.66 million, iron and steel sector ₦ 94,057.54 million, vehicle assembly sector ₦ 67,321.00 million, and fabricated metal ₦ 26,057.51 million. The broad classification of the economic activities in terms of output

contribution to the Nigerian economy revealed that the primary sector contributed ₦ 1,437,746.62 million (excluding the Oil sector) but when included, we have ₦ 3,948,951.89 million. Manufacturing activities contributed ₦ 590,438.57 million while tertiary activities contributed ₦ 1,404,468.03 million (excluding producer of government services sector) but when included we have ₦ 1,737,255.07 million.

The inter-industry transaction table revealed that in terms of output contribution to the Nigerian economy, agricultural sector dominance had been overtaken by the crude petroleum sector in 1995 and 2000[137].

Comparing the output value in percentages, we observe that for the agricultural sector, there was 98.79 percent increase between 1981 and 1985 while for crude oil and distributive sectors, there was 17.17 per cent and 42.90 percent increase respectively, however, the output of building and construction declined by 44.85 percent between 1981 and 1985[138].

Further comparisons show that between 1985 (i.e. the commencement of the adjustment programme) and 1995, there was dramatic increase in the sectoral output value. Specifically, the output of agricultural sector increased by 2,560.00 percent, crude oil by 6,638.00 percent, building and construction by 795.65 percent and distributive sector by 3,037.19 percent. Also, between 1995 and 2000, agricultural

[137] The current dominance of the crude petroleum sector in terms of output contribution might not be unconnected with the continue discovery of oil well, especially, in the Niger-Delta area of the country and the global increase in the price of crude oil products. However, there have been major improvements in agricultural output contribution to the GDP, specifically, in 1998 and 1999, due to favourable weather and diversification efforts of the government, agricultural contribution substantially exceeded that of oil.

[138] The substantial decline in the output value of building and construction sector is not unconnected with stabilisation policies introduced in 1982 which led to widespread unemployment and an increase in cost of living. Thus, activities in this sector nose-dived considerably.

sector recorded 90.82 percent increase in value, crude petroleum 190.87 percent, building and construction 126.51 percent and distributive sector by 101.82 percent.

Finally, when the sectoral output value for 1985 is compared with that of 2000, the percentage increase was very huge. Specifically, agricultural sector experienced 4,976 percent increase in output, crude oil 190.87 percent increase, building and construction 126.50 percent increase and distributive sector by about 101.83 percent increase[139].

The final demand sector shown in column 42 in all the inter-industry transaction tables for 1981, 1985, 1995 and 2000 includes values of goods and services used by households, governments, exports to other countries and imports from other countries into Nigeria. The final demand sector is known as an *exogenous* sector because changes in demand for products in this sector occur autonomously and repercussions are transmitted throughout the rest of the economy. In most cases, changes in the final demand sector occur because of political decisions and consumer preferences.

The final payment sector accounts for the direct payments for such items as wages, salaries, other labour income, proprietor income, including profits and payment outside the country for goods and services imported. Final payments, such as imports, are leakages from the domestic economy since money paid does not re-enter the domestic economic structure. The inter-industry transaction tables must be *balanced* in that the total output of each producing sector must be equal to its outlay as indicated in row 45 of column 45 of Tables 5.7a, 5.7b, 5.7c, and 5.7d for 1981, 1985,

[139] The percentage increase in agricultural contribution still confirms the seriousness of government efforts to diversify the economy from oil to non-oil.

1995 and 2000 respectively.

The row entries in the inter-industry transaction tables, (see Tables 5.7a, 5.7b, 5.7c, and 5.7d) described the way in which the total sales or each sector are allocated over the remaining sectors in the economy. For instance, the agriculture sector as shown in Table 5.7a sells ₦1,116.80 million worth of goods and services to itself; ₦28.40 million to other mining; ₦ 3,819.12 million to food sector; ₦901.70 million to drink, beverage and tobacco sector; ₦175.72 million to textiles sector; ₦194.40 million to footwear and leather sector; ₦108.20 million to paper and paper product sector; ₦144.23 million to drugs and chemical; ₦20.44 million to rubber plastic sector; ₦22.08 million to iron and steel sector; ₦11.80 million to electricity; ₦120.38 million to building and construction; and ₦101.91 million to hotels and restaurants.

The column entries in Tables 5.7a, 5.7b, 5.7c and 5.7d describe the inputs or purchases side of each sector in relation to all other sectors. Again, considering the agricultural sector in Table 5.7d, column 1 shows that ₦ 50,831.84 million worth of products were purchased from agriculture internally; ₦ 5,089.38 million from drugs and chemicals; ₦ 2,264.44 million from refineries; ₦ 8,602.11 million from fabricated metal; ₦ 30,403.31 million from vehicle assembly; ₦ 3,077.90 million from other manufacturing; ₦ 8,884.73 million from building and construction; ₦ 2,114.13 million from air transport; ₦ 4,979.16 million from other land transport; ₦ 48.21 million from water transport; ₦ 18.70 million from railway transport; and ₦ 27,395.26 million from distributive sector[140]. Also, ₦ 1,056,495.21 million in value added (wages, inertest payment, taxes, depreciation, and imports) as indicated by row

[140] Also, empty cells either show sectors from which very negligible purchases were made, and that are too small to merit recording, or sectors from which the agricultural sector made no purchases at all.

44, column 1 of table 5.7d. When all purchases or expenditure by sector are considered, total sector output is exactly equal to total sector outlay.

5.5.5.2 Brief Description of the Technical Coefficients and Interdependence Coefficients Tables

Next, we use MATLAB 6.1 to transform the inter-industry transaction matrix to obtain the technical coefficients (direct requirements coefficients) and the Leontief inverse (interdependence coefficients matrix) for the year 1981, 1985, 1995 and 2000. Specifically, we use MATLAB 6.1 to transform Tables 5.7a, 5.7b, 5.7c, and 5.7d to obtain technical coefficients (see Tables 5.8a, 5.8b, 5.8c and 5.8d in appendix) and Leontief inverse (see Tables 5.9a, 5.9b, 5.9c, and 5.9d in appendix).

First, as discussed in section 5.2.2 of this chapter, the technical coefficients are calculated as[141]:

$$a_{ij} = \frac{q_{ij}}{Q_j}$$

Hence, for 1981 and with reference to agricultural sector in particular, the technical coefficients are calculated to be 0.0939 for itself (i.e. agriculture), 0.0393 for crude petroleum, 0.0196 for refineries and 0.0143 for distributive trade. All these make up the first column of table 5.8a for 1981. The technical coefficients for all other sectors are calculated in the same manner following equation (5.3).

[141] See equation (5.3).

The technical coefficients for the agricultural sector show the value of purchases from each other sectors in the economy that must be made by the agricultural sector in order for it to produce one naira's worth of output. That is, for each naira of output produced by the agricultural sector, it must purchase ₦ 0.0939 (approximately 9 kobo) from within the agricultural sector, ₦ 0.0393 from crude petroleum, ₦ 0.0196 from the refineries, and ₦ 0.0143 from distributive trade. The technical coefficients of the crude petroleum from table 4.8a of 1981 indicate that for each naira of output nothing is bought from agriculture, but ₦ 0.0074, ₦ 0.0035, ₦ 0.0035 and ₦ 0.0024 are purchased from itself, other mining, food, and drink, beverage and tobacco respectively. These coefficients show the *direct* effects in all sectors due to one naira change in output in a particular sector and therefore, they reveal the inter-industry linkages that tie the economy together. The complete picture of the technical coefficients for the I-O model for 1981, 1985, 1995 and 2000 is in table 5.8a, 5.8b, 5.8c, and 5.8d respectively[142].

However, from economic theory, the direct or first round effects measure only a fraction of the total economic impacts since there are also indirect effects of any economic change. The *total* (direct and indirect) output levels needed to justify specified levels of final demand is obtained by deriving the Leontief inverse or the interdependence coefficients matrix following the method described in section 5.2.3 of this chapter. The Leontief inverse or the interdependence coefficients matrix for 1981, 1985, 1995 and 2000 are in Tables 5.9a, 5.9b, 5.9c and 5.9d respectively[143].

Each column of the $(1 - A)^{-1}$ matrix corresponds in the same order to the original

[142] For these Tables see the appendix.
[143] For these Tables see the appendix.

economic sectors shown in appendix as Tables 5.7a, 5.7b, 5.7c and 5.7d. That is, column 1 contains the coefficient for the agricultural sector, column 5 contains those for crude petroleum sector, column 22 contains those for building and construction sector and column 28 contains those for distributive sector.

For the purpose of interpretation, we considered column 2 (i.e. livestock) of 1981 i.e. Table 5.9a. The coefficients of column 2 of the matrix indicate that for each naira of sales to final demand by the livestock sector, total output requirements are ₦ 0.0619 from agriculture, ₦ 1.0002 from livestock, ₦ 0.0058 from crude petroleum, ₦ 0.0755 from food, ₦ 0.0020 from drugs and chemical, ₦ 0.0357 from distributive trade. The output required from livestock includes its ₦ 1.00 sales going to final demand, and ₦ 0.0002 of additional indirect output that is brought about by the fact that other processes and that they must increase output to satisfy the increase in final demand experience by livestock.

With reference to Table 5.8d and equation (5.9), the direct input requirements of livestock from agriculture are ₦ 0.04141 per naira of output. However, the total output requirement from agriculture is ₦ 0.08188 for each naira sales by livestock to final demand as shown in Table 5.9d. The difference between the total effect and direct effect (₦ 0.08188 – ₦ 0.04141 = ₦ 0.04047) is the indirect output required from agriculture. Not all of this indirect output will be sold to livestock as is the case with the direct output, rather, ₦ 0.04047 of output is required of the agriculture sector to meet the indirect input needs of all sectors of the economy. Finally, all the tables of interdependence coefficients (i.e. direct and indirect requirements) have diagonal entries greater than one because in the general solution of the system of equations, the

output of each sector in increased by one naira[144].

Having estimated and analyse the technical and interdependence coefficients, the uses of the I-O tables constitute the focus of the next chapter, chapter 6.

5.6 Limitations of the Static Input-Output Model

Irrespective of the variety of applications and uses of the I-O model, some of the problems that were encountered by Leontief still exist. In most countries, the I-O Tables are constructed once every five years and the data may not be available to the public for another three years. So, changes in the economic structure that occurred between the end of data collection and end of calendar year are not recorded. Aside from the above problem, other limitations of the I-O approach as highlighted by Davis (1990), Holland and Cooke (1992) and the OECD (2000);

First, the basic I-O model assumes constant returns to scale. It assumes that mix of inputs will be used by a sector to create output regardless of quantity. Second, each industry is assumed to produce *only* one type of product. Thus, automobile industry produces only cars and it assumes that the distribution and scale of the product is fixed. Third, each product within the industry is assumed to be the same. This implies that there is no substitution between inputs. Thus, the output of each sector is produced with a unique set of inputs. Fourth, technical coefficients are assumed to be fixed .i.e. the amount of each input necessary to produce one unit of each output is constant.

[144] This is accomplished by subtracting the table of technical coefficients from an identity matrix. The latter is a matrix which has ones in every diagonal cell and zeros elsewhere.

Therefore, the amount of inputs purchased by a sector is determined solely on the level of output. This implies that the implication of factor price effects, changing technology or economies of scale is disregarded. The model assumes no constraint on resources i.e. supply is infinite and perfectly elastic, and resources are efficiently employed. Finally, despite these limitations, the I-O model is perhaps one of the most powerful descriptive tools available to both national and regional analysts.

5.7 Summary and Conclusion

This chapter described the history, the structure, and detailed outline of the construction of the I-O model. The development of input-output model as an economic analytical tool and the actual construction of the first I-O table for the United States were accomplished by Wassily Leontief. Leontief's original table showed how each sector of the economy depended upon other sectors.

The I-O model has been defined in various ways. The I-O model shows how sectors (industries) interact; specifically, it shows how industries provide input to, and use output from, each other to produce goods and services; it provides detailed information on the flows of goods and services that make up the production process of industries.

The I-O model consists of three basic tables, which are; the transaction or flow table, a table of technical coefficients and the interdependence coefficients. The transaction table is the basic data table of the model while the technical and interdependence coefficients are analytical tables derived from the transaction table. Though, the transaction table provides an interesting and useful 'snapshot' of the structure of the Nigerian economy but it only a descriptive of the current economic situation.

The technical coefficients on the other hand show the value of inputs purchased from all sectors in the economy per naira of output in a particular sector, while the interdependence coefficients table, though regarded as the most important of the three I-O matrices for economic analysis purposes, measure the total output required for all

sectors in order for any particular sector to make a sale of one naira to final demand. Putting it succinctly, it measures the total impact of a change in final demand in a given sector on the output of all other sectors of the economy after all successive rounds of output increase have been recorded.

There have been five previous attempts at constructing I-O tables for Nigeria. The pioneering attempts by Carter (1966) in constructing I-O table for Nigeria was followed by Clark (1970); Aboyade (1981); Olayide, Olofin, Iyaniwura and Adeniji (1981); and recently by NISER (1990). Among these five attempts, the most disaggregated I-O table (i.e. 30 x 30 I-O table) based on Nigerian data was constructed by NISER (1990).

Specifically, in this chapter we constructed four new I-O tables with higher level of disaggregate, 35 x 35, than all the previous I-O for the Nigerian economy for 1981, 1985, 1995 and 2000. The major areas of improvement of our I-O tables over the previous I-O are quite germane.

First, through limiting this research to secondary sources of information, mainly publications of FOS and CBN, we have demonstrated that an I-O table for Nigerian economy can be constructed on the basis of existing data without recourse to primary data collection. Second, we have equally demonstrated that an I-O table can be computed within a reasonable length of time and at less than the prohibitive costs that reliance on primary data collection would entail. Third, we disaggregated transport activities into rail transport, other land transport (road transport), water transport, and air transport; utilities into electricity and water; and finance and insurance into

banking and finance and insurance. It is expected that this higher level of disaggregation would enable us to see clearly the importance of each and their respective contributions to the economy. The I-O tables constructed for Nigeria in this study is not only the most recent I-O tables but also the most disaggregated I-O tables for the Nigerian economy to the best of our knowledge.

Each row of Tables 5.9a, 5.9b, 5.9c, and 5.9d, i.e. Tables of interdependence coefficients, shows the output directly and indirectly required from the purchasing sectors to support the delivery of ₦1.00 to final demand by the corresponding selling sectors, while, each column shows the output required for a *single* sector (directly and indirectly) to support ₦1.00 of delivery to final demand by each of the processing sectors. The tables of interdependence coefficients are a general solution of the I-O system. It illustrates the principle of *economic interdependence*. The table can be use to show how a change in final demand for the output of one sector stimulates production in the other sectors. It shows the end result after all of the 'feedback effects' have worked themselves out.

Finally, the inter-industry transaction tables provide at a glance the contribution of sectors to national output, though the agricultural sector has over the years been regarded as the mainstay of the Nigerian economy, this role is gradually being taken over by the oil sector. However, the diversification effort of the government has beginning to yield fruits with the consistent increase in agricultural sector contribution to the national output. Specifically, in 1998 and 1999, and recently in 2001 the contribution of agricultural to national output was not only substantial but as continue to be on the increase.

CHAPTER 6

USES OF INPUT – OUTPUT TABLES WITH SPECIAL REFERENCE TO PASS-THROUGH

6.1 Introduction

As mentioned in chapter 3 of this thesis, the depreciation of naira against foreign currencies is expected to increase (decrease) the prices of imports (exports) measured in naira. The depreciation of the naira has two effects on the Nigerian market. First, the depreciation of the exchange rate may raise the sectoral cost of production, especially for a sector that relies on imported inputs. Second, the depreciation may shift the world demand for products towards Nigeria. The costs of production will be higher, the greater the dependence of Nigeria's production on imported inputs. In this case, intermediate input demand would play an important role.

Although changes that affect the basic input structure of an industry or a sector may occur slowly, they nevertheless do occur and cannot be ignored. It is, therefore, imperative to examine the implications of sectoral changes (changes in technical coefficients of the I-O tables) for Nigeria and identify the factors responsible for such changes.

Therefore, using a technique different from the time series approach employed in chapters 3 and 4 of this thesis, this chapter focuses on examining exchange rate pass-through for Nigeria with special reference to the effect on sectoral prices using the I-O technique. To the best of our knowledge, this study is the first to applying this technique in this area of research, most especially in Africa and particularly for Nigeria. This implies that, our study makes a contribution to methods of estimating exchange rate pass-through, especially for a small open economy. Before we apply the I-O framework to exchange rate pass-through in Nigeria we now discuss the

general uses of the I-O tables.

6.2 Uses of the Input-Output Tables

The I-O analysis has a variety of application and uses. Of course, the inter-industry transaction table represents at a glance a comprehensive view of the structure of the national economy, covering inter-sectoral flow of goods and services. Apart from using I-O technique to examine the factors that account for sectoral changes, i.e. causes of changes in the technical coefficients of the I-O tables, other specific applications and uses of the I-O table, we intend to focus this chapter on are structural analysis and forecasting.

6.2.1 Structural Analysis

Since its birth half a century ago, the I-O table has been widely used in the description of economic structure due to its explicit presentation of inter-industry relations. Specifically, the inter-industry transactions table describes the demand and supply relationships of an economy. It describes the economy as it is, not as it ought to be. It shows the final demand for goods and services and the inter-industry transactions required to satisfy the demand. Thus, it reveals the structural interdependence of the economy and it is generally regarded as the best tool for the description of structural change.

As an illustration, if I-O tables are available for two or more countries, they can be used to make a detailed comparative analysis of the economies involved. In fact, such

analysis would reveal much more, all things being equal, than a single comparison of 'stages of growth'. Specifically, the I-O technique allows the researchers to work at detailed levels of disaggregation and thus, provides a good yardstick for measuring inter-industry transactions. It is regarded as an indispensable tool for policy makers in underdeveloped countries when determining the types of investment which could stimulate growth and development. As a matter of fact, the importance of an I-O table cannot be restricted to underdeveloped countries alone, for it has become an important developmental tool to solving problems in advanced industrial economies. Specifically, if an economy is operating at less than full employment due to deficiency in aggregate demand, we can determine the level of aggregate demand through the I-O technique that would be required to achieve full employment[145]. Further, an up-to-date I-O table can be use by policy makers to project full employment levels of overall demand; so also, the private businesses can make effective use of this analytical tool in connection with marketing programmes[146].

The I-O tables have three advantages that make them particularly well suited for structural analysis:

6.2.1.1 The Data are usually Comprehensive and Consistent

By their nature, the I-O tables encompass all the formal market place activity that occurs in a modern economy. In many countries over hundred different data sources are used to ensure the completeness and internal consistency of the data, making it

[145] The necessary changes in final demand sectors of the I-O table could be made using the direct and indirect coefficients, thus, the levels of activity that would be required in all sectors to achieve full employment is determined.
[146] For detail see Evans (1952).

probably the single most comprehensive and complete source for economic data. Also, the I-O table play fundamental role in the construction of national accounts (see Aboyade 1981). This role implies that data are thoroughly checked for their accuracy, and that tables are intrinsically linked with many of the traditional indicators of economic performance such as production and gross national product.

6.2.1.2 Analyse the Economy as an Interconnected System of Industries that directly and indirectly affect one another

The nature of the I-O analysis makes it possible to analyse the economy as an interconnected system of sectors that directly and indirectly affect one another, thus, enable us to trace structural changes to industrial interconnections. This is germane as production process becomes increasing complex, requiring the interaction of many different businesses at the various stages of a product's processing. I-O techniques trace these linkages from the raw material stage to the sale of the product as a final, finished good.

Thus, for example, the decomposition analysis allows us to account for the fact that a decline in domestic demand for automobiles not only affects the auto-industry but also its suppliers, the steel industry, and the steel suppliers, i.e. the coal industry and so on. Therefore, in analysing an economy's reaction to changes in the economic environment, the ability to capture the indirect effects of a change is a unique strength of I-O analysis.

6.2.1.3 Allows a Decomposition of Structural Change which identifies the sources of change, direction and magnitude

The design of the I-O tables allows a decomposition of structural change which identifies the sources of change as well as the direction and magnitude of change. Specifically, the decomposition approach within the I-O framework provides a well-established method for chronicling the structural changes of an economy, particularly if a series of comparable tables are available for the economy in question. The I-O can be used to identify the effects of government policies on economic growth and structural changes, as the pattern of individual components of demand reflects economic policies. Most importantly, an I-O based analysis of structural change allows the introduction of a variable which describes changes in producer's input requirement, i.e. the way in which industries are linked to one another, which in I-O language is called the 'technology' of the economy. It enables changes in output to be linked to underlying changes in factors, such as exports, imports, domestic final demand as well as technology.

Since Chenery's pioneering work (1960), the decomposition method, with some extension and improvement, has been applied extensively by academic[147] and governmental organisations, such as the US Congressional Office, the World Bank and the OECD (Korres, 1996). However, most applications have concentrated on industrialised economies, with only a few on developing countries, though recently a

[147] For instance, Chenery (1960); Carter (1970); Staglin and Wessels (1972) for Germany; Feldman and Palmer (1985); Forssell (1985) for Finland; Kenemitsu and Ohnishi (1989) for Japan; Driver (1994) for the UK; Albala-Bertrand (1996) for Chilie; and Liu (1998) for China.

study on the Chinese economy by Liu (1998) has provided insights into the structural changes associated with economic development.

6.2.2 Input-Output Table as a Forecasting Tool

Aside from I-O tables being used as an important tool for structural analysis, recently, they have also been regarded as a good tool for economic forecast. First, there are three broad approaches to forecasting, namely: partial forecast; use of simultaneous equations; and the consistent forecast. Next, we discuss each of these approaches.

6.2.2.1 Partial Forecast

This is a rudimentary forecasting technique. Partial forecasting entails the projections of one or more time series. The forecasting technique in its simplest form involves fitting a mathematical curve to an individual time series and extrapolating this to some future date. Though often used in economic analysis, however, the partial forecasting is bedevilled by the volatility of time series. In fact, there may be wide short-term variations around a trend line fitted to given series. Thus, the trend might be adequate for long range planning purposes but wide variations around the trend line can result in misleading short-term forecasts. Second, individual forecasts based upon time series might not add up to a meaningful 'total' since there is the possibility of inconsistencies when individual time series are projected regardless of the analytical technique used in making the projections.

6.2.2.2 The use of Simultaneous Equations

A feasible way to avoid the problem of inconsistency in the projections of individual time series is to develop a model for the simultaneous projection of a group of time series. These models are system of equations which contain error terms and therefore enable us to avoid the problem of inconsistency. Of course, forecasters might use highly aggregated time series which describe the level of economic activity in the entire economy and accordingly might face the problem of a high degree of aggregation. However, the forecast obtained might still be helpful to policy makers on broad issues[148].

6.2.2.3 The Consistent Forecasting

In most cases, this has to do with the projection of an inter-industry transaction table. As highlighted by Almon (1970), when an I-O table is projected 'the output of each industry is consistent with the demands, both final and from other industries, for its products'. Consistent forecasts ensure that projections for individual industries or sectors add up to the total projection when the structural relations of the economy do not change significantly over the projection period. There are two main steps involved in a consistent forecast.

First, it is necessary to make projections of each entry in the final demand sectors of the I-O table. Second, but extremely important, a new transaction table is projected

[148] We note that the forecast might not be useful especially with regard to the anticipated levels of economic activity in specific industries or sectors.

on the basis of the assumed changes in final demand. The accuracy of the inter-industry projections will depend, of course, upon the accuracy with which the final demand projection can be made. The I-O forecasting is limited to the case of relatively short-term projections because the model upon which it is based is static, i.e. it assumes no change in technical coefficients.

As an example, all things being equal, the input pattern in tables 4.8a, 4.8b, 4.8c and 4.8d are expected to be stable during the projection period[149]. Technical coefficients might not change rapidly and the likely small changes that might occur over a relatively short period would not lead to serious errors in the projected inter-industry transaction table. However, the criticism of fixed technical coefficients implies that in making long-term forecasts, it would be difficult to rely on a static I-O model. Though the dynamic I-O model is still in its rudimentary stage, significant progress has been made[150].

Irrespective of the criticisms of the static I-O model, the model has been widely judged extremely useful for short-term forecasts. Specifically, an important illustration is the application of the consistent I-O forecast as part of indicative planning in France. The I-O model helped the French Planning Commission (FPC) in making detailed projections of output for the French economy for a specified future period. Putting it succinctly, the detailed forecast of final demand is prepared and from this, the projected levels of inter-industry transaction tables are computed. Thus, the final demand for automobiles is projected from the I-O forecast, and therefore the French steel industry can determine the implication of the increase in automobile

[149] This is not so because of the observed changes in technical coefficients.
[150] This study employed the static I-O model, though; the dynamic I-O model is much more complex and not the focus of this study.

production on its output. The effects of the expected changes in final demand on sectors can be traced back through the I-O table, to all other sectors of the economy.

6.3 Factors that might Cause Changes in Technical Coefficients

In an economy whether developed, underdeveloped or developing, it is not unreasonable to assume that changes in the technical relationships for an entire sector or economy occur slowly and orderly. Of course, changes in production do occur. New products are introduced, new raw materials are substituted for old ones, new technologies can alter the production process, and changes in relative prices induce medium to long-run substitution of one basic raw material for another and so on.

Therefore, over a long period of time span, the technical coefficients are more likely to be affected by four kinds of changes, namely, changes in relative prices; the effect of technological change or development; changes in product mix and finally, changes in the level of output.

6.3.1 Changes in Relative Prices

When relative prices of factors of production change, it is possible that the input patterns and hence the technical coefficients, would change[151]. The relative prices in most cases are bound to change due to movement in the exchange rate and other cost factors[152].

Therefore, price changes have a direct effect on technical coefficients and vector of final demand. As prices change in a manner that is not proportional for all sectors, technical coefficients will change relative to their representation of physical units to

[151] Of course, this would happen *only* when inputs can be substituted one for other another.
[152] This depends upon the pricing policy which has been discussed in chapter 3 sections 3.2 and 3.42.

production. The vectors of final demand would also be affected if we examine changes in demand over time.

Of course, the depreciation of the domestic currency against foreign currencies will increased the cost of imported inputs, *ceteris paribus*. This implies that in cases where there is no locally produced close substitute for the imported inputs, higher import prices will raise the domestic cost of production. Alternatively, if there is a close substitute, then locally produced inputs would be substituted for the imported inputs. In the agricultural subsector, an upward movement in the domestic price of imported inputs due to movement in the exchange rate, might force farmers to purchase local inputs, if they are readily available. Specifically, when the Federal Government banned the importation of wheat, most flour mill industries experimented with related locally produced inputs such as cassava and corn in 1992[153].

So, changes in relative prices of inputs may lead to substitution among inputs. Substitution happens either directly among the same kinds of inputs or by saving or indirectly as, for instance, where some raw materials may be saved by increasing the labour input.

As an illustration, assume that an industry is a large consumer of steel but that on technological grounds could just easily use aluminium, .i.e. substitute aluminium for steel[154]. Therefore, if steel prices rise significantly during the period, while aluminium prices remain stable, this industry, all things being equal, would substitute aluminium for steel. Specifically, when purchases of steel decline substantially and

[153] Though, the ban lasted for a very short period of time before the policy was reversed.
[154] Of course, this depend on other issues, such as the industrial policies, product to be produced and market structure.

there is a corresponding rise in aluminium purchases, the input coefficients in this industry's column and the steel and aluminium row will change.

The illustration above is based on the assumption that in the inter-industry transaction table, steel and aluminium are disaggregated into separate rows and columns. On the other hand, where they are aggregated as a sector, there might still be a change in the technical coefficient as a result of substitution[155].

6.3.2 The Establishment of New Industries

In the short, medium or long run, the establishment of new industries would result in changes in technical coefficients. So also, long-term consistent forecasts would be affected with the establishment of new industries during the projection period. In fact, most unexpected developments within any economy to a great extent would result in changes in technical coefficients and all types of forecasts would definitely be equally affected. However, this does not mean that forecasting should be abandoned but when new forms of economic activity appears on the horizon, any earlier forecasts would need modification to reflect the 'present' situation, .i.e. the anticipated changes in technical coefficients.

6.3.3 The effects of Technological change on Technical Coefficients

As we have observed, an essential feature of the I-O analysis is the technical presentation of sectoral production, on the assumption of fixed input coefficients.

[155] However, it is not necessary for the industry to make a complete switch from steel to aluminium in order to affect the input coefficients. Also, we note that the substitution of capital for labour might equally affect the input coefficients, even, when we assume no change in technology.

Intuitively, it seems that I-O coefficients will change with technological progress[156]. In fact, there should be some decline in intermediate and labour inputs as advanced technologies are phased into the production process.

Indeed, one of the earliest criticisms of the I-O technique is that it assumes 'fixed' technical coefficients. However, over a long period of time, new technological developments are bound to affect input patterns. Technical development may appear through changes in quality of inputs produced in other industries, in learning to put production equipment inside an industry to better use, and in technical renovation of production equipment. The quality of inputs may change as a result of technical development occurring in other industries. This may, in turn, result in increased productivity of the inputs in the industry using these products as inputs.

Also, better organisation of the production activities may increase the efficiency of production methods or the productivity of only one input inside an industry as a result of learning by doing. Renovation of production equipment as a result of an increase of capacity, depreciation or obsolescence of fixed capital brings in its train technical development embodied in the production machinery in use in an investing industry.

6.3.4 Changes in Product Mix

Perhaps one of the most important factors that would cause changes over time in the input coefficients for a given industry is changing product mix. Changes in sectoral

[156] Technological change implies a change in the physical requirements for the specific goods and services used in producing a given basket of goods. However, we recognised the fact that Carter (1970) argued that I-O coefficients are quite stable in the short term and even in medium term but do not change in accordance with technological progress. Further, Miernyk (1977) maintains that coefficient changes are by no means the same thing as technological change.

product mix will, all things being equal, result in a change in the technical coefficients. Specifically, in a highly aggregative I-O table, such as the 86-order classification system of the 1958 I-O table for the United States economy, an individual industry cannot represent a single, or even a homogenous, set of commodities. Thus, shifts over time in the product composition of an individual industry could cause associated shifts in I-O coefficients for that industry. Also, changes in product mix may lead to a change in the combination of production methods, where the production activities are used in an industry according to new rates of output of the commodities produced. Finally, we recognise the fact that there might even be changes in product mix in order to obtain an optimal combination of inputs and outputs in response to given market conditions.

6.3.5 Changes in the level of Output

Equally, changes in the level of output may also cause changes in I-O coefficients because of the existence of increasing or decreasing returns to scale.

6.4 The Determination of Prices

The I-O method can be used to describe the transmission of price changes between different industry or sectors and in addition, relates changes in costs of production (input into the I-O system) to changes in final prices (as determined by the I-O system). So, putting it succinctly, the I-O model can be use to determine the relationship between changes in costs of industries and the subsequent changes in prices of sales to final buyers.

In figure 6.1 below, different blocks are used to represent groups of sectors and transactions, and these blocks are linked by lines to show how changes in the prices, wages (labour), imports (movement in exchange rate i.e. appreciation or deprecation in exchange rate) and import duties affect the prices of transactions between industries and consequently the final price of goods produced. Thus, an increase in the price of imports of a particular commodity used in a manufacturing process would affect the retail price through the following process.

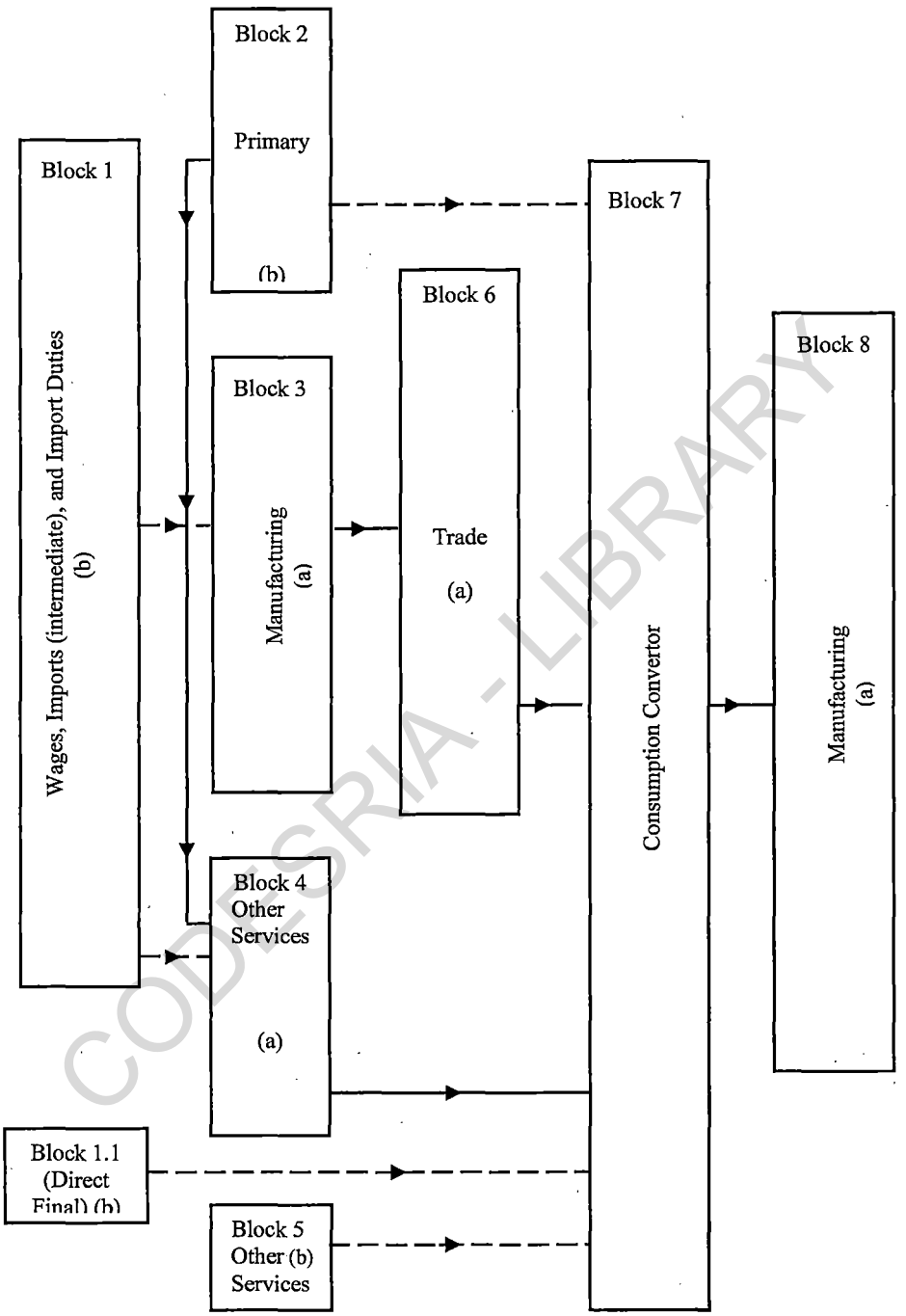
First, the price increase raises production costs and thereby the selling prices of those industries using the import. The higher selling prices are then passed on, either through higher production costs for other industries or as increased prices paid by wholesalers for final output. Then, wholesalers and retailers mark-up the cost of goods as they pass through the trade block[157]. Finally, the changes in retail prices of products of different industries are translated into prices of the components of the retail price as depicted in figure 6.1 below.

Blocks 1 and 8 represent the input and output of the model. Block 1 shows the payments for primary inputs such as wages, imports and import duties while Block 8 gives the value of sales to final buyers. Profits margin are assumed constant, and changes in profits of industries are related to changes in prime costs covering wages, imports, import duties and purchases from other industries. Sales to final buyer in the present model include only personal consumption expenditures. The changes in the

[157] Apart from these factors, it also depends on several other factors discussed in section 3.3 (chapter 3).

prices of other items of final expenditure are not analysed, since they do not lead to further changes in industry costs or prices.

Figure 6.1: The Input-Output Relations



(a) Prices determined by the model and
(b) Prices exogenous

Source: Haig, B.D and Wood M.P (1974)

Thus, Blocks 2 to 6 above represents groups of industries – the primary, manufacturing, services and trade industries. The method employed in calculating the selling prices from costs for each of these groups of industries is described below.

6.5 Input-Output Relationships between and among various Sectors included in the Model: The Multipliers or Impact analysis

6.5.1 Introduction

Though the original multiplier idea can be traced back to Kahn (1931), however, the 'modern' concept of multiplier is usually associated with J.M Keynes (1936). According to Keynes, 'a unit increment of autonomous investment causes an initial increase in income which generates successive rounds of consumer spending and incomes, each round producing numerically smaller increments until the process has finally worked itself out i.e. has reached equilibrium'. The full response to the stimulus produces two effects. First, saving equal to the initial unit increment of investment. Second, consumer spending (household consumption) is considerably larger than the initial increment of investment. The household consumption is a multiple of the unit increment of investment, the multiplier being given by $\frac{1}{1-c}$ *or* $(1-c)^{-1}$, where c is the marginal propensity to consume. Other autonomous expenditures like government spending and exports have similar effects[158].

[158] This is an over-simplified picture of reality and an exaggerated estimate of the size of multiplier because both government taxation and purchase of imports reduce the size of the multiplier, so that the latter is considerably small than $\frac{1}{1-c}$ *or* $(1-c)^{-1}$, in normal present day economic conditions.

6.5.2 Definitions of Multiplier

Broadly defined, a multiplier summarises the total effect or impact that can be expected from a change in a given exogenous variable(s). As an illustration, a new manufacturing facility or an increase in exports by a local firm named 'Nigerite' are economic changes which can spur ripple effects or spin-off activities. Therefore, multipliers measure the economic impact of these new exports, including the resulting spin-off activities.

Also, the relationship between the initial spending and the total effects generated by the spending is known as the multiplier effect of the sector or more generally, as the impact of the sector on the economy as a whole[159]. On the other hand, it may be regarded as the system of economic transactions that follow a disturbance in an economy. Any economic disturbance affects an economy in the same way as does a drop of water in a still pond. It creates a large primary 'ripple' by causing a *direct* change in the purchasing patterns of the affected sector or sectors. The multiplier effect has three components – *direct, indirect and induced effects*.

First, the direct effect is the change in purchases due to a change in economic activity. Given our illustration above, the direct effects are those changes that would occur in the activities of 'Nigerite' that would culminate into exports of additional goods or services. Second, the indirect effect is the change in the purchases of suppliers to those economic activities directly experiencing change. This implies that the indirect effects result from production changes in industries that supply 'Nigerite' with inputs

[159] The natural setting for multiplier analysis, more recently called impact analysis is economic planning.

(raw materials). Third, the induced effect is the change in consumer spending that is generated by changes in labour income within the economy as a result of the direct and indirect effects on the economic activities. This implies that each naira of employee's income earned in the direct and indirect activities triggers an additional chain spending. This spin-off effect is referred to as an 'induced effect' which is sometimes called the 'consumption effect'. The workers hired by 'Nigerite' in the expansion of exports earn new income as do new workers hired by the firms supplying 'Nigerite' with inputs.

In a nut shall, the induced effects occur as households spend more of their additional income on goods and services within Nigeria. The increased production activities of the firms supplying 'Nigerite' with inputs generate additional income, some of which would be spent on goods and services within the Nigerian economy, thus, increasing the multiplier effect.

Recently, the multiplier has been classified as type I or type II multipliers. The Type I multipliers include the direct and indirect effects. The indirect effects are those associated with changes in the backward linked industries due to an increase in demand from the directly affected industry. Therefore, Type I multipliers are calculated as:

$$Type\ I\ Multiplier = \frac{Direct + indirect\ effects}{Direct\ effects}$$

On the other hand, a Type II multiplier includes the direct, indirect and induced effects. It includes the effect on the backward linked industries as well as the induced consumption effect. The Type II multipliers are calculated as:

$$Type\ II\ Multiplier\ =\ \frac{Direct\ +\ indirect\ +\ induced\ effects}{Direct\ effects}$$

The Type II multiplier is a more realistic measure which takes into account the direct and indirect effects indicated by the I-O model plus the *induced* changes in income resulting from increased consumer spending.

6.5.3 Types of Multipliers

Changes in a microeconomic variable, sector or industry may be measured in several ways. So, while Nigeria policy makers may be primarily concerned with employment or income, the government may want to estimate a sector's or sectors' total value added to the Nigerian economy. Since multipliers are ratios of total to initial change, numerous economic multipliers can be calculated.

In reality, four multipliers are commonly used to assess the impact of an initial increase in production resulting from an increase in sales, usually called final demand in multiplier analysis. The four are: output, employment, wage and value added multipliers.

6.5.3.1 Output Multiplier

The output multiplier estimates the total change in sales and also assesses the interdependence of sectors within a national economy. Therefore, an output multiplier for a given sector in the Nigerian economy is the total value of sales by all sectors in the Nigerian economy to satisfy a naira's worth of final demand for that sector's output. Putting it succinctly, the output multiplier for industry i measures the sum of direct and indirect requirement from all sectors needed to deliver one additional naira unit of output of i to final demand.

An important point is that the value of total business activity is larger than the market value of currently produced goods and services because some of the re-spending in input-output models is for the purchase of intermediate goods and services. The values of these inputs are counted again when the final goods they are used to produce are sold. Therefore, as highlighted by Stevens and Lahr (1988) the 'output multipliers are almost always misleading because of double counting'[160].

6.5.3.2 Employment Multiplier

In many cases, the policy makers are often interested in the employment effect, that is the number of jobs a particular economic change is expected to generate or eliminate. Specifically, the employment multiplier measures the total change in employment or total number of jobs that are created across the Nigerian economy due to the addition of a single employee in a given sector[161]. Conversely, the additional employment in

[160] We were able to avoid this problem in the construction of I-O tables for Nigeria

[161] The stimulus for change in the Nigerian economy is the demand for output measured in naira. Thus,

the new activity multiplied by the employment multiplier for the sector provides an estimate of the total new jobs created within the country or an economy. On the other hand, if the relationship between the value of a sector's output and its employment level can be estimated, then, employment multipliers can be calculated. In most cases, there is no indication whether additional jobs created will be full or part-time, nor is there any indication of differences in wage rates for the employment created. As highlighted by Stevens and Lahr (1988), most employment multipliers are estimated in terms of jobs rather than 'full-time equivalent' employees.

6.5.3.3 Wage Multiplier

The wage multiplier measures the total change in income throughout the economy from a naira unit change in final demand for any given sector. This implies that the wage multiplier measures the total increase in income within the Nigerian economy resulting from a naira increase in income received by workers in the exporting industry[162].

On the other hand, wage multipliers translate the effects of changes in final demand into changes in household income. The wage multiplier is the ratio of the total change in household income to one naira change in final demand. Specifically, multiplying the initial change in income by the multiplier for the industry provides an estimate of the increase in income for all individuals in the sector resulting from the initial growth of one industry.

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the I-O measures output per employee and is therefore able to estimate employment changes based in final demand.

[162] The exporting industry in this case is Nigerite given our earlier illustration.

6.5.3.4 Value Added Multiplier

Up to the point of its last use, every commodity has value added to it as it passes through successive industrial activities. Value-added is a very good measure of the worth of an economic activity because it closely approximates gross national product.

Generally, the value-added is the amount of income and wealth generated in the industrial processes associated with each stage of production of a particular commodity. Income and wealth are measured simply as wages, salaries, normal benefits, profits, and returns on equity. In short, we can describe value added as returns to workers, returns to the owners of industrial capital, and returns to governments[163]. Of course, a simpler measure of value-added is the gross output of a firm (as measured by sales, gross receipts, and other operating income plus inventory change) minus intermediate inputs (the consumption of other goods and services that are purchased from other industries)[164].

Given the above, the value added multiplier represents a change in total value added (employee compensation plus proprietary income, plus other property income plus indirect business taxes) for every naira change in final demand for a given sector. This implies that the value added multiplier provides an estimate of additional value added to the product as a result changes in economic activity.

[163] In this broad definition we include indirect business tax payments to state of federal government as components of value added, but we exclude income taxes and taxes on profits. These taxes consist primarily of excise and sale taxes paid, usually, by individuals to businesses as a part of the normal operation of a business.

[164] This definition was borrowed from the Bureau of Economic Analysis, U.S. Department of Commerce Report (2002).

6.5.4 Wage, Value Added and Import Multipliers for the Nigerian Economy

One primary use of an I-O model is the estimation of the total effect on an economy as a results of changes in the components of final demand for the goods and services produced within a national economy. Specifically, a change in final demand, like a change in the Federal Government of Nigeria's demand for agricultural inputs (i.e. demand for fertilizers, insecticides, and improved crops) sets the national economy in motion, as productive sectors buy and sells goods and services from one another. These relationships cause the total effect to exceed its initial change in final demand. The ratio of the total economic effect on a national economy to the initial change is called a 'national economic multiplier'. The total effect is measured in terms of output, income or employment, giving rise to output, income and employment multipliers.

In actual fact, the use of multipliers for policy analysis has proved insightful. These multipliers can be used in preliminary policy analysis to estimate the economic impact of alternative policies or change in the national economy. In addition, the multipliers can be used to identify the degree of structural interdependence between each sector and the rest of the economy. In this study, irrespective of limitations imposed by data, and other constraints, we derived wage, value added and imports multipliers for the Nigerian economy.

Associated with the total requirements table defined earlier in Chapter 5 of this thesis is the concept of multiplier. Of course, each cell in the 'total' row of the total requirements tables (see Tables 5.9a, 5.9b, 5.9c and 5.9d) gives the analyst a multiple

by which each naira of increased final demand will impact on the overall output in the Nigerian economy. It measures how much total production of goods and services is required throughout the economy for every one naira of additional final demand for the goods produced by the industry named at the top of the column.

In this context, the multiplier in this case refers to the partial multiplier. This type of multiplier for a particular sector is calculated from the I-O system by multiplying the row of technical coefficients of income arising by the column of interdependence coefficients of the sector concerned. It must be noted that all of these partial multipliers are less than unity and indeed by definition cannot exceed this amount. The extent to which they are less than one depends on the import content, tax rate and retained profits within the economy concerned[165].

As earlier mentioned, the 'wage multiplier' of a sector is the amount by which the income of an economy is increased as a result of a one unit increase in the final demand for the products of that sector with no increase in the final demand for the products of any other sector. The latter assumption is rather stringent because all sectors are not completely independent and it is unrealistic to have an increase in the demand for the products of some sectors without at the same time increasing the demand for those of others.

With reference to the 1981 I-O table constructed for Nigeria, and as mentioned above, using the wage, valued added and import row vectors in Table 5.8a to multiply each element in the column of interdependence coefficients in Table 5.9a, we

[165] In a closed economy with no taxes, the partial multipliers would be one i.e. income and expenditure would be identical. In an open taxed economy, the magnitude of the multipliers depends on the tax and import rates and on other leakages. The greater these are, the smaller the multipliers.

obtained tables 6.1a (wage multiplier), 6.2a (value added multiplier) and 6.3a (import multiplier) respectively. Further, using the I-O Tables constructed for the years 1985, 1995 and 2000 (i.e. transforming Tables 5.8b and 5.9b; 5.8c and 5.9c; and 5.8d and 5.9d) we obtained Tables 6.1b, 6.2b and 6.3b; 6.1c, 6.2c and 6.3c; 6.1d, 6.2d and 6.3d respectively[166].

The pertinent question is; what do these multipliers show? First, multipliers reveal that different amounts of income are generated by different sectors of the Nigerian economy even if we assume that each sector expands its output by the same amount. The greater the degree of interdependence within the economy or conversely, the lesser its dependence on imports, the greater will be direct income changes.

Using the agricultural sector as an illustration, specifically from Tables 5.8a and 5.9a, if the final demand for agricultural products is increased by one unit, the output of agricultural sector would be increased by 1.1042, that of livestock and dairy products by 0.0001, that of fishing by 0.0000, that of forestry by 0.0000, and that of crude oil by 0.0577 (see Table 5.9a, column 1). Thus, if we look at the technical coefficient of wage in Table 5.8a, we would see that the coefficient for agriculture, livestock and diary products, fishing, forestry and crude oil are 0.7079, 0.8665, 0.3786, 0.9697 and 0.9117 respectively (see Table 5.8a, row 39).

Hence, an increase of 1.1042 units in agriculture output will increase the income arising in that sector by 0.7817 units (i.e. 0.7079 x 1.1042)[167]. Similarly, an increase of 0.0001 in the output of livestock and diary products sector will increase income in

[166] We use MATLAB 6.1 to obtain these results. These Tables can be found in appendix.
[167] For details on calculating partial multipliers, see O'Connor, R. and Henry, E.W (1975), pp 41 – 45.

this sector by 0.0001 units (i.e. 0.8665 x 0.0001), while an increase of 0.0577 in the output of the crude oil will increase the income of this sector by 0.0526 (i.e. 0.9117 x 0.0577)[168].

Finally, the *total* benefit to the economy of a unit increase in final demand for the products of agriculture, livestock, fishing, and forestry is therefore an increase of 0.8471, 0.9469, 0.6052 and 0.9718 units in the income of the nation respectively[169]. We observed that for 1981, the major benefit to the economy of a unit increase in final demand came from housing (0.9932) followed by iron and steel (0.9896), see table 6.1a for detailed results.

Extending the discussion and focusing on the agricultural sector we obtained similar results from the I-O tables for 1985, i.e. using Tables 5.8b and 5.9b. Therefore, if the final demand for agricultural products is increased by one unit, the output of agricultural sector would be increased by 1.1578, that of livestock and dairy products by 0.0003, that of fishing by 0.0000, that of forestry by 0.0005, and that of crude oil by 0.0036 (see Table 5.9b, column 1). Thus, if we look at the technical coefficient of income in Table 5.8b, we would see that the coefficient for agriculture, livestock and diary products, fishing, forestry and crude oil are 0.6964, 0.8967, 0.3625, 0.9768 and 0.9062 respectively (see Table 5.8b, row 39).

Therefore, an increase of 1.1578 units in agriculture output will increase the income arising in that sector by 0.8063 units (i.e. 0.6964 x 1.1578). Similarly, an increase of

[168] We omitted fishing and forestry since the coefficients for these sectors are zero.
[169] This is obtained through summation of all elements along the column (see table 5.1a for details). Thus, the column sum of the Leontief inverse shows the direct and indirect effects on the economy of a unit change in final demand for the sector shown at the head of column.

0.0003 in the output of livestock and diary products sector will increase income in this sector by 0.0002 units (i.e. 0.8967 x 0.0002), while an increase of 0.0005 in the output of forestry will increase the income of this sector by 0.0004 (i.e. 0.9768 x 0.0005), also an increase of 0.0036 in the output of crude oil will increase the income of this sector by 0.0032 (i.e. 0.9063 x 0.0036).

The *total* benefit to the economy of a unit increase in final demand for the products of agriculture, livestock, fishing, and forestry is therefore an increase of 0.8272, 0.9504, 0.6358 and 0.9785 units in the income of the nation respectively. We observed that for the 1985, the major benefit to the economy of a unit increase in final demand came from iron and steel (1.2431) followed by housing (0.9917), see table 6.1b for detailed results.

Also, using the I-O Table for 1995 and with reference to Tables 5.8c and 5.9c, if the final demand for agricultural products is increased by one unit, the output of agricultural sector would be increased by 1.1053, that of livestock and dairy products by 0.0017, that of fishing by 0.0000, that of forestry by 0.0031, and that of crude oil by 0.0048 (see Table 5.9c, column 1). Thus, if we look at the technical coefficient of income in Table 5.8c, we would see that the coefficient for agriculture, livestock and diary products, fishing, forestry and crude oil are 0.8015, 0.8951, 0.5116, 0.9326 and 0.9151 respectively (see Table 5.8c, row 39).

Thus, an increase of 1.1053 units in agriculture output will increase the income arising in that sector by 0.8859 units (i.e. 0.8015 x 1.1053). Similarly, an increase of 0.0017 in the output of livestock and diary products sector will increase income in this sector

by 0.0015 units (i.e. 0.8951 x 0.0017), while an increase of 0.0031 in the output of forestry will increase the income of this sector by 0.0029 (i.e. 0.9326 x 0.0031), and an increase of 0.0048 in the output of crude oil will increase the income of this sector by 0.0044 (i.e. 0.9151 x 0.0044), see column 1 of Table 6.1c.

Thus, the *total* benefit to the economy of a unit increase in final demand for the products of agriculture, livestock, fishing, and forestry is therefore an increase of 0.9441, 0.9766, 0.7946 and 0.9627 units in the income of the nation respectively. We observed that for the 1995, the major benefit to the economy of a unit increase in final demand came from rail transport (1.0853) followed by housing (0.9792), see Table 6.1c for detailed results.

Finally, using the I-O Table for 2000 and with reference to Tables 5.8d and 5.9d, if the final demand for agricultural products is increased by one unit, the output of agricultural sector would be increased by 1.0573, that of livestock and dairy products by 0.0010, that of fishing by 0.0024, that of forestry by 0.0000, and that of crude oil by 0.0244 (see Table 5.9d, column 1). Thus, if we look at the technical coefficient of income in Table 5.8d, we would see that the coefficient for agriculture, livestock and diary products, fishing, forestry and crude oil are 0.7894, 0.8295, 0.1316, 0.9323 and 0.5200 respectively (see Table 5.8d, row 39).

Hence, an increase of 1.0573 units in agriculture output will increase the income arising in that sector by 0.8346 units (i.e. 0.7894 x 1.0573). Similarly, an increase of 0.0010 in the output of livestock and diary products sector will increase income in this sector by 0.0008 units (i.e. 0.8295 x 0.0010), while an increase of 0.0024 in the output

of fishing will increase the income of this sector by 0.0003 (i.e. 0.1316 x 0.0024), an increase of 0.0001 in the output of forestry will increase the income of this sector by 0.0001 (.i.e. 0.9323 x 0.0001) and an increase of 0.0244 in the output of crude oil will increase the income of this sector by 0.0127 (i.e. 0.5200 x 0.0244).

The *total* benefit to the economy of a unit increase in final demand for the products of agriculture, livestock, fishing, and forestry is therefore an increase of 0.9026, 0.9739, 0.9054 and 0.9643 units in the income of the nation respectively. We observed that for the 1985, the major benefit to the economy of a unit increase in final demand came from water supply (3.2962) followed by communication (1.1249), see table 6.1d for detailed results[170].

The analysis immediately above focuses on agriculture, however, if the final demand for livestock and dairy products is increased in the Nigerian economy by one unit, the output of agricultural sector would be increased by 0.0619, that of livestock and dairy products by 1.0002, that of fishing by 0.0000, that of forestry by 0.0001, and that of crude oil by 0.0058 (see Table 5.9a, column 2). Following the method used when illustrating with agricultural sector above, and using Tables 5.8a and 5.9a, hence, an increase of 0.0619 units in agriculture output will increase the income arising in that sector by 0.0438 units (i.e. 0.7079 x 0.0619). Similarly, an increase of 1.0002 in the output of livestock and diary products sector will increase income in this sector by 0.8667 units (i.e. 0.8665 x 1.0002), while an increase of 0.0058 in the output of the crude oil will increase the income of this sector by 0.0053 (i.e. 0.9117 x 0.0058), see column 2 of Table 6.1a.

[170] Note, Table 6.1e contained summary of results of Tables 6.1a, 6.1b, 6.1c and 6.1d.

Extending the discussion and focusing on livestock and diary products sector we obtained similar results from the I-O Tables for 1985, i.e. using Tables 5.8b and 5.9b. This implies that, if the final demand for livestock and diary products is increased by one unit, the output of agricultural sector would be increased by 0.0173, that of livestock and dairy products by 1.0046, that of fishing by 0.0000, that of forestry by 0.0001, and that of crude oil by 0.0030 (see Table 5.9b, column 2). Thus, if we look at the technical coefficient of income in Table 5.8b, we would see that the coefficient for agriculture, livestock and diary products, fishing, forestry and crude oil are 0.6964, 0.8967, 0.3625, 0.9768 and 0.9062 respectively (see Table 5.8b, row 39).

Therefore, an increase of 0.0173 units in agriculture output will increase the income arising in that sector by 0.0121 units (i.e. 0.6964 x 0.0173). Similarly, an increase of 1.0046 in the output of livestock and diary products sector will increase income in this sector by 0.9008 units (i.e. 0.8967 x 1.0046), while an increase of 0.0001 in the output of forestry will increase the income of this sector by 0.0001 (i.e. 0.9768 x 0.0001), also an increase of 0.0030 in the output of crude oil will increase the income of this sector by 0.0027 (i.e. 0.9063 x 0.0030) see column 2 of Tables 6.1b.

Also, using the I-O Table for 1995 and with reference to Tables 5.8c and 5.9c, if the final demand for livestock and diary products is increased by one unit, the output of agricultural sector would be increased by 0.0688, that of livestock and dairy products by 1.0103, that of fishing by 0.0001, that of forestry by 0.0003, and that of crude oil by 0.0048 (see Table 5.9c, column 2). Therefore, if we look at the technical coefficient of income in Table 5.8c, we would see that the coefficient for agriculture,

livestock and diary products, fishing, forestry and crude oil are 0.8015, 0.8951, 0.5116, 0.9326 and 0.9151 respectively (see Table 5.8c, row 39).

Thus, an increase of 0.0688 units in agriculture output will increase the income arising in that sector by 0.0551 units (i.e. 0.8015 x 0.0688). Similarly, an increase of 1.0103 in the output of livestock and diary products sector will increase income in this sector by 0.9043 units (i.e. 0.8951 x 1.0103), while an increase of 0.0003 in the output of forestry will increase the income of this sector by 0.0003 (i.e. 0.9326 x 0.0003), so also an increase of 0.0048 in the output of crude oil will increase the income of this sector by 0.0044 (i.e. 0.9151 x 0.0044), see column 2 of Table 6.1c.

Similarly, using the I-O Table for 2000 and with reference to Tables 5.8d and 5.9d, if the final demand for livestock and dairy products is increased by one unit, the output of agricultural sector would be increased by 0.0819, that of livestock and dairy products by 1.0178, that of fishing by 0.0019, that of forestry by 0.0001, and that of crude oil by 0.0270 (see Table 5.9d, column 2). Therefore, if we look at the technical coefficient of income in Table 5.8d, we would see that the coefficient for agriculture, livestock and diary products, fishing, forestry and crude oil are 0.7894, 0.8295, 0.1316, 0.9323 and 0.5200 respectively (see Table 5.8d, row 39). Hence, an increase of 0.0819 units in agriculture output will increase the income arising in that sector by 0.0646 units (i.e. 0.7894 x 0.0819). Similarly, an increase of 1.0178 in the output of livestock and diary products sector will increase income in this sector by 0.8443 units (i.e. 0.8295 x 1.0178), while an increase of 0.0019 in the output of fishing will increase the income of this sector by 0.0003 (i.e. 0.1316 x 0.0019), so also an increase

of 0.0270 in the output of crude oil will increase the income of this sector by 0.0140 (i.e. 0.5200 x 0.0270), see column 2 of Table 6.1d.

Next, our analysis focuses on fishing sector. So, if the final demand for fishing is increased in the Nigerian economy by one unit, the output of agricultural sector would be increased by 0.0568, that of livestock and dairy products by 0.0009, that of fishing by 1.0000, that of forestry by 0.0004, and that of crude oil by 0.0901 (see Table 5.9a, column 3). Following the method used when illustrating with livestock and diary products sector above, and using Tables 5.8a and 5.9a, hence, an increase of 0.0568 units in agriculture output will increase the income arising in that sector by 0.0402 units (i.e. 0.7079 x 0.0568). Similarly, an increase of 0.0009 in the output of livestock and diary products sector will increase income in this sector by 0.0008 units (i.e. 0.8665 x 0.0009), while an increase of 1.0000 in the output of the fishing will increase the income of this sector by 0.3786 (i.e. 0.3786 x 1.0000), so also, an increase of 0.0901 in the output of crude oil will increase income of this sector by 0.0821 (0.9117 x 0.0901), see column 3 of Table 6.1a.

Extending the discussion and focusing fishing sector we obtained similar results from the I-O Tables for 1985, i.e. using Tables 5.8b and 5.9b. This implies that, if the final demand for fishing sector is increased by one unit, the output of agricultural sector would be increased by 0.0006, that of livestock and dairy products by 0.0001, that of fishing by 1.0000, that of forestry by 0.0005, and that of crude oil by 0.2077 (see Table 5.9b, column 3). Therefore, if we look at the technical coefficient of income in Table 5.8b, we would see that the coefficient for agriculture, livestock and diary

products, fishing, forestry and crude oil are 0.6964, 0.8967, 0.3625, 0.9768 and 0.9063 respectively (see Table 5.8b, row 39).

Therefore, an increase of 0.0006 units in agriculture output will increase the income arising in that sector by 0.0004 units (i.e. 0.6964 x 0.0006). Similarly, an increase of 0.0001 in the output of livestock and diary products sector will increase income in this sector by 0.0001 units (i.e. 0.8967 x 0.0001), while an increase of 1.0000 in the output of fishing will increase the income of this sector by 0.3625 (i.e. 0.3625 x 1.0000), also an increase of 0.2077 in the output of crude oil will increase the income of this sector by 0.1882 (i.e. 0.9063 x 0.2077), see column 3 of Table 6.1b.

Also, using the I-O Table for 1995 and with reference to Tables 5.8c and 5.9c, if the final demand for fishing sector is increased by one unit, the output of agricultural sector would be increased by 0.0087, that of livestock and dairy products by 0.0005, that of fishing by 1.0014, that of forestry by 0.0005, and that of crude oil by 0.1996 (see Table 5.9c, column 3). Thus, if we look at the technical coefficient of income in table 5.8c, we would see that the coefficient for agriculture, livestock and diary products, fishing, forestry and crude oil are 0.8015, 0.8951, 0.5116, 0.9326 and 0.9151 respectively (see Table 5.8c, row 39).

Thus, an increase of 0.0087 units in agriculture output will increase the income arising in that sector by 0.0070 units (i.e. 0.8015 x 0.0087). Similarly, an increase of 0.0005 in the output of livestock and diary products sector will increase income in this sector by 0.0004 units (i.e. 0.8951 x 0.0005), while an increase of 1.0014 in the output of fishing will increase the income of this sector by 0.5123 (i.e. 0.5116 x 1.0014), so also

an increase of 0.1996 in the output of crude oil will increase the income of this sector by 0.1827 (i.e. 0.9151 x 0.1996), see column 3 of Table 6.1c.

Further, using the I-O Table for 2000 and with reference to Tables 5.8d and 5.9d, if the final demand for fishing sector is increased by one unit, the output of agricultural sector would be increased by 0.7899, that of livestock and dairy products by 0.0032, that of fishing by 1.0073, that of forestry by 0.0003, and that of crude oil by 0.0805 (see Table 5.9d, column 3). Thus, if we look at the technical coefficient of income in Table 5.8d, we would see that the coefficient for agriculture, livestock and diary products, fishing, forestry and crude oil are 0.7894, 0.8295, 0.1316, 0.9323 and 0.5200 respectively (see Table 5.8d, row 39). Therefore, an increase of 0.7899 units in agriculture output will increase the income arising in that sector by 0.6235 units (i.e. 0.7894 x 0.7899). Similarly, an increase of 0.0032 in the output of livestock and diary products sector will increase income in this sector by 0.0026 units (i.e. 0.8295 x 0.0032), while an increase of 1.0073 in the output of fishing will increase the income of this sector by 0.1325 (i.e. 0.1316 x 1.0073), so also an increase of 0.0805 in the output of crude oil will increase the income of this sector by 0.0418 (i.e. 0.5200 x 0805), see column 3 of Table 6.1d.

Overall, our results revealed that for 1985, the benefit to the economy of a unit increase in final demand for the products of agriculture is an increase of 0.8272, slightly lower than the figure for 1981 (1981 figure is 0.8471), this might not be unconnected with the policy measures introduced by the federal government, .i.e. the stabilisation Act of 1982. In 1995, the benefit to the economy of a unit increase in final demand for the agricultural products is an increase of 0.9441, which is much

higher than the previous years. We assume that this might not be unconnected to the incentives measures introduced by the Federal Government to encourage agricultural production. However, in year 2000, the benefit to the economy of a unit increase in final demand for the agricultural products nosedived from 0.9441 in 1995 to 0.9026. Also, results in Tables 6.1.a, 6.1b, 6.1c and 6.1d revealed that final demand for a sector may be increased by one unit with zero increases in few other sectors. Finally, for ease of analysis and comprehension, Table 6.1e below contained summary of our results in tables 6.1a, 6.1b, 6.1c and 6.1d.

Table 6.1e: Wage Multipliers

		1981	1985	1995	2000
1	Agriculture	0.8471	0.8272	0.9441	0.9026
2	Livestock and Dairy Products	0.9469	0.9504	0.9766	0.9739
3	Fishing	0.6052	0.6358	0.7946	0.9054
4	Forestry	0.9718	0.9785	0.9627	0.9643
5	Oil (Petroleum)	0.9326	0.9244	0.9629	0.5409
6	Other Mining	0.8766	0.8464	0.6514	0.9185
7	Food	0.7672	0.6372	0.8303	0.9079
8	Drink, Beverage + Tobacco	0.5051	0.3362	0.8922	0.7403
9	Textiles	0.5194	0.4851	0.9038	0.7880
10	Footwear + Leather	0.6675	0.6029	0.8589	0.7820
11	Wood + Wood	0.6175	0.5705	0.7279	0.7086
12	Paper + Paper products	0.5691	0.5664	0.6481	0.7732
13	Drugs + Chemicals	0.7153	0.7111	0.7750	0.7968
14	Refineries	0.6817	0.6686	0.7519	0.6201
15	Rubber Plastic	0.6038	0.5086	0.8328	0.7375
16	Iron + Steel	0.9896	1.2431	0.7767	0.3911
17	Fabricated Metal	0.6318	0.6444	0.7621	0.6587
18	Vehicle Ass	0.6823	0.7153	0.6875	0.5583
19	Other Manufacturing	0.7428	0.5982	0.8222	0.8852
20	Electricity Generation	0.4795	0.3497	0.1892	1.0648
21	Water Supply	0.2252	0.2993	0.2852	3.2962
22	Building and Construction	0.5914	0.5030	0.5899	0.7639
23	Air Transport	0.3655	0.5115	0.6783	0.7338
24	Other Land	0.6213	0.5868	0.8839	0.8504
25	Water Trans	0.1859	0.5665	0.6439	0.3113
26	Railway Trans	0.3508	0.5526	1.0853	0.7181
27	Communication	0.3199	0.3709	0.3609	1.1249
28	Distribution T	0.6807	0.6610	0.9101	0.8196
29	Hotels + Restaurant	0.6181	0.6342	0.8420	0.9579
30	Banking Finance	0.4605	0.4882	0.5648	0.5420
31	Insurance	0.6665	0.4384	0.6784	0.3836
32	Real Estate	0.2400	0.9017	0.6464	0.3465
33	Housing	0.9932	0.9917	0.9792	0.9966
34	Community Soc. And Personal Ser.	0.8437	0.8423	0.9284	0.9229
35	Producer of Government services	0.0000	0.0000	0.0000	0.0000

Generally, considering all the sectors and the I-O Tables for 1981, 1985, 1995 and 2000, we conclude from Table 6.1e that the benefit to the Nigerian economy of a unit increase in final demand for the products of iron and steel sector both in 1985 and 1981 is 1.2431 and 0.9896 respectively. This is next to water supply which happens to happens to be highest with 3.2962 in 2000.

Other sectors that give the producers and the nation increased income after water supply include telecommunication, electricity supply, forestry, and hotel and restaurants in 2000; livestock and diary products, rail transportation, forestry, crude petroleum, and housing in 1995; housing, forestry, livestock and diary products, and crude oil in 1985; and finally, housing, forestry, livestock and diary products, and crude oil in 1981. Of course, a close observation revealed that the benefit from housing and forestry sectors to the Nigerian economy is very high for all the years for which I-O Tables was constructed. This implies that there is consistent increase in final demand for services in the housing and forestry sectors and undoubted have contributed much more than the other sectors to the Nigerian economy.

Next and as earlier defined, the value added multiplier provides an estimate of additional value added to the product as a result changes in economic activity. Specifically, Tables 6.2a, 6.2b, 6.2c, and 6.2d contained the value added for the Nigerian economy for the years 1981, 1985, 1995 and 2000 respectively. We used the method employed to obtained income multipliers to derive the value added. While Tables 6.2a, 6.2b, 6.2c, and 6.2d contained the broad details of value added by each sector of the Nigerian economy, for ease of analysis, Table 6.2e below contained summaries of the earlier tables mentioned.

Table 6.2e: Value Added Multipliers

		1981	1985	1995	2000
1	Agriculture	0.9964	0.9889	0.9896	1.0221
2	Livestock and Dairy Products	0.9973	0.9720	0.9989	1.0421
3	Fishing	0.9818	0.9690	0.9936	1.1616
4	Forestry	0.9997	0.9638	0.9980	1.0076
5	Oil (Petroleum)	0.9714	0.9472	0.9771	0.5584
6	Other Mining	0.9626	0.6401	0.9504	1.0436
7	Food	0.9747	0.7159	0.9845	1.1776
8	Drink, Beverage + Tobacco	0.9782	1.0593	0.9719	1.1054
9	Textiles	0.9582	1.1026	0.9893	1.0797
10	Footwear + Leather	0.9644	0.9900	0.9904	1.0805
11	Wood + Wood	0.9545	1.3595	0.9907	0.9958
12	Paper + Paper products	0.9645	0.4053	0.8762	1.0466
13	Drugs + Chemicals	0.9551	0.7314	0.9318	1.1188
14	Refineries	0.9733	1.1667	0.9378	0.8033
15	Rubber Plastic	0.9239	0.3492	0.9770	1.0320
16	Iron + Steel	0.6414	2.5315	0.9447	0.6372
17	Fabricated Metal	0.9556	0.8525	0.9608	0.9146
18	Vehicle Ass	0.9112	1.0254	0.8744	0.8149
19	Other Manufacturing	0.9781	0.6829	0.9678	1.1740
20	Electricity Generation	0.9799	0.7444	0.9790	1.1263
21	Water Supply	0.9779	0.7624	0.9867	1.0985
22	Building and Construction	0.8108	0.7043	0.7174	1.0310
23	Air Transport	0.9396	0.7267	0.9759	0.9148
24	Other Land	0.9653	0.9435	0.9670	0.9254
25	Water Trans	0.9549	0.8652	0.9754	1.0018
26	Railway Trans	0.9656	0.6468	0.9615	1.0183
27	Communication	0.9770	0.9551	0.9885	1.0778
28	Distribution T	0.9783	0.9539	0.9932	1.0868
29	Hotels + Restaurant	0.9921	1.1361	0.9948	1.2883
30	Banking Finance	0.9956	0.9964	0.9977	0.9727
31	Insurance	0.9946	0.6635	0.9865	1.0105
32	Real Estate	0.9959	0.7596	0.9943	0.7058
33	Housing	0.9970	0.9569	0.9883	1.0127
34	Community Soc. And Personal Ser.	0.9943	1.0018	0.9946	1.0259
35	Producer of Government services	1.0000	1.0000	1.0000	0.6803

A cursory examination of Table 6.2e revealed that in 1981, forestry (0.9997) had the largest value added multiplier. This is followed by livestock and diary products (0.9973), housing (0.9970), agriculture (0.09964) and lastly real estate (0.9959). However, in 1985, in terms of value added multiplier from sectors, that of iron and

steel was 2.5315, which was much higher than value added multiplier in all sectors in 1981. The iron and steel sector was followed by wood and wood products with 1.3595, hotels and restaurant with 1.1361, refineries with 1.1667, textiles with 1.1026; and drink beverage and tobacco with 1.0593.

In 1985, livestock and dairy products have the highest value added multiplier of 0.9989. This is followed by forestry with 0.9980, banking and finance with 0.9977, hotels and restaurant with 0.9949 and community services with 0.9946. Our results on value added multiplier for all the years under consideration revealed that the value added multiplier for the year 2000 was much higher for most sectors. The better performance achieved by almost all the sectors for the year 2000 might be as a result of the various reforms introduced by the federal government which kicked-off in 1986.

Specifically, hotels and restaurant has the highest with 1.2883. This is followed by food sector with 1.1776, other manufacturing with 1.1740, fishing with 1.1616, and electricity generation with 1.1263. Our general observation revealed that sectors with consistently high value added multiplier include hotels and restaurant; textiles; drink, beverage and tobacco; livestock and diary products; forestry; footwear and leather; telecommunication; distributive trade; banking and finance; and community service sector.

The fundamental issue determining the size of multiplier effect is the 'openness' of the economy. The economies that are more 'open' are those that import their required inputs from another country or countries. In this case, imports are thought of as

substitutes for local production. Thus, the more a country depends on imported goods and services instead of its own production, the more economic activity leaks away from the local economy. So, import multipliers are of special interest as they show the import requirements of a unit of final demand for the produce of each sector and how the balance of trade is affected by specific increases in the final demands for the products of different sectors[171].

The import multipliers calculated can be found in Tables 6.3a, 6.3b, 6.3c and 6.3d for 1981, 1985, 1995 and 2000 respectively. Also, with reference to the agricultural sector, and from Tables 5.8a and 5.9a, an increase of 1.1042 units in agricultural output increase import content into this sector by 0.1858 units (i.e. 0.1683 x 1.1042). Similarly, an increase of 0.0176 in the output of distribution sector, increase imports into this sector by 0.0043 units (i.e. 0.2465 x 0.0176). Finally, in terms of leakages from the Nigerian economy through imports, the import multiplier in Tables 6.3a, 6.3b, 6.3c and 6.3d revealed that a unit increase in final demand for the agricultural, livestock, fishing and forestry would result in a decrease of 0.2150, 0.1981, 0.5142 and 0.0051 units in the income of the nation respectively (see column 1 of Table 6.3e below).

[171] Similarly, other multipliers though not relevant in our case can be calculated using the same process.

Table 6.3e: Imports Multipliers

		1981	1985	1995	2000
1	Agriculture	0.2150	0.2246	0.2528	0.2237
2	Livestock and Dairy Products	0.1981	0.1384	0.1412	0.2765
3	Fishing	0.5142	0.3888	0.4224	1.0126
4	Forestry	0.0051	0.0041	0.0727	0.0632
5	Oil (Petroleum)	0.0729	0.0626	0.1005	0.4897
6	Other Mining	0.7218	0.5828	1.0662	0.8935
7	Food	0.9868	0.7014	0.9763	1.4100
8	Drink, Beverage + Tobacco	0.7585	0.5067	0.4870	0.8280
9	Textiles	0.5582	0.4901	0.3214	0.6393
10	Footwear + Leather	0.9591	0.4631	0.3447	0.6614
11	Wood + Wood	0.9297	0.6687	0.1981	0.8056
12	Paper + Paper products	0.6850	0.5029	1.3733	0.5610
13	Drugs + Chemicals	0.5028	0.5575	0.8505	1.0465
14	Refineries	0.8806	0.8770	0.7906	1.2613
15	Rubber Plastic	0.9161	0.6359	1.2594	0.5660
16	Iron + Steel	0.9775	4.3697	0.7848	0.9649
17	Fabricated Metal	0.9592	1.1252	1.0605	0.3995
18	Vehicle Ass	0.9008	0.9842	0.7615	1.2153
19	Other Manufacturing	0.9153	0.6024	0.9269	1.6150
20	Electricity Generation	0.4456	0.3571	0.8259	1.1193
21	Water Supply	0.4915	0.3187	0.7751	1.4562
22	Building and Construction	0.8821	0.6130	0.5926	0.3610
23	Air Transport	0.9376	0.7781	0.9572	1.2741
24	Other Land	0.5480	0.4566	0.4751	0.7611
25	Water Trans	0.5253	0.8585	0.8973	0.5251
26	Railway Trans	0.9898	1.0225	1.4044	0.7634
27	Communication	0.5539	0.5033	0.5602	0.7693
28	Distribution T	0.4599	0.3520	0.3743	0.9754
29	Hotels + Restaurant	0.6964	0.6730	0.4755	1.7440
30	Banking Finance	0.2242	0.1878	0.1401	0.4671
31	Insurance	0.2594	0.6980	1.0225	0.7032
32	Real Estate	0.2605	0.0959	0.4353	0.9358
33	Housing	0.0315	0.0269	0.0817	0.0951
34	Community Soc. And Personal Ser.	0.2430	0.2311	0.2327	0.4097
35	Producer of Government services	0.0000	0.0000	0.0000	0.3197

Specifically, from the tables mentioned above, the results revealed that the partial import multiplier of a unit final demand for agriculture is 0.2150 for 1981, 0.2246 for 1985, 0.2528 for 1995 and 0.2237 for 2000[172]. The results above revealed gradually

[172] The result was obtained through summation of all elements along the agricultural sector's column.

increase in import multiplier from 1981 to 1995, but a light reduction in the year 2000.

Finally, considering all the sectors and the years under investigation, we can conclude that sectoral dependence on imports varies from one sector to another. From our results in Tables 6.3a, 6.3b, 6.3c and 6.3d we can infer that sectors like air transport, hotel and restaurant, rubber, paper, railway transport, wood and wood products, iron and steel, fabricated, vehicles, and electricity depends more on imports than other sectors. In fact, this is more clearly demonstrated when we look at Table 6.3e (obtained from tables 6.3a, 6.3b, 6.3c and 6.3d) which presents the summary of import multipliers for 1981, 1985, 1995 and 2000.

6.6 An Analysis of Sectoral Pass-Through Effects on the Nigerian Economy Using the Input-Output Technique

6.6.1 Introduction

An input-output model has been used in various ways in an empirical analysis. Specifically, an interesting use of the I-O model, relevant to this study, is the use of the I-O model to analyse changes in sectoral prices as a result of movement in the exchange rate in Nigeria.

We observed that the depreciation of the naira would increase the cost of both imported inputs and finished goods measured in domestic currency. A cursory observation of the technical coefficients and interdependence coefficients tables constructed for Nigeria in chapter 5 of this thesis revealed some changes in these coefficients. Thus, the depreciation of exchange rate is more likely to account for these changes in the I-O coefficients for Nigeria[173].

[173] We note that there are other domestic factors that might equally influence sectoral price in Nigeria apart from depreciation of naira exchange rate; such factors may include the demand and supply of necessary sectoral inputs, however, this study specifically focuses on the influence of the exchange rate.

6.6.2 Prices in the Input-Output Context

A variation of the multiplier calculation is the estimation of the sectoral output price changes as a result of depreciation of the exchange rate with no change in the quantities of the various commodities produced[174].

In section 6.3 of this chapter, we examined the factors that account for changes in I-O coefficients. Of course, the effects of movement of exchange rate will be reflected in the price of imports. As this would have both direct and indirect effect on each sector, therefore, we need a multi-sector framework to show these effects and this is provided most conveniently by the I-O technique.

Following Geary and Pratschke (1968) and work by Bulmer-Thomas (1982), and based on the assumption of fixed coefficients, we set out prices in an input-output framework. Our equations for the sectoral prices are based on the I-O coefficients and the input-coefficients per unit of output of each sector for labour and intermediate products. Also, our set of equations for each year of the system of prices of the outputs of the 35 sectors is based on the assumption that prices are set on cost-plus basis. Therefore, given the 35 sectors into which we had classified the Nigerian economy for our purpose, the factors of productions in this case, labour and imports (and other intermediate imported inputs) for each sectors, then, we have:

[174] It should be noted that in a closed economy where there are no exports or imports, price changes on the home market can bring about no *real* gain in overall national income, though of course, differential price changes will redistribute income between one sector and another.

$$
\begin{aligned}
P_1 &= a_{11}P_1 + a_{21}P_2 + a_{31}P_3 + a_{41}P_4 + \ldots\ldots\ldots\ldots + a_{35,1}P_{35} + \alpha_1 w_1 + \beta_1 r_{m,1} \\
P_2 &= a_{12}P_1 + a_{22}P_2 + a_{32}P_3 + a_{42}P_4 + \ldots\ldots\ldots\ldots + a_{35,2}P_{35} + \alpha_2 w_2 + \beta_2 r_{m,2} \\
P_3 &= a_{13}P_1 + a_{23}P_2 + a_{33}P_3 + a_{43}P_4 + \ldots\ldots\ldots\ldots + a_{35,3}P_{35} + \alpha_3 w_3 + \beta_3 r_{m,3} \\
P_4 &= a_{14}P_1 + a_{24}P_2 + a_{34}P_3 + a_{44}P_4 + \ldots\ldots\ldots\ldots + a_{35,4}P_{35} + \alpha_4 w_4 + \beta_4 r_{m,4} \\
P_5 &= a_{15}P_1 + a_{25}P_2 + a_{35}P_3 + a_{45}P_4 + \ldots\ldots\ldots\ldots + a_{35,5}P_{35} + \alpha_5 w_5 + \beta_5 r_{m,5} \\
&\vdots \\
P_{35} &= a_{1,35}P_1 + a_{2,35}P_2 + a_{3,35}P_3 + a_{4,35}P_4 + \ldots\ldots\ldots\ldots + a_{35,35}P_{35} + \alpha_{35} w_{35} + \beta_{35} r_{m,35}
\end{aligned}
\qquad \textbf{(6.1)}
$$

In equation (6.1) above, the a_{ij} are the technical coefficients of input requirements for sector j from sector i[175], the α_i are the labour inputs per unit of output, and the β_i are the imports per unit of output, the w_i and $r_{m,i}$, respectively, are the unit prices of those inputs.

In matrix form, equation (6.1) can be written as depicted in equation (6.2) below:

[175] It represents the proportion of sector's total output which is obtained when the flow matrix is divided by the total gross output of the purchasing sector.

$$\begin{bmatrix} P_1 \\ P_2 \\ P_3 \\ P_4 \\ . \\ . \\ . \\ . \\ . \\ . \\ P_{35} \end{bmatrix} = \begin{bmatrix} a_{11} & a_{21} & a_{31} & a_{41} & a_{51} & \ldots a_{35,1} \\ a_{12} & a_{22} & a_{32} & a_{42} & a_{52} & \ldots . a_{35,2} \\ a_{13} & a_{23} & a_{33} & a_{43} & a_{53} & \ldots . a_{35,3} \\ a_{14} & a_{24} & a_{34} & a_{44} & a_{54} & \ldots a_{35,4} \\ . & . & . & . & . & \ldots . \\ . & . & . & . & . & \ldots . \\ . & . & . & . & . & \ldots . \\ . & . & . & . & . & \ldots . \\ . & . & . & . & . & \ldots . \\ . & . & . & . & . & \ldots . \\ a_{1,35} & a_{2,35} & a_{3,35} & a_{4,35} & \ldots & a_{35,35} \end{bmatrix} \begin{bmatrix} P_1 \\ P_2 \\ P_3 \\ P_4 \\ . \\ . \\ . \\ . \\ . \\ . \\ P_{35} \end{bmatrix} + \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \\ b_{31} & b_{32} \\ b_{41} & b_{42} \\ . & . \\ & . \\ . & . \\ . & . \\ . & . \\ . & . \\ b_{35,1} & b_{35,2} \end{bmatrix} \begin{bmatrix} \bar{w}_1 \\ \\ r_m \end{bmatrix} \quad \textbf{(6.2)}$$

The first matrix of coefficients on the right-hand-side of equation (6.2) is the intersectoral technical matrix. The second matrix is the set of coefficients on the input coefficients of the other two elements in the production or cost structure. From equation (6.2), we derived equation (6.3) as;

$$(I - A) \begin{bmatrix} P_1 \\ P_2 \\ P_3 \\ P_4 \\ . \\ . \\ . \\ . \\ . \\ . \\ P_{35} \end{bmatrix} = \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \\ b_{31} & b_{32} \\ b_{41} & b_{42} \\ . & . \\ & . \\ . & . \\ . & . \\ . & . \\ . & . \\ b_{35,1} & b_{35,2} \end{bmatrix} \begin{bmatrix} \bar{w} \\ \\ \\ r_m \end{bmatrix} \quad \textbf{(6.3)}$$

Transforming equation (6.3), we have equation (6.4) defined as:

$$\begin{bmatrix} P_1 \\ P_2 \\ P_3 \\ P_4 \\ . \\ . \\ . \\ . \\ . \\ . \\ P_{35} \end{bmatrix} = (I - A)^{-1} \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \\ b_{31} & b_{32} \\ b_{41} & b_{42} \\ . & . \\ . & . \\ . & . \\ . & . \\ . & . \\ . & . \\ b_{35,1} & b_{35,2} \end{bmatrix} \begin{bmatrix} \bar{w} \\ \\ \\ r_m \end{bmatrix} \quad \textbf{(6.4)}$$

Putting the equations above in vector and matrix format, we have:

$$P = (I - A)^{-1} Bq \quad \textbf{(6.5)}$$

Therefore, differentiating the resultant system of equations, *ceteris paribus*, the impact of a unit change in an import price/exchange rate on the domestic prices of the sectors can be evaluated for each I-O tables constructed for 1981, 1985, 1995 and 2000 in chapter 5. Effectively, the coefficient on the price of a given imported commodity will provide that price effect. Thus, we require the matrix

$$(I - A)^{-1} B \quad \textbf{(6.6)}$$

to obtain our results.

6.6.3 The Empirical Results

As mentioned earlier, we employed a multi-sector framework to show *ceteris paribus* the impact of a unit change in an import/exchange rate on the sectoral domestic prices based on the I-O Tables constructed for 1981, 1985, 1995 and 2000. For our analysis we employed equations (6.5) and (6.6). These equations enable us to show the effect of a unit change in the exchange rate on sectoral prices in Nigeria[176].

The hallmark of the I-O framework is that output of any sector could serve as both as input into another sector, and as a final consumer product. So, we commence our analysis by examining the effect of a unit increase in the price of imports as a result of movement in the exchange rate on each of the 35 sectors but paying particular attention to sectors that depends more on imported inputs. Based on a priori, these sectors include vehicle assembly, iron and steel, crude petroleum, manufacturing, refineries, agriculture, transport, mining, drugs and chemicals and communication.

Therefore, focusing on the I-O Table for 1981, we examine the ceteris paribus influence of a unit increase in the import price as a result of movement in the exchange rate on sectoral price. In doing this we assume away the possible influence of the market structure, pricing policies on the part of the exporters, the possibility of product substitutability, the behaviour of the market forces which might influence pricing, and the distribution channels.

A cursory observation revealed that the sectoral price response to a unit increase in the import price as a result of movement in the exchange rate is positive for all sector

[176] We employed MATLAB 6.1 for all the matrices transformations and to obtain our results.

but at varrying degree. The positive price response is not surprising given the importance of imports both intermediate and final goods to the Nigerian economy.

For ease and chronological analysis, first, we considered sectors that constitute the primary economic activity. We observed that prices of products from the agricultural sector increased approximately by 0.1054, livestock by 0.0389, fishing by 0.1565, forestry by 0.2836, crude petroleum by 0.9595 and mining by 0.5500. Of all these sectors that constituted the primary economic activity, the price response from crude petroleum sector was much higher and in fact, the highest among the 35 sectors under consideration though closely followed by mining. This is not unconnected with the fact that prices in crude petroleum and mining sectors are not only priced in U.S dollar but are externally determined[177]. The low price response of agriculture, livestock and fishing sectors is quite understandable, based on the fact that these sectors relied much more on domestic inputs when compared with crude petroleum sector.

Extending our analysis to the secondary economic activity, the ceteris paribus influence of a unit increase in the price of imports as a result of movement in the exchange rate revealed that the prices of products in the food sector increased by 0.2173; drink, beverage and tobacco sector by 0.2288; textiles sector by 0.1868, footwear and leather sector by 0.1724; wood, and wood products sector by 0.1992; paper and paper products sector by 0.1384; drugs and chemical sector by 0.2077; refineries by 0.6229; rubber and plastic by 0.2070; iron and steel sector by 0.7000; fabricated metal by 0.2425; vehicle assembly by 0.6094; and other manufacturing by

[177] This implies that Nigeria is a price-taker as mentioned earlier.

0.5873 (see Table 6.6) below. From these immediate results, we observed that the import dependence of the sectors that comprises the secondary economic activity is somehow varied. Specifically, the sectoral price response as a result of a unit increase in the price of imports for refineries is 0.6229 and this happens to be the highest, closely followed by vehicle assembly with 0.6094 and other manufacturing with 0.5873. This is not unconnected with the fact that these sectors are considered to be import dependent. In fact, activities in the refineries sector relied entire on import of machinery and equipment, though, serious effort is currently been made to provide domestic substitute so as to conserve foreign exchange for development purpose.

The response of the sectors that constitute the tertiary economic activity revealed that a unit increase in the import price of imports as a result of movement in the exchange rate of naira resulted in increased price for products of electricity sector by 0.1898; water supply sector by 0.2543; building and construction sector by 0.4636; air transport sector by 0.4501; other land transport sector by 0.3334; water transport sector by 0.1487; railway transport sector by 0.1818; communication sector by 0.2288; distributive trade sector by 0.1586; hotels and restaurants sector by 0.1476; banking and finance by 0.0325; insurance by 0.0368; real estate and business services by 0.0992; housing sector by 0.1611 and community, social and personal services by 0.1357 (see Table 6.6). With reference to the tertiary economic activity, the highest sectoral price response came from the building and construction sector with 0.4636 which is closely followed by air transport with 0.4501 and other land transport with 0.3334. In actual fact, these three sectors depend much more on imported inputs. The results of these three sectors (i.e. building and construction, air transport and land transport) reflect the dependence of the sectors on either intermediate/final imported

goods. We equally reconginsed the fact that air and land transport sectors depend on petroleum products which as mentioned earlier usually priced in U.S dollars

Generally, from Table 6.6 below, the highest sectoral price response to a unit increase in price of imports is crude petroleum with 0.9595, followed by iron and steel with 0.7000, refineries with 0.6229, and vehicle assembly with 0.6094. On the other hand, the sectors with lowest price response include banking and finance with 0.0325, insurance with 0.0368, and livestock with 0.0389. The low price response of these sectors to some extent reflect their minimal dependence on either imported intermediate inputs or output of another that depend on imported inputs.

Using the I-O Table constructed for 1985, we examined the ceteris paribus impact of a unit increase in the import prices as a result of movement in the exchange rate on sectoral prices. As expected, our results revealed that sectoral response varied from one sector to another. The response from sectors that constitute the primary economic activity revealed that agricultural sector price increased by 0.1009, livestock by 0.0977, fishing by 0.1429, forestry by 0.1560, crude petroleum by 0.9560, and mining by 0.2734. For this group, the price response from crude petroleum was the highest with 0.9560, closely followed by other mining with 0.2734 and forestry with 0.1560 (see Table 6.6 below).

With reference to sectors that constitute the secondary economic activity, the sectoral price response from food is 0.2148; drink, beverage and tobacco increased by 0.1528; textiles by 0.1011; footwear and leather by 0.1071; wood and wood products by 0.1856; paper and paper products by 0.1436; drugs and chemicals by 0.1297;

refineries by 0.4225; rubber and plastic by 0.1135; iron and steel by 0.6272; fabricated metal by 0.1926; vehicle assembly by 0.3274 and other manufacturing by 0.3577 (Table 6.6).

The highest sectoral price response for this group comes from the iron and steel sector with 0.6272, followed by refineries with 0.4225 and other manufacturing with 0.3577. Sectors with the lowest price response are textiles with 0.1011, footwear and leather sector with 0.1071 and rubber and plastic sector with 0.1135.

Table 6.6: The Price Effects of a Unit Increase in Imports Price on Sectoral Prices

	Sectors	1981	1985	1995	2000
1	Agriculture	0.1054	0.1009	0.1028	0.1774
2	Livestock	0.0389	0.0977	0.1213	0.1838
3	Fishing	0.1565	0.1429	0.2225	0.2002
4	Forestry	0.2836	0.1560	0.1901	0.2575
5	Crude Petroleum	0.9595	0.9560	0.9719	0.9821
6	Other Mining	0.5500	0.2734	0.3322	0.5809
7	Food	0.2173	0.2148	0.4162	0.5453
8	Drink, Beverage and Tobacco	0.2288	0.1528	0.3926	0.4669
9	Textiles	0.1868	0.1011	0.1378	0.2275
10	Footware and Leather	0.1724	0.1071	0.1540	0.1844
11	Wood & Wood Products	0.1992	0.1856	0.1506	0.3768
12	Paper & Paper products	0.1384	0.1436	0.1425	0.2561
13	Drugs and Chemical	0.2077	0.1297	0.2583	0.3296
14	Refineries	0.6229	0.4225	0.7523	0.7718
15	Rubber and Plastic	0.2070	0.1135	0.1975	0.1453
16	Iron and Steel	0.7000	0.6272	0.4964	0.2471
17	Fabricated Metal	0.2425	0.1926	0.2624	0.4274
18	Vehicle Assembly	0.6094	0.3274	0.5163	0.6208
19	Other Manufacturing	0.5873	0.3577	0.2329	0.4298
20	Electricity	0.1898	0.2595	0.2555	0.2147
21	Water Supply	0.2543	0.1204	0.1029	0.2780
22	Building and Construction	0.4636	0.2342	0.2122	0.3897
23	Air Transport	0.4501	0.3128	0.2942	0.4608
24	Other Land Transport	0.3334	0.1316	0.2646	0.4552
25	Water Transport	0.1487	0.1388	0.1878	0.3040
26	Railway Transport	0.1818	0.2793	0.2057	0.4804
27	Communication	0.2288	0.4058	0.2134	0.4050
28	Distributive Trade	0.1586	0.1004	0.1724	0.2169
29	Hotels and Restaurants	0.1476	0.1596	0.1519	0.1988
30	Banking and Finance	0.0325	0.0885	0.2047	0.1411
31	Insurance	0.0368	0.1669	0.1288	0.2014
32	Real Estate and Business Services	0.0992	0.2137	0.1824	0.2464
33	Housing	0.1611	0.1055	0.1079	0.1198
34	Community, Social and Personal Services	0.1357	0.0545	0.1883	0.0686
35	Producer of Government Services	0.0873	0.0592	0.0393	0.0788

The price response of the sectors that constitute the tertiary economic activity is between 0.0545 and 0.4058. Specifically, the price response of electricity sector increased by 0.2595; water supply 0.1204; building and construction 0.2342; air transport by 0.3128; other land transport by 0.1316; water transport by 0.1388; railway transport by 0.2793; communication by 0.4058; distributive trade by 0.1004; hotels and restaurants by 0.1596; banking and finance by 0.0885; insurance by 0.1669; real estate and business services by 0.2137; housing by 0.1055; community, social and personal services by 0.0545 and the producer of government services by 0.0592.

Table 6.6 revealed that the highest price response due to a unit increase in import comes from crude petroleum sector with 0.9560, followed by iron and steel with 0.6272 and communication sector with 0.4058 while the lowest price response comes from community, social and personal services sector. When we juxtaposed the results for 1985 with 1981, we observed that while the price response of some sectors such as livestock, electricity, railway transport, communication, and paper and paper products have marginally increased, the price response of sectors such as drink, beverage and tobacco, water supply, building and construction, distributive trade, air transport, vehicle assembly, and refineries have reduced but for some, the price response is almost the same, these sectors are forestry, crude petroleum, hotels and restaurants, and food.

With reference to I-O Table constructed for 1995, we examined the ceteris paribus effect of a unit increase in import price on sectoral prices. Table 6.6 above revealed the sectoral price responses. The price responses from sectors that constitute the

primary economic activity is slightly higher than that of 1985. The price response of agriculture is 0.1028; livestock 0.1213; fishing 0.2225; forestry 0.1901; petroleum 0.9719 and other mining 0.3322. The highest price response as usual is petroleum with 0.9719, followed by fishing with 0.2225 and 0.1901.

Extending the analysis to sectors that constitute the secondary economic activity, the price response of these sectors to a unit increase in import price looks much higher than that of 1981. Specifically, prices in food sector increased by 0.4162; drink, beverage and tobacco by 0.3926; textiles by 0.1378; footwear and leather by 0.1540; wood and wood products by 0.1506; paper and paper products by 0.1425; drugs and chemical by 0.2583; refineries by 0.7523; rubber and plastic by 0.1975; iron and steel by 0.4964; fabricated metal by 0.2624; vehicle assembly by 0.5163; other manufacturing by 0.2329.

A cursory look at these results revealed that the price response of the refineries sector is the highest with 0.7523, followed by vehicle assembly with 0.5163 and iron and steel sector with 0.4964. The lowest price response from the group comes from textiles with 0.1378; paper and paper products with 0.1425 and wood and wood products 0.1506. The sectors that constitute the tertiary economic activity revealed that the sectoral price response of a unit increase in import price as a result of movement in exchange rate is 0.2555 for electricity, 0.1029 for water supply, 0.2122 for building and construction, 0.2942 for air transport, 0.2646 for other land transport, 0.1878 for water transport, 0.2057 for railway transport, 0.2134 for communication, 0.1724 for distributive trade, 0.1519 for hotels and restaurants, 0.2047 for banking and finance, 0.1288 for insurance, 0.1079 for housing, 0.1883 for community, social and

personal services (see Table 6.6). For the tertiary economic activity as a group, on the average, the sectoral price response was much higher than that of 1981 and 1985 with the exception of iron and steel, water supply, building and construction, air transport and railway transport sectors, this might not be unconnected with the volatility of the naira/dollar exchange rate and other external factors.

Next, we examined the ceteris paribus effects of a unit increase in the price of imports as a result of the movement in the exchange rate on sectoral prices using the I-O Table constructed for 2000. The sectoral price response is higher than that of 1981, 1985 and 1995 for the entire 35 sectors. A look at the sectors that constitute the primary economic activity revealed agricultural price increased by 0.1774, livestock by 0.1838, fishing by 0.2002, forestry by 0.2575, crude petroleum by 0.9821, and other mining by 0.5809. Given the primary economic activity, the price response of crude petroleum sector with 0.9821, is in fact, the highest price response, not only for 2000 but for all the years under consideration (i.e. 1981, 1985, and 1995). A cursory look at Table 6.6 above revealed that the price response of sectors that constituted the secondary economic activity is equally higher than the previous years under consideration for the same group.

Specifically, prices in the food sector increased by 0.5453; drink, beverage and tobacco by 0.4669; textiles by 0.2275; footwear and leather by 0.1844; wood and wood products by 0.3768; paper and paper products by 0.2561; drugs and chemical by 0.3296; refineries by 0.7718; rubber and plastic by 0.1453; iron and steel by 0.2471; fabricated metal by 0.4274; vehicle assembly by 0.6208; and other manufacturing by 0.4298. For this group, the highest price response came from refineries with 0.7718,

followed closely by vehicle assembly sector with 0.6208 and food sector with 0.5453. The price response from the food sector is very high for 2000 and it is extremely disturbing. It can be interpreted to imply high volatility in the exchange rate or high import content in the food sector.

The sectoral price response as a result of a unit increase in the price of import from the sectors that constituted the tertiary economic activity is shown in Table 6.6. Table 6.6 revealed that sectoral price response from electricity is 0.2147; water supply 0.2780; building and construction 0.3897; air transport 0.4608; land transport 0.4552; water transport 0.3040; railway transport 0.4804; communication 0.4050; distributive trade 0.2169; hotels and restaurants 0.1988; banking and finance 0.1411; insurance 0.2014; real estate and business services 0.2464; housing 0.1198; community, social and personal services 0.0686 and producer of government services 0.0788. The highest sectoral price response from this group comes from railway transport with 0.4804 followed by air transport with 0.4608 and land transport with 0.4552.

In summary, given the I-O Tables for 1981, 1985, 2995 and 2000, Table 6.6 above revealed that the sectoral price response to a unit increase in the import price as a result of movement in the exchange rate is incomplete for all the sectors with the exception of crude petroleum, which is nearly complete for all the years. Though, the pass-through is incomplete for all the years, we observed that the degree of pass-through based on the I-O Table for 2000 is much higher than other years under investigation for all the 35 sectors.

6.7 Conclusion

In this chapter we employed the Leontief I-O Tables constructed for 1981, 1985, 1995 and 2000 in chapter 5 of this thesis to estimate exchange rate pass-through for Nigeria. In order to achieve the above objective, we first highlighted the uses of the I-O model to a developed or developing economy, and examined factors responsible for changes in the I-O technical coefficients which include changes in relative prices, the establishment of new industries, technological change, changes in product mix, and changes in the level of output. As a prelude to pass-through estimation using the I-O approach, we calculated the income, value added and import multipliers for Nigeria.

Our results revealed that sectoral dependence on imports varies from one sector to another. The results in Tables 6.3a, 6.3b, 6.3c and 6.3d, show that sectors like air transport, hotel and restaurant, rubber, paper, railway transport, wood and wood products, iron and steel, fabricated, vehicles, and electricity depend more on imports than other sectors. In fact, this is more clearly demonstrated by Table 6.3e which presents the summary of import multipliers for 1981, 1985, 1995 and 2000.

Next, we estimate the exchange rate pass-through for Nigeria using the I-O Tables for 1981, 1985, 1995 and 2000. We examine the ceteris paribus influence of a unit increase in the import price as a result of movement in the exchange rate on sectoral prices. The results provide evidence of incomplete pass-through but at varying degree across sectors, corroborating our findings using the time series approach in Chapters 3 and 4. However, the degree of pass-through obtained from the I-O approach appears to be higher than the estimates obtained from the econometric analysis for quite a

number of sectors. This might not be unconnected with the fact that, in the I-O model, the inter-industry transaction table identifies all transactions that occur in all sectors of the Nigerian economy. In short, it gives a broader picture of the economy.

CHAPTER 7

GENERAL CONCLUSION

7.1 The Main Findings and Conclusion

This study investigated pass-through from producers' costs and the exchange rate to the domestic price of imports in Nigeria from her major trading partners which include the U.S, the U.K, Germany, France, China, Japan, Netherlands, and Italy, at the aggregate and sectoral levels. In carrying out this empirical investigation, we employed both the Johansen technique (to examine the long-run relationships among the variables) and the Loentief input – output method to estimate exchange rate pass-through for Nigeria. As a prelude to our investigation, we reviewed the macroeconomic situation in Nigeria from 1970 to 2000 focusing on economic policy, economic sub-sectors, and economic and developmental challenges facing Nigeria.

In employing the Johansen technique, we use the mark-up approach which implies setting export prices as a mark-up on production costs where mark-up depends on the competitive pressures in the imports market and the nominal exchange rate. Also, we employed secondary data, basically quarterly time series data from 1970q1 to 2001q4 which amounts to a sample size of 128 observations.

Our findings using Johansen technique is that full pass-through of exchange rate from the major trading partners could not be established for both the aggregate and disaggregates import data. Our results indicate incomplete pass-through at varying degree across sectors. Though, sectoral speeds of adjustment are similar for food, beverage and tobacco (sector 12), paper and paper products, including printing and publishing (sector 64), iron and steel bars, and angles shapes (sector 67), and fabricated metal, machinery and equipment (sector 74) while the speed of adjustment

for aggregate import unit values is -0.01. The speed of adjustment to equilibrium for textiles, wearing apparel and leather (sector 65), estimated as -0.19 this implies a quicker adjustment rate, which is attributable to the importance of this sector for the total Nigerian imports.

In the case of application of the Leontief I-O technique to exchange rate pass-through in Nigeria, our results suggest a lack of full pass-through for 1981, 1985, 1995 and 2000 for all sectors. The results revealed that the sectoral price response due to *ceteris paribus* unit increase in the price of imported inputs is positive[178]. This implies that the results based on the Leontief I-O approach corroborate our findings from the time series approach. However, the magnitude of the estimated pass-through coefficients from the I-O approach is higher than those obtained from the time series approach.

Sectors with pass-through estimates above 50 percent across the years under investigation are crude petroleum sector (almost complete pass-through), refineries (with the exception of 1985), iron and steel (with the exception of 2000), mining (with exception of 1985 and 1995), vehicle assembly (with the exception of 1985) and a few other sectors. The incomplete pass-through can be interpreted as implying that Nigeria's major trading partners compete among themselves for increase in market share in Nigeria and therefore, treat movement in the exchange rate as temporary. Alternatively, it reveals that the effort of the federal government in encouraging

[178] As mentioned earlier, in doing this, we assume away the possible influence of the market structure, pricing policies on the part of the exporters, the possibility of product substitutability, the behaviour of the market forces which might influence pricing and the distribution channels.

companies to use local inputs where possible instead of relying on imported intermediate inputs is yielding results[179].

A key policy implication of the incomplete exchange rate pass-through findings for most sectors in Nigeria is that import prices are less responsive to movements in the exchange rate. Specifically, a depreciation of the naira (in the presence of exchange rate pass-through to import) would increase the price of foreign goods relative to domestic goods, which should, *ceteris paribus*, increase the demand for domestic goods relative to foreign goods. If there is a decline in the exchange rate pass-through to import prices, *ceteris paribus*, the change in relative international prices will be smaller and so will be the resulting effect on relative demand. In other words, if the adjustment in relative prices is dampened, then the incentive for consumer to switch expenditure from foreign to domestic goods will be reduced. This implies that the exchange rate policy may be a blunt instrument when used to restore external balance since relative price adjustment will be limited. Further, our results of incomplete pass-through suggest that exchange rate changes are likely to lead to smaller real effects in the economy through lower changes in both the terms of trade and import volumes.

7.2 Policy Recommendations

First, though the estimated exchange rate pass-through for Nigeria is incomplete at both the aggregate and sectoral levels, we suggest that the federal government should continue to intensify effort at encouraging companies to rely on local inputs to

[179] This would enable Nigeria to conserve foreign exchange and build up her external reserves.

conserve foreign exchange for development.

Second, given the macroeconomic problems facing Nigeria as highlighted in section 2.5 of chapter 2, and the policy responses incorporated since the 1986 adjustment programme, the Nigerian economy is gradually moving towards the right direction. We observe that the federal government effort at restructuring and diversifying the economy away from oil, is gradually yielding fruits as many companies now source part of their inputs locally. However, the existing government policies can be complement by the following policies.

First, there is the need to continue good economic management, which should embrace appropriate exchange rate policies and further opening up of the economy through privatisation[180]. Second, there is the need to ensure political stability through continuous democratic reforms which should provide good governance characterised by transparency and accountability. Third, the federal government should continue to rehabilitate and expand infrastructural facilities. Fourth, there is need for evolving schemes that would increase productivity and wages, through for instance, increased supply of micro-credit finance[181]. Other sectoral and specific recommendations are as follows.

Nigeria's endowments, both human and materials, permit a wide range of farming systems in food crops, cash crops, export crops farming and other rural based agricultural complements. Thus, the following is necessary to improve agricultural productivity in Nigeria; first, the promotion of pilot projects in community based or

[180] We recognized the fact that the federal government has privatized and commercialized some sectors, i.e. communication and petroleum sectors.
[181] Though the States and the Federal have commenced this, it needs to be further intensified.

local government areas should involve the development of an integrated agro-allied industries and the continue provision of portable water, access road, and other income generating activities, environmental management and mass literacy programme[182]. Second, a major key to the development of the agricultural sector is the active participation of the private enterprise. Farmers and other agricultural producers should play the leading role in the design and implementation of production and processing schemes, deriving direct benefits from these, while government should continue to encourage production through the creation and strengthening of infrastructure and the accessing of improved technologies, materials and markets. The resulting partnership would produce a strong and sustainable agricultural economy and provide backbone for industrial growth and development.

Next, the need for Nigeria to continue to develop its manufacturing sector cannot be overemphasised. So, the government need to continue to restructure this sector so as to enhance its performance. Nigeria's manufactured products as (light household items, tyres, processed foods, shoes, detergents) have made deep in road into the African continent in spite of capacity under-utilisation that characterises the industrial sector. Thus, Nigeria should further build on its industrial potential of industrialisation by establishing and promoting small and medium scale industrial establishments. An immediate solution to some of the problems facing the industrial sector would be to focus attention on factors associated with manufacturing production, including finance, domestic credit, raw materials, and labour. Finance constitutes an important component of manufacturing production, the more finance available, the higher the prospect of increased manufacturing activity. If the level of

[182] This would complement other policies aim at diversifying the Nigerian economy.

industrial production rises, then employment, output, and capacity utilisation will be enhanced. Increased local sourcing of raw materials will lead to less demand for foreign exchange. Less foreign exchange will be required to buy imported raw materials and fewer imports of finished goods will be needed since suitable goods will be available locally at comparable costs, which have implications for pass-through.

The current efforts at encouraging the processing of commodities such as cocoa and palm kernel before exporting them need to be sustained. This is an important way of accelerating the value added programme and increasing the manufacturing sub-sector's share of the GDP.

Apart from policies that affect the manufacturing sub sector directly, those that affect it indirectly are also very important. Policies that put more money in the hands of low income workers are likely to have serious positive effect on the manufacturing sub-sector, for example, through improved terms of trade for farmers. Increased income for the low income population will lead to an increased demand for manufactured products, which in turn, will lead to more income for manufacturers to be used to finance production. Also, exogenous factors, particularly, political stability and a positive attitude towards private profit, need to be re-established. These two factors help to reduce the level of uncertainty in the society, thereby making long range planning in industry possible.

In addition to the above, other measures and strategies to enhance industrial performance include launching and consistent implementation of the Strategic Industries Manufacturing Initiative which would continue to enhance the

diversification of the manufacturing base, strengthening of the interface between research and industrialists and commercialisation of research findings; institutional strengthening and restructuring of inefficient companies to enable them adequately perform their roles including the provision of infrastructure to industrial estates.

There is need to integrate the worldwide information technology especially the internet where inter-related services functions are performed. Nigeria's services sector has not been made to contribute its true potential in the development process. This is bound to be the case as the country is beset by problems of prevalence of low skills, infrastructural underdevelopment and lack of inter-linkages between services and other sectors. The services sector is dominated by informal services and hence the sector's contribution to the GDP is gross understated.

The state of transport facilities needs continuous improvement. The Nigerian roads, rail, air and water transport system has been in deplorable conditions for many years. There is the need for the continuous development and implementation of the road maintenance policy, encouragement of private sector participant in road maintenance and construction. Also, there is the need for the continuous refurbishment of infrastructure at the airports, encourage more investors to come into the aviation industry and more airlines to operate in the domestic routes and setting of competitive standards for operation and for the monitoring of compliance.

In order for the government to positively influence urban employment through policy measures that will stimulate employment, there is the need to evolve a new approach for obtaining accurate data on unemployment on a regular basis. For this purpose, a

Labour Registration Office should be established at every local government headquarters, at every state capital and at the federal government level. Such registration should identify every skill at technical and secondary school education, trade centre, polytechnics and university levels.

Concrete policies on external debt and other internal imbalances should be pursued to ameliorate the external constraints to economic growth and development efforts. In this regard, the following recommendations are considered possible: first, the intensification of the debt conversion programme to reduce the external debt burden. Second, external sector policy should favour direct investment inflows in order to obtain additional resources to expand domestic production of exportables and also gain technology transfer that can assist in transforming the domestic industrial landscape. This would have implications for exchange rate pass-through.

7.3 Further research

This empirical study was conducted at the aggregate and sectoral levels. In using Johansen techniques to estimate pass-through, we employed the import unit values, which may be regarded as crude measures that may not accurately reflect prices of individual products. So, a study based on actual import prices will complement this study[183]. Also, coverage in terms of sectors can be increased when the relevant data are readily available.

Further, given the factors that account for the changes in input-output coefficients as

[183] As mentioned earlier in the thesis, the import price data are not available for most developing countries including Nigeria presently.

discussed in chapter 6, it would have been useful to estimate the likely parameters by employing simultaneous equations. Alternatively, to estimate pass-through using the Leontief input-output tables, we would have employed a panel approach. However, the short length of input-output tables available acts as constrain to this kind of estimation. So, our study is mainly constrained by data limitations.

CARTER'S TECHNOLOGY MATRIX

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. *Agriculture*	0.0000	0.0000	0.3810	0.3136	0.0000	0.0208	0.0959	0.0000	0.0000	0.0022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0064
2. *Livestock, fishing, forest*	0.0000	0.0000	0.0074	0.0000	0.0000	0.0000	0.3013	0.0059	0.0057	0.0024	0.0000	0.0000	0.0000	0.0188	0.0000	0.0006	0.0003	0.0175	0.0105	0.0453
3. *Agricultural processing*	0.0002	0.0059	0.0000	0.0553	0.0072	0.0000	0.0045	0.0000	0.0000	0.1763	0.0000	0.0374	0.0000	0.0726	0.0000	0.0241	0.0000	0.2569	0.0000	0.0000
4. *Textiles*	0.0000	0.0000	0.0000	0.0000	0.1933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0064
5. *Clothing*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000
6. *Drink and tobacco*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7. *Food*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8. *Metal mining*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9. *Non-metal mining*	0.0000	0.0000	0.0003	0.0008	0.0000	0.0000	0.0000	0.0032	0.0000	0.0073	0.0078	0.0785	0.0000	0.0505	0.0002	0.0011	0.1550	0.0031	0.0000	0.0000
10. *Chemicals*	0.0000	0.0004	0.0000	0.0000	0.0000	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0082	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000
11. *Transport*	0.0006	0.0054	0.0855	0.0053	0.0379	0.0134	0.0451	0.0085	0.0238	0.0239	0.0000	0.0542	0.0229	0.0793	0.0110	0.0282	0.0408	0.0357	0.0324	0.0482
12. *Utilities*	0.0000	0.0000	0.0082	0.0117	0.0006	0.0053	0.0019	0.0389	0.0076	0.0126	0.0000	0.0000	0.0000	0.0013	0.0059	0.0123	0.0924	0.0088	0.0055	0.0030
13. *Trade*	0.0004	0.0003	0.0042	0.0111	0.0434	0.0044	0.0282	0.0183	0.0132	0.0093	0.0157	0.0191	0.0000	0.0671	0.0234	0.0273	0.0069	0.0442	0.0207	0.0160
14. *Construction*	0.0000	0.0000	0.0010	0.0015	0.0000	0.0006	0.0008	0.0032	0.0094	0.0050	0.0000	0.0035	0.0043	0.0000	0.0160	0.0023	0.0038	0.0016	0.0006	0.0075
15. *Service*	0.0009	0.0007	0.0214	0.0141	0.0230	0.0251	0.0473	0.0209	0.0060	0.0629	0.0282	0.0182	0.0296	0.0103	0.0009	0.0409	0.0330	0.0658	0.0345	0.0397
16. *Transport equipment*	0.0000	0.0000	0.0018	0.0002	0.0000	0.0007	0.0009	0.0032	0.0016	0.0029	0.0587	0.0000	0.0000	0.0024	0.0000	0.0000	0.0014	0.0004	0.0004	0.0021
17. *Non-metalic min. prod.*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0051	0.0000	0.0000	0.0000	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18. *Metal manufacturing.*	0.0000	0.0000	0.0020	0.0070	0.0221	0.0043	0.0036	0.0045	0.0023	0.0032	0.0010	0.0663	0.0022	0.0026	0.0015	0.0054	0.0067	0.0050	0.0051	0.0045
19. *Wood feather, paper.*	0.0000	0.0000	0.0007	0.0010	0.0001	0.0035	0.0075	0.0026	0.0027	0.0109	0.0071	0.0023	0.0043	0.0216	0.0092	0.0007	0.0049	0.0011	0.0000	0.0010
20. *Miscellaneous manufac.*	0.0000	0.0000	0.0003	0.0005	0.0000	0.0017	0.0029	0.0013	0.0013	0.0045	0.0010	0.0012	0.0042	0.0000	0.0051	0.0003	0.0024	0.0006	0.0004	0.0000

Source: Carter (1966) *op. cit.*, pp. 332—333

CLARK'S TECHNOLOGY MATRIX

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. Agriculture	0.0480	0.6400	0.0000	0.0000	0.1150	0.0000	0.5560	0.9690	0.0030	0.0000	0.0000	0.2930	0.2660	0.0000	0.0000	0.3430	0.2020	0.0230	0.0000	0.0000	0.0840	0.0370	0.0000	0.0000	0.0000
2. Oil Seeds	0.0000	0.0000	0.0000	0.0000	0.0240	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3. Fresh Fish	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4. Tobacco.	0.0000	0.0000	0.0000	0.0000	0.1220	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5. Food, drink etc.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6. Beer, Stout	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7. Packed meat.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8. Butter.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9. Mining.	0.0000	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0000	0.0040	0.0010	0.1390	0.0110	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10. Crude oil.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11. Craft weave.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0050	0.0000	0.1370	0.0350	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0000
12. Cot. textile.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1330	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13. Non-metal-Manufacture	0.0020	0.0020	0.0000	0.0000	0.0130	0.0330	0.0240	0.0000	0.0050	0.0160	0.0030	0.0100	0.0010	0.0120	0.0000	0.0060	0.0250	0.0020	0.0000	0.0420	0.0370	0.0350	0.0080	0.0130	0.0000
14. Cement.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3760	0.0000	0.0000	0.0000	0.0000	0.0000	0.0510	0.0000	0.0000	0.0000	0.0000
15. Cement good.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0070	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16. Wood manufacture.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17. Soap.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18. Metal manufacture.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0110	0.0160	0.0000	0.0160	0.0480	0.0120	0.0350	0.0200	0.0010	0.0000	0.0410	0.0040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19. Bike assembly.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20. Vehicle assembly.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21. Construction.	0.0000	0.0010	0.0000	0.0000	0.0010	0.0020	0.0000	0.0000	0.0020	0.0940	0.0000	0.0080	0.0000	0.0000	0.0030	0.0000	0.0080	0.0320	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1040
22. Utilities	0.0010	0.0040	0.0000	0.0000	0.0020	0.0120	0.0000	0.0000	0.0190	0.0030	0.0010	0.0620	0.0050	0.1040	0.0250	0.0140	0.0140	0.0110	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000
23. Transport	0.0110	0.0230	0.0000	0.0000	0.0490	0.0340	0.0400	0.0000	0.0087	0.0590	0.0330	0.0180	0.0340	0.0480	0.0080	0.0130	0.0700	0.0290	0.0240	0.0089	0.0730	0.0540	0.0000	0.0000	0.0000
24. Trade Services.	0.0030	0.0700	0.0000	0.0000	0.0670	0.0810	0.0890	0.0010	0.0190	0.2100	0.0600	0.0350	0.0540	0.0450	0.0170	0.0320	0.0087	0.0880	0.0320	0.0380	0.0710	0.0370	0.0400	0.0270	0.0000
25. House rent.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Source: Clark (1970) *op. cit.*, pp. 73—74

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20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
						Final Demand								
Distributive Trade	Finance and Insurance	Producers of Government Services	Hotel and Catering	Professional Business and Other Services	Housing	Sub-Total 1 to 25	Private Final Consumption Expenditure	Government Final Consumption Expenditure	Increase in Stocks	Gross Fixed Capital Formation	Export	Less Import	Total Final Demand	Total Output
—	—	—	5,018	—	—	343,987	11,823,299	2,401	—	—	216,411	(36,712)	2,005,399	2,349,386
—	—	—	1,544		—	421,677	457,960	680	—	—	15,011	(904)	472,747	494,424
—	—	—	—	—	—	117,927	86,819	104	—	—	12,469	—	99,392	217,319
—	—	—	965	—	—	977	490 659	—	—	—	—	—	490,659	491,636
8,429	177	—	—	—	—	100,598	10,021	1,804	1,302	—	1,948,839	(41,000)	1,920,966	2,021,564
—	—	—	—	—	—	297,924	3,261	—	—	—	3,369	(6,326)	304	298,228
—	402	—	3,088	497	—	72,399	411,718	5,268	16,358	—	84,067	(33,129)	484,282	556,681
6,762	66	—	—	288	—	47,734	224,879	11,622	44,497	—	8,792	(9,351)	280,439	328,173
5,040	65	—	—	—	—	37,291	20,486	1,153	(18,384)	—	3,416	(4,940)	1,731	39,022
6,198	8,860	—	193	1,802	—	78,327	13,641	9,158	7,152	—	167	(4,397)	25,721	104,048
—	—	—	—	1,180	—	93,582	179,086	7,028	11,660	—	1,034	(6,491)	192,317	285,899
6,514	—	—	—	590	—	62,506	35,098	4,995	8,183	—	370	(9,896)	38,750	101,256
—	—	—	—	—	—	123,151	120,597	11,690	4,199	—	363	(36,802)	100,047	223,198
—	—	—	—	—	—	5,390	201,877	7,947	19,601	—	17,856	(108,001)	139,280	144,670
—	—	—	—	—	—	15,643	84,834	900	219	—	175	—	86,128	101,771
14,820	741	—	579	1,577	—	53,723	1,734	13,745	—	—	—	—	15,479	69,202
—	—	—	—	—	90,310	98,757	—	136,144	—	1,684,144	—	—	1,820,258	1,919,015
258,007	3,479	—	579	4,504	—	554,273	60,636	77,058	—	—	56,700	(49,300)	145,094	699,367
7,392	1,596	—	579	2,928	—	29,374	1,957	6,383	—	—	—	—	8,340	37,714
19,194	3,000	—	5,281	2,676	—	417,207	2,214,519	5,593	—	—	—	—	2,220,109	2,637,316
—	2,131	—	193	6,605	—	59,979	108,998	378	—	—	2,000	(4,000)	107,376	167,355
—	—	—	—	—	—	—	19,100	664,403	—	—	18,300	(37,400)	664,403	664,403
—	24	—	—	—	—	2,470	48,802	525	—	—	—	—	49,327	51,797
298	2,820	—	702	2,164	—	79,138	214,898	58,839	—	—	77,661	(343,333)	8,065	87,203
36,570	3,366	—	578	3,177	—	67,149	644,960	6,298	—	—	—	—	651,258	718,407
369,224	26,727	—	19,299	27,988	90,310	2,781,183	—	—	—	—	—	—	—	—
—	177	—	—	—	—	675,962	36,056	—	—	364,300	—	(1,076,318)	(675,962)	—
369,224	26,904	—	19,299	27,988	90,310	3,457,145	7,515,892	1,034,116	94,787	2,048,414	2,467,000	(1,808,300)	1,135,909	14,809,054
2,268,092	140,451	664,403	32,498	59,215	628,097	11,351,909	—	—	—	—	—	—	—	—
2,637,316	167,355	664,403	51,797	87,203	718,407	14,809,054	—	—	—	—	—	—	—	—

(+) negative entries.

Table 5.3B

ORIGINAL INPUT COEFFICIENTS FOR THE NIGERIAN ECONOMY, 1973

Input of Industries / Output of Industries	1 Agriculture	2 Livestock	3 Forestry	4 Fishing	5 Oil Mining	6 Other Mining and Quarrying	7 Food, Drink, Beverages and Tobacco	8 Textile, Wearing Apparel and Leather Products	9 Wood and Wood Products Including Furniture	10 Paper and Paper Products Printing and Publishing	11 Drugs and Chemicals	12 Rubber and Plastic Products	13 Basic Metal Products	14 Fabricated Metal Products Machinery and Equipment	15 Other Manufacturing Products	16 Electricity and Water	17 Building and Construction	18 Transport	19 Communication	20 Distributive Trade	21 Finance and Insurance	22 Producers of Government Services	23 Hotel and Cathering	24 Professional Business and Other Services	25 Housing
1. Agriculture	48.63	0.00	0.00	0.00	0.00	0.00	260.10	215.81	0.00	1.01	0.07	0.14	3.29	0.00	80.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.88	0.00	0.00
2. Livestock	0.00	0.00	0.00	0.00	0.00	0.00	6.36	47.37	0.00	0.00	0.07	1.61	0.00	0.00	8.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.80	0.00	0.00
3. Forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.07	273.44	0.00	18.05	84.40	1.21	0.05	39.00	0.00	46.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4. Fishing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.63	0.00	0.00
5. Oil Mining	0.00	0.00	0.00	16.84	2.74	2.14	4.45	6.77	13.74	28.51	6.00	3.49	7.06	6.48	4.25	111.28	0.98	78.21	1.19	3.20	1.06	0.00	0.00	0.00	0.00
6. Other Mining and Quarrying	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.01	0.00	0.00	0.00	0.00	90.71	0.00	17.01	0.00	142.70	3.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. Food, Drink, Beverages and Tobacco	0.00	10.11	0.00	2.84	0.00	0.00	99.30	0.00	0.00	0.00	0.23	0.00	0.00	0.00	63.79	0.16	0.00	0.22	0.24	0.00	2.40	0.00	59.62	5.70	0.00
8. Textile, Wearing Apparel and Leather Products	0.00	0.00	0.00	0.00	0.23	0.00	5.26	61.78	7.30	44.84	0.13	24.45	0.31	1.11	89.40	0.01	0.00	0.22	0.21	2.56	0.39	0.00	0.00	3.30	0.00
9. Wood and Wood Products Including Furniture	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.23	18.19	17.47	2.76	2.64	0.71	22.01	35.90	0.00	10.94	0.71	0.00	1.91	0.39	0.00	0.00	0.00	0.00
10. Paper and Paper Products Printing and Publishing	0.00	0.00	0.00	0.00	0.88	0.00	31.11	3.78	5.89	168.98	30.64	18.72	8.44	19.78	9.30	0.74	1.39	4.53	23.79	2.35	52.94	0.00	3.73	20.66	0.00
11. Drugs and Chemicals	2.45	0.00	0.00	0.00	0.25	0.00	2.32	77.89	9.99	13.47	87.95	0.20	4.03	19.91	9.16	0.00	14.35	0.08	0.24	0.00	0.00	0.00	0.00	13.53	0 00
12. Rubber and Plastic Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75	8.84	0.02	2.78	106.13	2.67	1.33	22.25	0.00	0.00	57.03	0.00	2.47	0.00	0.00	0.00	6.77	0.00
13. Basic Metal Products	12.09	0.00	0.00	0.00	1.77	0.00	0.00	0.56	4.66	0.00	7.34	4.38	150.04	37.22	8.51	0.00	28.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14. Fabricated Metal Products Machinery and Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15. Other Manufacturing Products	5.56	0.00	0.00	0.00	0.00	0.00	3.18	0.08	0.00	0.00	0.00	0.00	0.00	0.00	4.34	4.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16. Electricity and Water	0.00	0.00	0.00	4.50	0.31	4.40	7.28	37.51	13.51	20.94	7.51	19.77	21.38	14.74	0.63	5.35	0.01	1.18	12.05	5.62	4.43	0.00	11.18	18.08	0.00
17. Building and Construction	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.03	0.00	6.64	3.13	0.00	0.00	0.00	0.00	0.00	125.71
18. Transport	0.00	0.00	10.58	0.96	23.83	275.10	22.03	61.51	47.13	80.25	59.35	60.65	96.47	13.20	4.24	19.42	26.52	15.42	55.03	97 83	20.79	0.00	11.18	51.65	00.0
19. Communication	0.00	0.00	0.00	0.84	0.25	0.00	4.39	2.36	3.15	2.69	9.37	9.99	2.55	3.93	0.22	2.27	2.61	3.62	13.34	2.80	9.54	0.00	11 18	33.58	0 00
20. Distributive Trade	1.90	0.22	0.00	2.03	1.88	0.34	34.87	131.21	95.41	132.81	61.45	48.61	167.12	40.65	13.09	12.46	91.59	75.94	5.30	7.28	17 93	0 00	101 96	30.69	0 00
21. Finance and Insurance	0.0	0.00	0.00	10.36	1.12	2.36	7.19	15.68	17.58	9.61	12.00	16.94	15.37	6.91	0.98	12.68	6.37	12.64	14.74	0.00	12.73	0.00	3.72	75.74	0.00
22. Producers Of Government Services	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0 00	0.00	0.00	0.00
23. Hotel and Catering	0.0	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.48	19.17	0.00	0.14	0.00	0.00	0.00	0.00
24. Professional Business and Other Services	0.0	0.00	0.00	14.23	4.87	49.15	0.28	2.63	6.59	6.54	0.79	0.98	0.99	3.91	0.19	144.50	2.26	25.46	169.97	0 11	16.35	0.00	13 55	24 82	0.00
25. Housing	0.0	0.00	0.00	1.56	0.36	0.00	1.30	3.68	4.84	8.65	2.65	8.63	2.84	6.79	0.85	4.12	7.18	1.36	15.80	13.87	20.11	0.00	11.16	36.43	0.00
26. Total Intermediate Inputs Sub-Total I to 25	70.70	11.33	10.58	54.16	39.88	333.49	489.66	670.68	530.26	535.79	309.14	411.73	575.21	198.02	412.54	341.83	381.47	286.60	334.20	140.00	159.70	0.00	372.59	320.95	125.71
27. Complementary Imports	0.00	0.00	0.00	0.00	54.69	0.00	39.28	37.28	9.46	35.11	143.81	232.16	188.98	484.28	47.78	5.00	157.28	60.52	22.75	0 00	1.06	0.00	0.00	0.00	0.00
28. Total Inputs	70.70	11.33	10.58	54.16	94.57	333.49	528.94	707.96	539.72	570.90	452.95	643.89	764.19	682.30	460.32	346.83	538.75	347.12	356.95	140.00	160.76	0.00	372.59	320 95	125.71
29. Value Added	929.30	988.67	989.42	945.84	905.43	666.51	471.06	292.04	460.18	429.10	547.05	356.11	235.81	317.70	539.68	653.17	461.25	652.88	643.05	860.00	839.24	1,000	627.41	679.05	874.29
30. Gross Input	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Notes :—(a) The figures are based on a final output of ₦1,000 per sector.

(b) The number of the row sectors correspond with the descriptions in the column sectors.

Table 5.4A NIGERIA: INTERINDUSTRY FLOW MATRIX FOR 1985

	ACTIVITY SECTORS	1	2	3	4	5	6	7	8	9	10	11	
1	AGRICULTURE	3185.56	0.00	0.00	0.00	0.00	0.00	476.99	191.89	215.61	0.00	0.00	0.
2	LIVESTOCK	0.00	0.00	0.00	0.00	0.00	0.00	148.07	0.00	0.00	37.43	0.00	0.
3	FISHING	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
4	FORESTRY	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.32	131.
5	CRUDE PETROLEUM	0.00	0.00	211.81	0.00	58.91	1.71	0.00	0.00	0.00	0.00	0.00	0.
6	OTHER MINING	0.00	0.00	0.00	0.00	0.33	1.47	0.00	0.00	0.00	0.00	0.00	0.
7	FOOD	0.00	378.98	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
8	DRINK BEV&TOBACCO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
9	TEXTILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
10	FOOTWEAR&LEATHER	0.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	133.41	0.00	0.00	0.
11	WOOD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.31	0.00	0.
12	PAPER	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.61	0.
13	DRUGS&CHEM	21.16	0.00	1.43	0.00	3.83	0.00	0.00	20.28	0.00	0.00	0.00	16.
14	REFINERIES	50.81	0.00	6.10	0.55	1.10	26.26	0.00	6.76	0.00	0.00	0.00	0.
15	RUBBER&PLASTICS	0.00	0.00	0.03	0.00	1.37	41.22	19.74	24.24	18.81	5.31	9.61	11.
16	IRON AND STEEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.85	0.00	0.
17	FABRICATED METAL	346.78	0.00	0.04	0.45	7.70	7.12	0.00	0.00	0.00	0.00	0.00	0.
18	VEHICLE ASSEMBLY	0.00	0.00	0.00	0.00	1.79	10.58	0.00	0.00	0.00	0.00	0.00	0.
19	OTHER MANUF.	206.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
20	UTILITIES	0.00	0.00	21.35	0.00	0.00	0.00	0.00	2.48	0.00	0.00	0.00	0.
21	BLDG&CONSTRUCTN	0.00	0.00	0.00	0.00	2.48	3.02	19.30	21.17	67.90	8.71	4.36	7.
22	TRANSPORT	0.00	0.00	4.60	1.50	4.65	5.06	0.00	0.00	0.00	0.00	0.00	0.
23	COMMUNICATIONS	0.00	0.00	2.08	0.00	195.10	88.85	158.84	106.67	24.55	15.52	21.68	50.
24	DISTRIBUTIVE TRADE	95.84	64.12	9.05	0.05	1.05	0.00	5.47	4.92	4.65	0.70	0.60	1.
25	HOTEL AND RESTRNTS	0.00	0.00	0.00	0.00	14.26	0.23	297.38	145.97	71.99	37.71	46.66	85.
26	FIN.&INSURANCE	0.00	0.00	47.62	0.45	-2.98	0.00	0.00	0.00	0.00	0.00	0.00	0.
27	REAL ESTATE&BUS.SERV	0.00	0.00	53.69	0.00	8.74	1.57	13.46	12.02	8.65	1.68	1.44	2.
28	HOUSING (DWELLING)	0.00	0.00	4.48	0.00	31.28	27.03	4.40	2.68	2.07	0.22	0.24	0.
29	COMTY SOC.&PERS SERV.	0.00	0.00	1.37	0.55	1.76	0.00	3.63	3.60	2.46	1.65	1.01	2.
30	PROD OF GOVT SERV	0.00	0.00	0	0.00	0	14.82	0.00	0.00	0.00	0.00	0.00	0.
31	DOM.INT.INPUT	3907.07	443.1	365.13	3.55	338.32	228.94	1147.29	542.67	550.12	165.09	161.54	310.
32	IMPORT	84.93	0.00	0.00	0.00	301.48	0.00	106.93	23.94	36.01	12.91	9.88	29.
33	TOT.INT.INPUT	3992.00	443.10	365.13	3.55	639.80	228.94	1254.22	566.61	586.12	176.00	171.42	339.
34	WAGES	2512.00	76.00	288.00	12.00	196.20	17.06	275.69	238.57	354.68	78.49	60.52	184.
35	OPERATING SURPLUS	16472.00	4738.62	391.33	1329.26	11577.82	398.98	608.16	145.52	430.16	212.31	58.23	234.
36	CAPITAL CONS EXP	745.00	27.00	31.00	3.00	336.08	12.56	76.91	125.97	95.70	23.08	19.48	41.
37	INDIRECT BUS.TAX	0.00	0.00	4.00	74.00	25.68	0.00	88.24	456.47	141.75	38.98	12.52	42.
38	LESS SUBSIDIES	67.00	0.00	0.00	61.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
39	VALUE ADDED	19662.00	4841.62	714.33	1357.26	12135.78	428.60	1049.00	966.53	1022.29	352.86	150.55	503.
40	TOTAL INPUT	23654.00	5284.72	1079.46	1360.81	12775.58	657.54	2303.22	1533.14	1608.41	528.86	321.97	843.

Table 5.4A (Contd.) NIGERIA: INTERINDUSTRY FLOW MATRIX FOR 1985

13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
75.96	0.00	0.12	33.11	0.00	0.00	182.75	0.00	0.00	0.00	0.00	0.00	151.91	0.00	0.00
59.10	0.00	1.09	0.00	0.00	0.00	28.38	0.00	0.00	0.00	0.00	0.00	53.07	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.00	0.00	0.00	0.00	0.00	58.75	0.00	0.00
17.71	0.00	77.70	1.43	0.01	5.64	17.49	0.00	37.06	0.00	0.00	0.00	0.00	0.00	0.00
0.00	574.17	0.00	0.00	0.00	0.00	16.94	138.50	5.18	1261.27	2.32	191.61	0.00	11.49	0.00
0.00	0.00	0.00	147.97	0.00	0.00	33.71	0.00	234.79	14.34	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	12.16	0.00	0.00	0.26	0.10	0.00	30.77	4.21	1.56
7.85	0.00	0.00	0.00	0.00	0.00	36.64	0.00	0.00	0.15	0.00	0.00	18.64	2.06	1.62
0.00	0.00	0.00	0.00	1.27	0.00	28.28	0.00	0.00	0.31	0.88	28.49	0.00	1.01	1.84
0.00	0.00	9.95	1.15	0.00	75.00	0.00	0.00	-0.00	0.10	0.00	0.00	0.00	0.00	0.00
0.00	0.00	1.09	2.69	25.17	50.00	20.31	0.00	14.14	1.28	0.00	21.33	0.00	1.01	0.00
1.31	0.00	7.64	31.79	22.61	80.00	11.47	0.00	1.77	8.10	9.12	26.15	3.08	138.37	6.52
73.14	11.06	0.05	15.17	22.77	248.79	11.29	0.04	18.75	0.15	0.10	35.50	0.00	0.00	4.55
0.42	0.57	9.38	129.68	15.72	75.00	26.71	0.23	1.28	139.99	0.45	0.00	0.00	2.78	0.00
0.00	0.00	53.32	10.08	1.54	0.00	0.00	0.00	0.00	102.08	0.00	27.40	0.00	0.00	1.39
9.04	0.00	1.81	285.11	130.28	120.00	22.44	0.00	29.04	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	42.56	0.00	5.52	0.00	7.26	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.67	0.00	0.00	5.94	1.24	0.00	7.38	1.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.80	21.08	9.79	81.68	6.81	4.15	1.41	2.50	0.02	7.18	8.00	126.32	13.96	17.72	4.19
0.00	0.00	0.00	0.00	0.00	0.00	0	6.43	0.00	23.18	1.20	0.00	0.00	0.00	0.00
60.74	123.44	39.24	208.06	36.78	210.73	10.24	9.16	53.33	94.49	36.67	2229.35	14.17	84.47	18.85
2.73	1.37	1.76	6.83	1.64	6.81	0.25	0.57	2.72	8.36	4.57	33.10	7.34	20.13	7.80
19.49	43.26	54.12	43.57	12.61	289.59	29.29	5.44	170.29	430.41	3.26	153.30	119.15	67.32	19.34
0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	9.73	13.55	0.00	0.00	0.52	0
7.26	5.12	12.02	76.53	6.75	26.37	2.28	5.75	12.24	74.04	9.43	0.00	4.43	49.40	21.55
2.19	0.44	1.31	2.19	0.94	4.37	0.37	53.56	3.56	122.22	88.55	2.03	13.38	53.62	10.49
4.69	1.49	1.78	5.68	1.85	2.41	1.27	1.18	8.57	4.94	6.28	187.64	8.41	48.57	10.40
0.00	0.00	0.00	0.00	0.00	0.00	22.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56.09	781.99	282.17	1088.68	330.53	1198.86	529.71	224.97	600.00	2302.59	184.47	3062.22	497.06	502.69	110.10
34.98	10.84	145.66	268.79	36.71	159.24	13.25	0.95	823.00	115.42	2.34	0.00	0.00	0.49	0.00
91.07	792.83	427.83	1357.47	367.24	1358.10	542.96	225.92	1423.00	2418.01	186.81	3062.22	497.06	503.18	110.10
83.07	63.96	124.12	165.08	162.76	117.16	239.10	283.74	507.00	1148.22	209.29	2544.70	196.56	697.78	106.60
65.02	54.34	236.81	0.00	329.46	924.78	423.54	51.89	1021.00	1568.16	40.47	6194.24	260.22	1210.83	1373.7
42.90	41.17	29.28	123.06	39.99	39.89	111.22	183.47	4.00	896.72	41.54	447.71	17.42	789.09	15.10
89.30	97.57	32.48	45.83	51.86	22.68	61.43	0.00	1.00	42.80	0.00	0.00	2.90	0.00	
0.00	0.00	0.00	1003.19	0.00	0.00	0.00	0.00	0.00	206.20	3.00	0.00	0.00	0.00	7.1
10.29	257.04	422.69	-669.22	584.07	1104.51	835.29	519.10	1533.00	3449.70	288.50	9186.65	477.10	2697.70	1488.4
61.36	1049.87	850.52	688.24	951.31	2462.61	1378.25	745.02	2956.00	5867.71	475.11	12248.87	974.16	3200.88	1598.5

Table 5.4A (Contd.) NIGERIA: INTERINDUSTRY FLOW MATRIX FOR 1985

28	29	30	31 INT	32 pcons	33 gcons	34 invstmt	35 export	36 import	37 fin.dem	38 output
0.00	0.00	0.00	4613.90	18170.12	23.54	0	1056.13	209.69	19040.10	23654.00
0.00	0.00	0.00	307.15	4902.79	6.67	0	73.25	5.14	4977.57	5284.72
0.00	0.00	0.00	59.34	1020.12	0	0	0	0.00	1020.12	1079.46
0.00	0.00	0.00	359.82	939.15	0.98	0	60.86	0.00	1000.99	1360.81
0.00	0.00	0.00	2473.91	875.62	17.65	33.7	9510.75	136.04	10301.68	12775.59
0.00	0.00	0.00	432.61	244.64	0	0	16.45	36.16	224.93	657.54
0.00	2.00	0.00	431.41	1478.50	29.27	239.30	231.55	106.80	1871.82	2303.23
0.00	0.00	0.00	66.97	1162.56	22.59	184.72	178.74	82.44	1466.18	1533.14
0.00	1.16	0.00	197.64	499.16	82.95	836.28	31.11	38.73	1410.78	1608.41
0.00	0.00	0.00	97.51	85.63	31.46	317.15	11.80	14.69	431.35	528.86
0.00	0.00	0.00	141.62	657.09	11.35	-476.54	16.67	28.22	180.35	321.97
0.00	7.22	0.00	406.22	185.99	90.16	185.39	0.82	25.12	437.24	843.46
0.00	4.73	0.00	602.79	870.89	52.53	229.47	3.83	28.15	1128.57	1731.36
0.00	0.00	0.00	601.17	366.97	16.66	72.78	1.22	8.93	448.70	1049.87
0.00	2.37	0.00	241.07	405.05	47.01	212.12	1.81	56.53	609.46	850.52
0.00	0.00	0.00	612.55	-0.00	115.08	108.85	1.77	150.00	75.70	688.24
0.00	0.00	0.00	414.98	526.53	13.55	87.99	15.09	106.83	536.33	951.31
0.00	0.00	0.00	0.00	2410.79	69.74	420.10	72.05	510.08	2462.61	2462.61
0.00	0.00	0.00	227.21	1135.63	8.83	5.7	0.88	0.00	1151.04	1378.25
0.00	6.33	0.00	479.84	130.32	134.86	0	0	0.00	265.18	745.02
33.87	0.00	0.00	74.41	0.00	210.85	2670.74	0	0.00	2881.59	2956.00
0.00	18.05	0.00	3905.12	1211.68	755.8	0	276.71	281.61	1962.59	5867.71
0.00	11.73	0.00	138.82	273.72	62.57	0	0	0.00	336.29	475.11
0.00	10.72	0.00	2429.60	9764.44	54.83	0	0	0.00	9819.27	12248.87
0.00	0.00	0.00	26.78	942.18	5.2	0	0	0.00	947.38	974.16
0.00	26.47	0.00	438.15	2772.19	3.63	0	9.76	22.85	2762.73	3200.88
0.00	8.67	0.00	489.93	2113.59	577.1	0	379	1961.11	1108.58	1598.51
0.00	12.73	0.00	329.48	1640.60	61.79	0	0	0.00	1702.39	2031.87
0.00	0.00	0.00	39.28	665.50	0	0	0	0.00	665.50	704.78
0.00	0.00	0.00	0.00	82.36	4835.5	0	133.19	215.55	4835.50	4835.50
33.87	112.18	0.00	20639.27	55533.80	7342.15	5127.75	12083.43	4024.63	76062.50	96701.77
0.00	0.00	0.00	2237.37					2237.37		
33.87	112.18	0.00	22876.64	55533.80	7342.15	5127.75	12083.43	6262.00	73825.13	96701.77
0	54.28	4813.44	15870.70							
1998.00	521.23	0.00	53641.02							
0.00	17.09	22.06	4399.28							
0.00	0.00	0.00	1331.66							
0.00	0.00	0.00	1347.54							
1998.00	592.60	4835.50	73825.11							
2031.87	704.78	4835.50	96701.76							

Table 5.4B

TECHNOLOGY MATRIX FOR 1985

ACTIVITY SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13
1 AGRICULTURE	0.13467	0.00000	0.00000	0.00000	0.00000	0.00000	0.20710	0.12516	0.13405	0.00000	0.00000	0.00000	0.10163
2 LIVESTOCK	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.06429	0.00000	0.00000	0.07077	0.00000	0.00000	0.02258
3 FISHING	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
4 FORESTRY	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.22151	0.15586	0.01023
5 CRUDE PETROLEUM	0.00000	0.00000	0.19622	0.00000	0.00461	0.00260	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
6 OTHER MINING	0.00000	0.00000	0.00000	0.00000	0.00003	0.00224	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
7 FOOD	0.00000	0.07171	0.00127	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00453
8 DRINK BEV&TOBACCO	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.08295	0.00000	0.00000	0.00000	0.00000
9 TEXTILES	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.02138	0.00000	0.00000	0.00000
10 FOOTWEAR&LEATHER	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01433	0.00000	0.00000
11 WOOD	0.00000	0.00000	0.00009	0.00000	0.00030	0.00000	0.00000	0.01323	0.00000	0.00000	0.00000	0.01997	0.00653
12 PAPER	0.00000	0.00000	0.00133	0.00000	0.00009	0.03994	0.00000	0.00441	0.00000	0.00000	0.00000	0.00000	0.10000
13 DRUGS&CHEM	0.00089	0.00000	0.00565	0.00040	0.00011	0.06269	0.00857	0.01581	0.01170	0.01005	0.02985	0.01327	0.00602
14 REFINERIES	0.00215	0.00000	0.00003	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.08102	0.00000	0.00000	0.00000
15 RUBBER&PLASTICS	0.00000	0.00000	0.00000	0.00000	0.00060	0.01083	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00522
16 IRON AND STEEL	0.00000	0.00000	0.00004	0.00033	0.00014	0.01609	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
17 FABRICATED METAL	0.01466	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
18 VEHICLE ASSEMBLY	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00162	0.00000	0.00000	0.00096
19 OTHER MANUF.	0.00875	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20 UTILITIES	0.00000	0.00000	0.01978	0.00000	0.00019	0.00459	0.00838	0.01381	0.04222	0.01647	0.01354	0.00901	0.00739
21 BLDG&CONSTRUCTN	0.00000	0.00000	0.00000	0.00000	0.00036	0.00770	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
22 TRANSPORT	0.00000	0.00000	0.00426	0.00110	0.01527	0.13512	0.06897	0.06958	0.01526	0.02935	0.06734	0.05933	0.02931
23 COMMUNICATIONS	0.00000	0.00000	0.00193	0.00000	0.00008	0.00000	0.00237	0.00321	0.00289	0.00132	0.00187	0.00194	0.00158
24 DISTRIBUTIVE TRADE	0.00405	0.01213	0.00838	0.00004	0.00112	0.00035	0.12911	0.09521	0.04476	0.07131	0.14493	0.10098	0.06324
25 HOTEL AND RESTRNTS	0.00000	0.00000	0.00000	0.00000	0.00023	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
26 FIN.&INSURANCE	0.00000	0.00000	0.04411	0.00033	0.00068	0.00239	0.00584	0.00784	0.00538	0.00318	0.00448	0.00342	0.00419
27 REAL ESTATE&BUS.SERV	0.00000	0.00000	0.04974	0.00000	0.00245	0.04111	0.00191	0.00175	0.00129	0.00041	0.00076	0.00052	0.00126
28 HOUSING (DWELLING)	0.00000	0.00000	0.00415	0.00000	0.00014	0.00000	0.00158	0.00235	0.00153	0.00311	0.00313	0.00355	0.00271
29 COMTY SOC.&PERS SERV.	0.00000	0.00000	0.00127	0.00040	0.00000	0.02254	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
30 PROD OF GOVT SERV	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

TECHNOLOGY MATRIX FOR 1965

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0.00000	0.00014	0.04811	0.00000	0.00000	0.13260	0.00000	0.00000	0.00000	0.00000	0.00000	0.15594	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00129	0.00000	0.00000	0.00000	0.02059	0.00000	0.00000	0.00000	0.00000	0.00000	0.05448	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00043	0.00000	0.00000	0.00000	0.00000	0.00000	0.06031	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.09136	0.00208	0.00001	0.00229	0.01269	0.00000	0.01254	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.54690	0.00000	0.00000	0.00000	0.00000	0.01229	0.18590	0.00175	0.21495	0.00488	0.01564	0.00000	0.00359	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.21500	0.00000	0.00000	0.02446	0.00000	0.07943	0.00244	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00882	0.00000	0.00000	0.00004	0.00020	0.00000	0.03159	0.00132	0.00098	0.00000	0.00284	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.02658	0.00000	0.00000	0.00003	0.00000	0.00000	0.01913	0.00064	0.00102	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00133	0.00000	0.02052	0.00000	0.00000	0.00005	0.00185	0.00233	0.00000	0.00032	0.00115	0.00000	0.00165	0.00000
0.00000	0.01170	0.00168	0.00000	0.03046	0.00000	0.00000	0.00000	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00128	0.00391	0.02646	0.02030	0.01474	0.00000	0.00478	0.00022	0.00000	0.00174	0.00000	0.00052	0.00000	0.00000	0.00000	0.00000
0.00000	0.00899	0.04619	0.02377	0.03249	0.00832	0.00000	0.00060	0.00138	0.01919	0.00214	0.00316	0.04323	0.00408	0.00000	0.01024	0.00000
0.01053	0.00005	0.02205	0.02394	0.10103	0.00819	0.00005	0.00634	0.00003	0.00020	0.00290	0.00000	0.00000	0.00285	0.00000	0.00671	0.00000
0.00054	0.01103	0.18842	0.01652	0.03046	0.01938	0.00031	0.00043	0.02386	0.00096	0.00000	0.00000	0.00087	0.00000	0.00000	0.00000	0.00000
0.00000	0.06269	0.01465	0.00162	0.00000	0.00000	0.00000	0.00000	0.01740	0.00000	0.00224	0.00000	0.00000	0.00087	0.00000	0.00336	0.00000
0.00000	0.00213	0.41426	0.13695	0.04873	0.01628	0.00000	0.00982	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.04473	0.00000	0.00401	0.00000	0.00246	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00863	0.00130	0.00000	0.00535	0.00213	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.02008	0.01152	0.11868	0.00716	0.00168	0.00102	0.00336	0.00001	0.00122	0.01684	0.01031	0.01433	0.00554	0.00262	0.00000	0.00898	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00866	0.00000	0.00395	0.00253	0.00000	0.00000	0.00000	0.00000	0.01667	0.00000	0.00000
0.11758	0.04614	0.30231	0.03866	0.08557	0.00743	0.01229	0.01804	0.01610	0.07718	0.18200	0.01455	0.02639	0.01179	0.00000	0.02561	0.00000
0.00130	0.00206	0.00993	0.00172	0.00277	0.00018	0.00077	0.00092	0.00142	0.00962	0.00270	0.00753	0.00629	0.00488	0.00000	0.01664	0.00000
0.04121	0.06363	0.06331	0.01325	0.11760	0.02125	0.00730	0.05761	0.07335	0.00686	0.01252	0.12231	0.02103	0.01210	0.00000	0.01521	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00166	0.02852	0.00000	0.00000	0.00016	0.00000	0.00000	0.00000	0.00000
0.00487	0.01413	0.11120	0.00709	0.01071	0.00165	0.00772	0.00414	0.01262	0.01985	0.00000	0.00455	0.01543	0.01348	0.00000	0.03756	0.00000
0.00042	0.00154	0.00318	0.00098	0.00178	0.00027	0.07189	0.00120	0.02083	0.18638	0.00017	0.01373	0.01675	0.00656	0.00000	0.01230	0.00000
0.00142	0.00209	0.00825	0.00195	0.00098	0.00092	0.00158	0.00290	0.00084	0.01322	0.01532	0.00863	0.01517	0.00651	0.00000	0.01806	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.01635	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.74485	0.33176	1.58183	0.34744	0.48683	0.38434	0.30196	0.20298	0.39242	0.38827	0.25000	0.51024	0.15705	0.06888	0.01667	0.15917	0.00000
0.01033	0.17126	0.39055	0.03859	0.06466	0.00961	0.00128	0.27842	0.01967	0.00493	0.00000	0.00000	0.00015	0.00000	0.00000	0.00000	0.00000
0.75517	0.50302	1.97238	0.38603	0.55149	0.39395	0.30324	0.48139	0.41209	0.39319	0.25000	0.51024	0.15720	0.06888	0.01667	0.15917	0.00000
0.06092	0.14593	0.23986	0.17109	0.04758	0.17348	0.38085	0.17152	0.19568	0.44051	0.20775	0.20177	0.21800	0.06671	0.00000	0.07702	0.99544
0.05176	0.27843	0.00000	0.34632	0.37553	0.30730	0.06965	0.34540	0.26725	0.08518	0.50570	0.26712	0.37828	0.85940	0.98333	0.73956	0.00000
0.03921	0.03443	0.17880	0.04204	0.01620	0.08070	0.24626	0.00135	0.15282	0.08743	0.03655	0.01788	0.24652	0.00948	0.00000	0.02425	0.00456
0.09294	0.03819	0.06659	0.05451	0.00921	0.04457	0.00000	0.00034	0.00729	0.00000	0.00000	0.00298	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	1.45762	0.00000	0.00000	0.00000	0.00000	0.00000	0.03514	0.00631	0.00000	0.00000	0.00000	0.00447	0.00000	0.00000	0.00000
0.24483	0.49698	-0.97236	0.61396	0.44851	0.60605	0.69676	0.51861	0.58791	0.60681	0.75000	0.48976	0.84280	0.93112	0.98333	0.84083	1.00000
1.00000	1.00000	1.00001	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

Table 5.4C

NIGERIA: LEONTIEF INVERSE FOR 1985

	ACTIVITY SECTORS	1	2	3	4	5	6	7	8	9	10	11	12	13
1	AGRICULTURE	1.1578	0.0173	0.0006	0.0000	0.0002	0.0071	0.2411	0.1460	0.1694	0.0014	0.0002	0.0002	0.1328
2	LIVESTOCK	0.0003	1.0046	0.0001	0.0000	0.0000	0.0011	0.0647	0.0002	0.0001	0.0729	0.0000	0.0000	0.0253
3	FISHING	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	FORESTRY	0.0005	0.0001	0.0005	1.0000	0.0001	0.0016	0.0005	0.0026	0.0003	0.0085	0.2252	0.1594	0.0130
5	CRUDE PETROLEUM	0.0036	0.0031	0.2077	0.0005	1.0088	0.0801	0.0325	0.0359	0.0241	0.0236	0.0464	0.0310	0.0211
6	OTHER MINING	0.0012	0.0000	0.0001	0.0000	0.0003	1.0084	0.0006	0.0005	0.0003	0.0003	0.0003	0.0003	0.0025
7	FOOD	0.0001	0.0720	0.0014	0.0000	0.0000	0.0002	1.0047	0.0001	0.0000	0.0052	0.0000	0.0000	0.0019
8	DRINK BEV&TOBACCO	0.0003	0.0000	0.0001	0.0000	0.0000	0.0003	0.0001	1.0001	0.0001	0.0000	0.0000	0.0000	0.0051
9	TEXTILES	0.0003	0.0001	0.0001	0.0000	0.0001	0.0002	0.0004	0.0004	1.0906	0.0002	0.0004	0.0003	0.0003
10	FOOTWEAR&LEATHER	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	1.0229	0.0000	0.0000	0.0000
11	WOOD	0.0007	0.0001	0.0000	0.0000	0.0000	0.0007	0.0004	0.0003	0.0002	0.0003	1.0149	0.0002	0.0003
12	PAPER	0.0008	0.0001	0.0026	0.0000	0.0005	0.0031	0.0011	0.0146	0.0007	0.0014	0.0009	1.0211	0.0087
13	DRUGS&CHEM	-0.0020	0.0001	0.0018	0.0000	0.0002	0.0471	0.0010	0.0058	0.0007	0.0005	0.0009	0.0006	1.1121
14	REFINERIES	0.0041	0.0009	0.0062	0.0005	0.0008	0.0723	0.0119	0.0190	0.0141	0.0127	0.0330	0.0157	0.0108
15	RUBBER&PLASTICS	0.0002	0.0002	0.0004	0.0000	0.0003	0.0036	0.0022	0.0021	0.0007	0.0896	0.0023	0.0019	0.0014
16	IRON AND STEEL	0.0045	0.0001	0.0003	0.0001	0.0011	0.0233	0.0010	0.0007	0.0007	0.0004	0.0001	0.0001	0.0106
17	FABRICATED METAL	0.0178	0.0003	0.0001	0.0003	0.0002	0.0171	0.0037	0.0023	0.0026	0.0000	0.0001	0.0001	0.0021
18	VEHICLE ASSEMBLY	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	OTHER MANUF	0.0102	0.0002	0.0001	0.0000	0.0000	0.0004	0.0022	0.0030	0.0016	0.0001	0.0000	0.0000	0.0024
20	UTILITIES	0.0009	0.0009	0.0207	0.0000	0.0004	0.0103	0.0106	0.0159	0.0473	0.0194	0.0164	0.0110	0.0109
21	BLDG&CONSTRUCTN	0.0000	0.0001	0.0004	0.0000	0.0004	0.0086	0.0006	0.0006	0.0006	0.0005	0.0007	0.0005	0.0004
22	TRANSPORT	0.0043	0.0095	0.0134	0.0013	0.0168	0.1641	0.1001	0.0959	0.0306	0.0539	0.1047	0.0855	0.0548
23	COMMUNICATIONS	0.0001	0.0003	0.0026	0.0000	0.0002	0.0014	0.0031	0.0039	0.0035	0.0020	0.0026	0.0025	0.0023
24	DISTRIBUTIVE TRADE	0.0064	0.0227	0.0125	0.0002	0.0027	0.0229	0.1421	0.1077	0.0540	0.0864	0.1589	0.1120	0.0795
25	HOTEL AND RESTRNTS	0.0000	0.0000	0.0002	0.0000	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0003	0.0002	0.0002
26	FIN.&INSURANCE	0.0008	0.0006	0.0462	0.0004	0.0011	0.0097	0.0077	0.0098	0.0071	0.0057	0.0065	0.0050	0.0070
27	REAL ESTATE&BUS.SERV	0.0003	0.0005	0.0537	0.0000	0.0029	0.0470	0.0057	0.0060	0.0064	0.0037	0.0049	0.0038	0.0041
28	HOUSING (DWELLING)	0.0002	0.0005	0.0056	0.0000	0.0003	0.0019	0.0041	0.0045	0.0028	0.0050	0.0060	0.0056	0.0046
29	COMTY SOC.&PERS SERV.	0.0002	0.0000	0.0013	0.0004	0.0000	0.0227	0.0000	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001
30	PROD OF GOVT SERV	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 5.4C (Contd.)

NIGERIA: LEONTIEF INVERSE FOR 1985

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0.0016	0.0006	0.1064	0.0191	0.0189	0.1674	0.0005	0.0026	0.0006	0.0062	0.0009	0.1921	0.0006	0.0010	0.0000	0.0020	0
0.0003	0.0023	0.0022	0.0010	0.0049	0.0217	0.0001	0.0003	0.0002	0.0017	0.0001	0.0569	0.0001	0.0002	0.0000	0.0004	0
0.0000	0.0000	0.0001	0.0000	0.0000	0.0004	0.0000	0.0000	0.0001	0.0017	0.0000	0.0603	0.0000	0.0000	0.0000	0.0000	0
0.0006	0.0998	0.0246	0.0145	0.0153	0.0183	0.0004	0.0144	0.0024	0.0037	0.0015	0.0010	0.0072	0.0009	0.0002	0.0025	0
0.5871	0.0273	0.3969	0.0820	0.0706	0.0397	0.1925	0.0209	0.2408	0.0308	0.0628	0.0294	0.0148	0.0048	0.0003	0.0107	0
0.0006	0.0011	0.3729	0.0557	0.0188	0.0314	0.0009	0.0840	0.0030	0.0005	0.0006	0.0004	0.0001	0.0001	0.0014	0.0002	0
0.0001	0.0002	0.0008	0.0002	0.0004	0.0105	0.0001	0.0001	0.0002	0.0015	0.0000	0.0358	0.0014	0.0010	0.0000	0.0030	0
0.0001	0.0000	0.0010	0.0003	0.0006	0.0268	0.0001	0.0001	0.0001	0.0008	0.0000	0.0192	0.0007	0.0011	0.0000	0.0001	0
0.0002	0.0002	0.0012	0.0018	0.0005	0.0227	0.0002	0.0002	0.0003	0.0024	0.0026	0.0004	0.0005	0.0013	0.0000	0.0019	0
0.0000	0.0128	0.0034	0.0005	0.0314	0.0001	0.0000	0.0001	0.0003	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0
0.0001	0.0016	0.0079	0.0293	0.0213	0.0155	0.0001	0.0052	0.0004	0.0001	0.0019	0.0004	0.0004	0.0000	0.0001	0.0001	0
0.0011	0.0111	0.0937	0.0397	0.0398	0.0113	0.0009	0.0024	0.0027	0.0220	0.0028	0.0047	0.0452	0.0050	0.0000	0.0128	0
0.0121	0.0007	0.0644	0.0375	0.1164	0.0124	0.0005	0.0118	0.0009	0.0010	0.0034	0.0011	0.0002	0.0033	0.0002	0.0076	0
1.0043	0.0147	0.3671	0.0728	0.0539	0.0302	0.0010	0.0110	0.0255	0.0036	0.0049	0.0029	0.0025	0.0006	0.0002	0.0012	0
0.0028	1.0695	0.0405	0.0087	0.0074	0.0014	0.0005	0.0014	0.0196	0.0019	0.0061	0.0012	0.0008	0.0013	0.0000	0.0043	0
0.0008	0.0040	1.7177	0.2466	0.0849	0.0305	0.0004	0.0194	0.0005	0.0001	0.0002	0.0008	0.0000	0.0000	0.0003	0.0001	0
0.0001	0.0001	0.0081	1.0481	0.0006	0.0073	0.0001	0.0040	0.0001	0.0001	0.0000	0.0030	0.0000	0.0000	0.0001	0.0000	0
0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0
0.0001	0.0001	0.0164	0.0038	0.0011	1.0072	0.0022	0.0002	0.0000	0.0001	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0
0.0214	0.0145	0.2206	0.0410	0.0172	0.0080	1.0039	0.0040	0.0032	0.0190	0.0114	0.0182	0.0067	0.0032	0.0001	0.0102	0
0.0010	0.0005	0.0081	0.0015	0.0011	0.0005	0.0089	1.0010	0.0043	0.0034	0.0012	0.0006	0.0005	0.0002	0.0167	0.0006	0
0.1409	0.0704	0.6887	0.1532	0.1625	0.0391	0.0195	0.0514	1.0409	0.0901	0.1934	0.0474	0.0372	0.0165	0.0009	0.0347	0
0.0019	0.0028	0.0217	0.0054	0.0050	0.0013	0.0013	0.0016	0.0021	1.0113	0.0032	0.0085	0.0068	0.0052	0.0000	0.0173	0
0.0547	0.0781	0.2039	0.0576	0.1576	0.0388	0.0111	0.0662	0.0815	0.0236	1.0290	0.1576	0.0300	0.0151	0.0011	0.0220	0
0.0004	0.0002	0.0019	0.0004	0.0004	0.0001	0.0001	0.0001	0.0018	0.0290	0.0004	1.0003	0.0004	0.0002	0.0000	0.0006	0
0.0077	0.01[illegible]	0.2105	0.0392	0.0243	0.0073	0.0094	0.0077	0.0144	0.0248	0.0029	0.0091	1.0168	0.0142	0.0001	0.0395	0
0.0069	0.005[illegible]	0.0605	0.0123	0.0093	0.0039	0.0740	0.0067	0.0235	0.1940	0.0059	0.0211	0.0198	1.0084	0.0001	0.0178	0
0.0027	0.0040	0.0235	0.0064	0.0055	0.0026	0.0025	0.0044	0.0027	0.0158	0.0161	0.0116	0.0163	0.0071	1.0001	0.0195	0
0.0000	0.0001	0.0087	0.0013	0.0004	0.0172	0.0001	0.0019	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	1.0000	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 5.7A: FLOW MATRIX OF THE 1981 INPUT-OUTPUT TABLE OF NIGERIA

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		Agriculture	Livestoc	Fishing	Forestry	Oil (Petrol	Other Min	Food	Drink, Be	Textiles	Footwea	Wood +	Paper +	Drugs +	Refineries	Rubber I	Iron + St	Fabricat	Vehicle /	Other Ma	Electrici	Water
1	Agriculture	1116.80	0.00	0.00	0.00	0.00	28.40	3819.12	901.70	175.72	194.40	0.12	108.20	144.23	0.00	20.44	22.08	0.00	0.00	27.60	11.80	0.00
2	Livestocks and Dairy Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.24	0.00	0.00	33.46	0.00	18.75	0.00	0.00	0.00	846.60	0.00	0.00
3	Fishing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.96	0.00	0.00
4	Forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	21.74	0.00	26.23	0.00	30.32	0.00	0.00	0.00	44.14	0.00	0.00
5	Oil (Petroleum)	468.18	0.00	84.17	0.00	80.08	56.36	27.21	19.05	30.03	8.03	13.74	27.87	34.16	574.17	43.13	58.78	78.95	40.30	28.24	0.00	21.12
6	Other Mining	0.00	0.00	0.00	0.00	38.23	25.60	5.59	0.00	26.65	0.00	0.00	33.71	25.54	0.00	0.00	52.88	91.74	0.00	93.42	23.20	0.00
7	Food	0.00	144.16	67.36	0.00	38.00	0.00	3.06	16.94	0.00	65.19	0.00	0.00	49.95	0.00	0.00	0.00	0.00	0.00	54.43	0.00	0.00
8	Drink, Beverage & Tobacco	0.00	0.00	0.00	0.00	26.40	0.00	12.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Textiles	0.00	0.00	0.00	0.00	0.00	0.00	4.54	0.04	24.24	42.64	0.00	29.74	0.00	0.00	51.14	311.12	0.00	0.00	0.00	0.00	0.00
10	Footwear and Leather	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.24	0.00	0.14	0.00	0.00	0.00	4.15	0.00	0.00	0.00	0.00	0.00
11	Wood and Woods Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.71	0.00	67.91	9.94	29.74	2.53	0.00	16.77	17.01	8.11	13.04	25.58	0.00	0.00
12	Paper and Paper Products	0.00	0.00	0.00	0.00	21.80	0.00	12.20	12.74	26.00	89.00	9.54	25.66	17.55	0.00	21.48	12.12	57.73	8.81	0.00	0.00	0.00
13	Drugs and Chemical	0.00	0.00	0.00	0.00	12.91	0.00	28.11	1.86	37.22	81.09	62.32	8.11	23.12	11.06	12.66	117.81	49.01	191.87	16.43	10.40	0.00
14	Refineries	232.81	0.00	1.10	1.17	1.07	21.22	9.74	10.24	8.18	2.31	1.11	2.14	8.42	0.57	5.38	119.61	10.72	45.36	11.71	0.08	0.02
15	Rubber and Plastic Products	0.00	0.00	0.00	0.00	0.00	0.00	22.52	0.00	10.60	79.02	16.44	0.30	7.62	0.00	24.36	23.13	0.00	36.89	11.12	0.00	0.00
16	Iron and Steel	0.00	0.00	0.00	0.00	0.00	104.80	10.20	23.11	43.34	0.00	11.19	0.00	0.00	0.00	24.13	0.00	0.00	94.28	46.60	8.20	0.00
17	Fabricated Metal	0.00	0.00	0.00	0.00	8.62	0.00	4.78	29.29	0.00	0.00	1.21	23.45	3.56	0.00	26.84	24.56	57.74	56.74	0.00	0.00	0.00
18	Vehicle Assembly	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.46	0.00	65.11	0.00	0.00
19	Other Manufacturing (Misc)	0.00	0.00	0.00	0.00	0.00	0.00	6.03	16.81	5.27	15.53	145.73	12.14	6.62	0.00	42.24	21.90	26.99	132.17	45.34	0.00	0.00
20	Electricity Generation	0.00	0.00	50.22	0.00	10.37	39.04	2.31	3.23	12.49	15.99	21.11	5.17	15.22	1.64	26.77	21.04	26.07	34.37	19.76	0.00	0.00
21	Water Supply	0.00	0.00	0.00	0.00	0.00	0.00	7.01	4.38	22.23	24.39	5.73	3.74	16.14	4.42	14.01	5.87	5.70	50.41	0.00	0.00	0.00
22	Building and Construction	0.00	0.00	69.92	0.00	0.00	25.60	3.39	27.12	23.11	41.18	5.52	15.41	45.56	0.00	34.77	27.17	22.06	0.75	0.00	12.20	19.40
23	Air Transport	0.00	0.00	0.21	0.03	4.86	1.88	7.47	4.37	1.67	2.82	0.21	3.71	6.88	10.44	1.32	4.22	1.89	7.41	1.01	0.52	0.74
24	Other Land Transport	0.00	0.00	1.97	1.34	20.29	42.45	2.11	4.13	2.84	8.19	1.48	8.82	15.12	92.01	12.00	44.27	19.81	145.98	7.86	1.60	1.94
25	Water Transport	0.00	0.00	0.51	0.09	10.15	8.51	9.12	6.16	3.22	3.42	1.47	0.13	0.42	8.51	2.94	7.41	2.44	16.18	1.10	0.22	0.62
26	Railway Transport	0.00	0.00	0.91	0.04	4.82	10.53	4.22	11.21	1.82	1.09	0.17	2.81	0.12	2.45	3.87	2.18	0.64	1.94	0.07	1.25	0.86
27	Communication	0.00	0.00	2.08	0.00	1.05	0.00	5.47	4.92	1.65	0.70	0.40	1.64	2.73	1.37	1.76	6.83	1.64	2.81	0.25	0.69	0.24
28	Distribution	169.80	63.52	42.40	0.00	27.20	78.84	19.74	63.81	38.81	2.64	75.38	42.84	24.14	43.26	46.91	93.29	423.80	281.41	24.41	18.80	22.13
29	Hotels and Restaurants	0.00	0.00	0.00	0.00	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	Banking and Finance	0.00	0.00	13.41	0.38	2.62	0.85	10.01	3.96	2.48	1.39	0.82	0.24	1.07	1.11	10.72	59.22	5.37	20.91	0.49	1.64	1.52
31	Insurance	0.00	0.00	10.21	0.07	1.12	0.72	2.41	1.06	0.17	0.29	0.62	0.21	0.22	0.44	1.30	16.71	1.38	5.46	0.84	0.22	1.22
32	Real Estate and Business Ser.	0.00	0.00	23.69	0.00	7.28	17.03	2.10	0.68	1.07	0.22	0.24	0.14	0.15	0.24	1.31	2.19	0.94	4.37	0.37	11.94	8.64
33	Housing	0.00	0.00	1.48	0.00	1.76	0.00	1.13	0.60	0.46	1.65	1.01	2.99	1.60	0.29	1.78	5.68	1.85	2.41	1.17	0.32	0.36
34	Commty Soc and Per ser	0.00	0.00	0.37	0.55	0.00	7.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.58	0.00	0.00
35	Producer of Govt Serv.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	Domestic Inter. Input	1987.59	207.68	370.01	3.67	320.61	469.65	4042.17	1178.12	499.35	902.57	407.24	389.05	512.36	751.98	497.10	1081.23	937.04	1193.87	1405.19	103.08	78.81
37	Import	14.93	0.00	0.00	0.00	301.48	0.00	106.93	23.94	36.01	12.91	9.88	19.62	54.98	4.84	45.66	168.79	36.71	159.24	13.25	0.81	0.14
38	Total Inter. Input	2002.52	207.68	370.01	3.67	622.09	469.65	4149.10	1202.06	535.36	915.48	417.12	408.67	567.34	756.82	542.76	1250.02	973.75	1353.11	1418.44	103.89	78.95
39	Wages	1284.00	36.00	287.00	15.00	121.22	44.56	273.71	240.55	353.53	79.65	60.34	177.57	146.28	68.13	121.75	167.46	162.84	217.15	239.11	115.18	79.83
40	Operating Surplus	8423.00	1658.81	414.32	1045.19	9890.05	818.09	608.16	145.52	430.16	212.31	58.23	234.88	765.02	54.34	236.81	0.00	329.46	924.78	423.54	121.27	0.00
41	Capital Consumption Exp	381.00	12.00	22.00	2.00	208.53	20.23	76.91	125.97	95.70	23.08	19.48	41.73	42.90	41.71	29.28	123.06	39.99	39.89	111.22	65.45	72.87
42	Indirect Business Taxes	0.00	0.00	1.00	73.00	5.87	0.00	88.24	456.47	141.75	38.98	12.52	42.17	89.30	97.57	32.48	45.83	51.86	22.68	61.43	0.00	0.00
43	Less Subsidies	192.00	0.00	0.00	61.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1003.19	0.00	0.00	0.00	0.00	0.00
44	Value Added	9896.00	1706.81	724.32	1074.19	10225.67	882.88	4047.02	968.51	1021.14	354.02	150.57	496.35	1043.50	261.75	420.32	-666.84	584.15	1204.50	835.30	301.90	152.70
45	Gross Input	11898.52	1914.49	1094.33	1077.86	10847.76	1352.53	5196.12	2170.57	1556.50	1269.50	567.69	905.02	1610.84	1018.57	963.08	583.18	1557.90	2557.61	2253.74	405.79	231.65

TABLE 5.7A (Contd.): FLOW MATRIX OF THE 1981 INPUT-OUTPUT TABLE OF NIGERIA

		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
		Building	Air Tran	Other La	Water T	Railway	Commur	Distributi	Hotels	Bankin Fi	Insuran	Real Es	Housing	Commt	Producer	Total Inter	PFCON	GFCON	Investme	Export	Import	Final Dem	Gross O
1	Agriculture	120.38	0.00	0.00	0.00	0.00	0.00	0.00	101.91	0.00	0.00	0.00	0.00	0.00	0.00	6793.90	3202.30	876.11	0.00	1077.14	49.93	5105.62	11899.52
2	Livestocks and Dairy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.07	0.00	0.00	0.00	0.00	0.00	0.00	1023.12	1412.74	0.00	44.30	120.62	684.29	893.37	1916.49
3	Fishing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.75	0.00	0.00	0.00	0.00	0.00	0.00	51.71	1103.37	0.00	15.50	0.00	73.25	1045.62	1097.33
4	Forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.51	806.20	138.05	3.24	7.86	0.00	955.35	1081.86
5	Oil (Petroleum)	96.40	8.07	1252.91	3.48	2.81	13.74	270.66	0.00	10.17	0.44	0.00	0.00	0.00	0.00	3357.25	290.36	344.61	48.40	7992.14	1180.00	7495.51	10852.76
6	Other Mining	204.84	0.41	12.25	0.97	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	641.64	13.26	429.41	7.62	266.60	0.00	716.89	1358.53
7	Food	0.00	0.03	0.08	0.07	0.08	0.00	0.00	10.77	3.95	0.21	1.56	0.00	0.00	0.00	462.84	1117.00	945.67	36.98	2640.63	0.00	4740.28	5203.12
8	Drink, Beverage & Tc	0.00	0.02	0.05	0.06	0.02	0.00	0.00	18.64	1.92	0.14	1.62	0.00	1.48	0.00	70.93	2315.98	1716.05	241.32	0.00	2165.71	2107.64	2178.57
9	Textiles	0.00	0.45	0.11	0.09	0.05	0.00	0.00	0.00	0.94	0.02	1.84	0.00	0.00	0.00	475.96	1029.61	64.50	453.23	0.00	457.80	1089.54	1565.50
10	Footwear and Leathe	0.00	0.63	0.04	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.16	0.00	70.40	905.71	28.31	24.31	311.42	60.65	1209.10	1279.50
11	Wood and Woods Pr	261.40	0.09	0.20	0.78	0.21	0.00	0.00	0.00	0.80	0.21	0.00	0.00	0.00	0.00	476.03	72.65	51.26	3.45	77.86	102.56	102.66	578.69
12	Paper and Paper Pro	0.00	2.09	4.03	0.79	1.19	19.20	206.40	3.08	95.41	1.66	1.52	0.00	0.00	0.00	662.00	235.65	102.32	12.35	0.00	95.30	255.02	917.02
13	Drugs and Chemical	284.20	0.02	0.08	0.04	0.01	1.84	273.20	0.00	0.00	0.00	2.55	0.00	7.22	0.00	1246.14	314.84	85.31	11.27	0.00	33.72	377.70	1623.84
14	Refineries	1.20	7.81	114.60	5.32	7.26	0.15	0.00	0.00	1.86	0.11	0.00	0.00	4.73	0.00	650.00	321.97	6.66	57.39	1.16	4.61	382.57	1032.57
15	Rubber and Plastic P	0.00	22.67	50.68	12.67	5.64	0.00	333.00	0.00	0.00	0.00	1.39	0.00	0.00	0.00	673.05	296.79	148.94	16.51	27.08	184.29	305.03	978.08
16	Iron and Steel	407.00	0.00	0.00	0.00	0.00	0.00	246.40	0.00	0.00	0.00	0.00	0.00	3.37	0.00	1038.62	241.32	0.00	85.62	0.00	766.38	-439.44	599.18
17	Fabricated Metal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	253.79	734.01	372.12	156.34	58.64	0.00	1321.11	1574.90
18	Vehicle Assembly	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	125.57	1698.50	629.54	122.00	0.00	0.00	2450.04	2575.61
19	Other Manufacturing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	495.77	15133.44	0.00	0.00	19316.26	32672.73	1776.97	2272.74
20	Electricity Generatior	41.40	0.88	2.44	0.50	0.17	3.32	12.80	7.65	3.98	2.78	2.77	0.00	3.84	0.00	407.33	309.79	0.00	0.98	0.00	292.31	18.46	425.79
21	Water Supply	0.00	0.76	2.15	0.72	0.09	0.00	0.00	6.37	9.87	1.09	1.42	0.00	2.85	0.00	210.35	38.09	4.21	0.00	0.00	0.00	42.30	252.65
22	Building and Constru	0.00	25.00	11.91	5.37	1.10	21.02	159.60	0.00	0.00	0.00	0.00	26.65	0.00	0.00	645.81	4736.19	0.00	0.00	0.00	0.00	4736.19	5382.00
23	Air Transport	13.21	7.48	2.67	1.48	1.76	1.28	80.99	13.58	4.11	2.81	3.11	0.00	1.26	0.00	218.40	82.41	19.28	0.00	18.14	43.19	76.64	295.04
24	Other Land Transpor	101.44	5.37	25.92	0.82	4.51	21.93	162.71	8.62	47.46	7.21	8.84	0.00	6.11	0.00	859.15	3145.80	532.61	0.00	12.32	214.42	3476.31	4335.46
25	Water Transport	7.48	5.79	4.32	3.84	2.44	1.40	3.51	10.06	2.11	2.23	5.81	0.00	3.24	0.00	159.85	114.53	69.11	0.00	57.30	51.12	189.82	349.67
26	Railway Transport	11.20	2.48	0.77	1.86	1.96	1.06	2.16	0.82	0.79	0.86	0.09	0.00	1.63	0.00	102.68	6.58	4.80	0.00	0.41	11.36	0.43	103.11
27	Communication	9.72	1.22	3.23	2.71	1.20	1.57	83.10	7.34	8.31	3.81	7.80	0.00	7.73	0.00	200.97	168.38	62.57	0.00	0.00	0.00	230.95	431.92
28	Distribution	151.40	51.89	220.72	42.48	6.32	31.76	88.69	89.15	11.98	7.34	6.34	0.00	11.72	0.00	2350.92	6248.64	0.00	0.00	0.00	0.00	6248.64	8599.56
29	Hotels and Restaurar	0.00	1.63	4.72	2.16	1.01	4.55	0.00	0.00	0.46	0.06	0.00	0.00	0.00	0.00	45.57	742.18	12.29	0.00	0.00	0.00	754.47	800.04
30	Banking and Finance	16.10	5.45	28.69	5.90	3.51	2.67	0.00	3.34	7.52	0.82	7.96	0.00	8.09	0.00	258.26	1463.72	4.46	0.00	0.00	16.37	1451.81	1710.07
31	Insurance	7.14	2.88	21.31	2.21	2.60	1.76	0.00	11.09	4.17	0.89	8.91	0.00	7.38	0.00	146.01	98.70	0.37	0.00	0.00	6.48	92.59	238.60
32	Real Estate and Bus.	13.56	17.81	76.22	8.07	2.31	18.55	82.03	16.38	16.75	0.57	7.49	0.00	3.67	0.00	378.01	79.23	17.34	0.00	2.35	21.11	77.81	455.82
33	Housing	11.93	1.79	3.45	0.67	0.06	1.28	107.64	8.44	12.14	1.82	5.40	0.00	10.73	0.00	224.89	1344.97	61.79	0.00	0.00	0.00	1406.76	1631.65
34	Commty Soc and Pe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.32	516.89	0.00	0.00	0.00	0.00	516.89	581.21
35	Producer of Govt Ser	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.00	121.25	6805.96	0.00	98.68	345.24	6680.65	6715.65
36	Domestic Inter. Input	1760.00	172.72	1843.55	103.09	46.93	147.08	2112.89	379.06	244.70	35.08	76.42	26.65	86.21	0.00	24408.75	50463.05	13533.65	1340.81	32086.61	39532.82	57891.30	82894.05
37	Import	823.00	7.11	96.48	10.82	1.01	2.34	0.00	0.00	0.37	0.12	0.00	0.00	0.00	0.00	1988.37							
38	Total Inter. Input	2583.00	179.83	1940.03	113.91	47.94	149.42	2112.89	379.06	245.07	35.20	76.42	26.65	86.21	0.00	26362.12							
39	Wages	1032.00	79.02	539.00	188.90	103.02	182.47	1789.05	148.27	337.43	49.90	281.18	0.00	41.72	6677.76	15779.58							
40	Operating Surplus	1730.00	0.00	1158.30	0.00	0.00	42.57	4333.77	223.70	634.56	119.60	62.23	1572.00	409.36	0.00	37120.03							
41	Capital Consumption	11.00	45.28	629.40	44.00	7.58	30.46	335.85	17.13	463.01	2.90	15.49	0.00	13.42	2.89	3254.41							
42	Indirect Business Tax	4.00	0.00	44.73	0.00	0.00	0.00	0.00	2.88	0.00	0.00	0.00	0.00	0.00	0.00	1354.76							
43	Less Subsidies	0.00	32.09	0.00	22.14	81.43	0.00	0.00	0.00	0.00	0.00	11.50	0.00	3.50	0.00	1449.85							
44	Value Added	2777.00	92.21	2371.43	210.76	29.17	255.50	6458.67	391.98	1435.00	172.40	347.40	1572.00	461.00	6680.65	57891.93							
45	Gross Input	5360.00	272.04	4311.46	324.67	77.11	404.92	8571.56	771.04	1680.07	207.60	423.82	1598.65	547.21	6680.65	82894.05							

TABLE 5.7B: FLOW MATRIX OF THE 1985 INPUT-OUTPUT TABLE OF NIGERIA

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Activity Sectors	Agriculture	Livestock	Fishing	Forestry	Crude Pet	Other Mini	Food	Drink, Bev	Textiles	Footwear	Wood & \	Paper & F	Drugs & C	Refineries	Rubber & Pl	Iron & Steel	Fabricated M
1.00	Agriculture	3185.56	0.00	0.00	0.00	0.00	0.00	476.99	191.89	215.61	0.00	0.00	0.00	175.96	0.00	0.12	33.11	0.00
2.00	Livestock	0.00	0.00	0.00	0.00	0.00	0.00	148.07	0.00	0.00	37.43	0.00	0.00	39.10	0.00	1.09	0.00	0.00
3.00	Fishing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	Forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.32	131.46	17.71	0.00	77.70	1.43	0.01
5.00	Crude Petroleum	0.00	0.00	211.81	0.00	58.91	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	574.17	0.00	0.00	0.00
6.00	Other Mining	0.00	0.00	0.00	0.00	0.33	1.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	147.97	0.00
7.00	Food	0.00	378.98	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.00	Drink, Bev. + Tobacco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.85	0.00	0.00	0.00	0.00
9.00	Textiles	0.00	0.00	0.00	0.00	0.99	0.00	0.00	0.00	133.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27
10.00	Footware + Leather	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.31	0.00	0.00	0.00	0.00	9.95	1.15	0.00
11.00	Wood & Wood Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.61	0.00	0.00	0.00	1.09	2.69	25.17
12.00	Paper & Paper products	0.00	0.00	0.10	0.00	3.83	0.00	0.00	20.28	0.00	0.00	0.00	16.85	11.31	0.00	7.64	31.79	22.61
13.00	Drugs and Chemical	21.16	0.00	1.43	0.00	1.10	26.26	0.00	6.76	0.00	0.00	0.00	0.00	173.14	11.06	0.05	15.17	22.77
14.00	Refineries	50.81	0.00	6.10	0.55	1.37	41.22	19.74	24.24	18.81	5.31	9.61	11.19	10.42	0.57	9.38	129.68	15.72
15.00	Rubber and Plastic	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	42.85	0.00	0.00	0.00	0.00	53.32	10.08	1.54
16.00	Iron and Steel	0.00	0.00	0.00	0.00	7.70	7.12	0.00	0.00	0.00	0.00	0.00	0.00	9.04	0.00	1.81	285.11	130.28
17.00	Fabricated Metal	346.78	0.00	0.04	0.45	1.79	10.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.56
18.00	Vehicle Assembly	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19.00	Other Manufacturing	206.92	0.00	0.00	0.00	0.00	0.00	0.00	2.48	0.00	0.00	0.00	0.00	1.67	0.00	0.00	5.94	1.24
20.00	Electricity	0.00	0.00	12.15	0.00	1.43	2.35	10.66	13.75	39.49	5.46	2.78	4.81	6.71	12.66	5.68	43.27	2.99
21.00	Water Supply	0.00	0.00	9.20	0.00	1.05	0.67	8.64	7.42	28.41	3.25	1.58	2.79	5.37	8.42	4.11	38.41	3.82
22.00	Building and Construction	0.00	0.00	0.00	0.00	4.65	5.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23.00	Air Transport	0.00	0.00	0.21	0.03	7.84	2.88	17.42	14.37	4.67	2.82	5.44	3.71	6.88	10.42	4.39	4.22	3.89
24.00	Other Land Transport	0.00	0.00	2.97	1.34	170.29	72.45	102.88	64.93	9.84	8.19	12.42	38.84	35.12	102.06	22.04	194.25	29.81
25.00	Water Transport	0.00	0.00	0.51	0.09	10.15	3.51	20.32	16.16	5.22	3.42	3.46	4.68	7.42	8.51	6.94	7.41	2.44
26.00	Railway Transport	0.00	0.00	0.91	0.04	6.82	10.01	18.22	11.21	4.82	1.09	0.36	2.81	1.32	2.45	5.87	2.18	0.64
27.00	Communication	0.00	0.00	2.08	0.00	1.05	0.00	5.47	4.92	4.65	0.70	0.60	1.64	2.73	1.37	1.76	6.83	1.64
28.00	Distributive Trade	95.84	64.12	9.05	0.05	14.26	0.23	297.38	145.97	71.99	37.71	46.66	85.17	109.49	43.26	54.12	43.57	12.61
29.00	Hotels and Restaurants	0.00	0.00	0.00	0.00	2.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.00	Banking and Finance	0.00	0.00	37.41	0.38	7.62	0.85	11.05	8.96	6.48	1.39	0.82	2.47	6.06	3.71	10.72	59.82	5.37
31.00	Insurance	0.00	0.00	10.21	0.07	1.12	0.72	2.41	3.06	2.17	0.29	0.62	0.41	1.20	1.41	1.30	16.71	1.38
32.00	Real Estate and Business Ser.	0.00	0.00	53.69	0.00	31.28	27.03	4.40	2.68	2.07	0.22	0.24	0.44	2.19	0.44	1.31	2.19	0.94
33.00	Housing	0.00	0.00	4.48	0.00	1.76	0.00	3.63	3.60	2.46	1.65	1.01	2.99	4.69	1.49	1.78	5.68	1.85
34.00	Commty Soc and Per Services	0.00	0.00	1.37	0.55	0.00	14.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35.00	Producer of Government Ser.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.00	Domestic Inter. Input	3907.07	443.10	365.12	3.55	338.32	228.94	1147.28	542.68	550.10	163.09	161.53	310.26	635.38	782.00	282.17	1088.66	330.55
37.00	Import	84.93	0.00	0.00	0.00	301.48	0.00	106.93	23.94	36.01	12.91	9.88	29.62	54.98	10.84	145.66	268.79	36.71
38.00	Total Inter Input	3992.00	443.10	365.12	3.55	639.80	228.94	1254.21	566.62	586.11	176.00	171.41	339.88	690.36	792.84	427.83	1357.45	367.26
39.00	Wages	2512.00	75.99	288.01	12.00	196.21	17.06	273.71	240.55	353.53	79.65	60.34	177.57	146.28	68.13	121.75	167.46	162.84
40.00	Operating Surplus	16472.00	4738.62	391.33	1329.26	11577.82	398.98	608.16	145.52	430.16	212.31	58.23	234.88	765.02	54.34	236.81	0.00	329.46
41.00	Captail Consumption Exp.	745.00	27.00	31.00	3.00	336.08	12.56	76.91	125.97	95.70	23.08	19.48	41.73	42.90	41.71	29.28	123.06	39.99
42.00	Indirect Business Taxes	0.00	0.00	4.00	74.00	25.68	0.00	88.24	456.47	141.75	38.98	12.52	42.17	89.30	97.57	32.48	45.83	51.86
43.00	Less Subsidies	67.00	0.00	0.00	61.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1003.19	0.00
44.00	Value Added	19662.00	4841.61	714.34	1357.26	12135.79	428.60	1047.02	968.51	1021.14	354.02	150.57	496.35	1043.50	261.75	420.32	-666.84	584.15
45.00	Gross Input	23654.00	5284.71	1079.46	1360.81	12775.59	657.54	2301.23	1535.13	1607.25	530.02	321.98	836.23	1733.86	1054.59	848.15	690.61	951.41

TABLE 5.7B (Contd.): FLOW MATRIX OF THE 1985 INPUT-OUTPUT TABLE OF NIGERIA

		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
etal	Activity Sectors	Vehicle As	Other Mar	Electricity	Water Sup	Building & C	Air Transpo	Other Land	Water Trar	Railway T	Communi	Distribution	Hotel & Res	Banking +Fi	Insurance	Real Esta	Housing
1	Agriculture	0.00	182.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	151.91	0.00	0.00	0.00	0.00
2	Livestock	0.00	28.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.07	0.00	0.00	0.00	0.00
3	Fishing	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.75	0.00	0.00	0.00	0.00
4	Forestry	5.64	17.49	0.00	0.00	37.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Crude Petroleum	0.00	16.94	94.38	44.12	5.18	2.07	1252.91	3.48	2.81	2.32	191.61	0.00	10.17	1.32	0.00	0.00
6	Other Mining	0.00	33.71	0.00	0.00	234.79	0.51	12.25	0.97	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Food	0.00	12.16	0.00	0.00	0.00	0.03	0.08	0.07	0.08	0.10	0.00	30.77	3.95	0.26	1.56	0.00
8	Drink, Bev. + Tobacco	0.00	36.64	0.00	0.00	0.00	0.02	0.05	0.06	0.02	0.00	0.00	18.64	1.92	0.14	1.62	0.00
9	Textiles	0.00	28.28	0.00	0.00	0.00	0.06	0.11	0.09	0.05	0.88	28.49	0.00	0.94	0.07	1.84	0.00
10	Footware + Leather	75.00	0.00	0.00	0.00	0.00	0.02	0.04	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	Wood & Wood Products	50.00	20.31	0.00	0.00	14.14	0.09	0.20	0.78	0.21	0.00	21.33	0.00	0.80	0.21	0.00	0.00
12	Paper & Paper products	80.00	11.47	0.00	0.00	1.77	1.09	4.03	1.79	1.19	9.12	26.15	3.08	116.71	21.66	6.52	0.00
13	Drugs and Chemical	248.79	11.29	0.03	0.01	18.75	0.02	0.08	0.04	0.01	0.10	35.50	0.00	0.00	0.00	4.55	0.00
14	Refineries	75.00	26.71	0.14	0.09	1.28	7.81	114.60	10.32	7.26	0.45	0.00	0.00	1.86	0.92	0.00	0.00
15	Rubber and Plastic	0.00	0.00	0.00	0.00	0.00	19.36	50.68	22.67	9.37	0.00	27.40	0.00	0.00	0.00	1.39	0.00
16	Iron and Steel	120.00	22.44	0.00	0.00	29.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Fabricated Metal	0.00	5.52	0.00	0.00	7.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Vehicle Assembly	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Other Manufacturing	0.00	7.38	1.13	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Electricity	1.71	0.70	1.05	0.57	0.02	0.85	2.44	0.50	0.17	4.81	57.80	7.65	3.98	2.78	2.77	0.00
21	Water Supply	2.44	0.71	0.66	0.22	0.00	0.26	2.15	0.72	0.09	3.19	68.52	6.31	9.87	1.09	1.42	0.00
22	Building and Construction	0.00	0.00	3.67	2.78	0.00	4.80	11.91	5.37	1.10	1.20	0.00	0.00	0.00	0.00	0.00	33.87
23	Air Transport	17.41	1.21	0.52	0.14	3.21	4.08	2.67	1.89	1.76	1.28	60.97	3.41	4.11	2.81	3.11	0.00
24	Other Land Transport	165.20	7.86	3.63	2.57	41.44	6.29	31.18	18.82	4.51	31.93	2162.71	8.62	77.46	20.89	10.84	0.00
25	Water Transport	26.18	1.10	0.89	0.62	7.48	5.62	4.32	3.84	2.44	2.40	3.51	2.06	2.11	4.76	4.81	0.00
26	Railway Transport	1.94	0.07	0.65	0.14	1.20	2.48	0.77	1.86	1.96	1.06	2.16	0.08	0.79	0.86	0.09	0.00
27	Communication	6.81	0.25	0.33	0.24	2.72	1.22	3.23	2.71	1.20	4.57	33.10	7.34	12.31	7.82	7.80	0.00
28	Distributive Trade	289.59	29.29	3.50	1.94	170.29	76.89	240.72	96.48	16.32	3.26	153.30	119.15	47.98	19.34	19.34	0.00
29	Hotels and Restaurants	0.00	0.00	0.00	0.00	0.00	1.84	4.72	2.16	1.01	13.55	0.00	0.00	0.46	0.06	0.00	0.00
30	Banking and Finance	20.91	1.46	2.64	1.52	9.10	5.71	28.69	6.90	3.51	6.67	0.00	3.34	19.52	10.82	12.64	0.00
31	Insurance	5.46	0.82	0.92	0.67	3.14	2.11	21.31	3.21	2.60	2.76	0.00	1.09	13.17	5.89	8.91	0.00
32	Real Estate and Business Ser	4.37	0.37	31.94	21.62	3.56	18.62	76.22	20.07	7.31	88.55	2.03	13.38	40.75	12.87	10.49	0.00
33	Housing	2.41	1.27	0.32	0.86	8.57	0.76	3.45	0.67	0.06	6.28	187.64	8.41	30.75	17.82	10.40	0.00
34	Commty Soc and Per Service	0.00	22.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	Producer of Government Ser.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	Domestic Inter. Input	1198.86	529.71	146.40	78.57	600.00	162.61	1868.81	205.50	65.66	184.48	3062.22	497.06	399.61	132.39	110.10	33.87
37	Import	159.24	13.25	0.81	0.14	823.00	7.11	96.48	10.82	1.01	2.34	0.00	0.00	0.37	0.12	0.00	0.00
38	Total Inter Input	1358.10	542.96	147.21	78.71	1423.00	169.72	1965.29	216.32	66.67	186.82	3062.22	497.06	399.98	132.51	110.10	33.87
39	Wages	117.15	239.11	181.57	102.17	507.00	48.26	1031.23	56.32	12.42	209.28	2544.69	196.56	1176.01	92.46	106.65	0.00
40	Operating Surplus	924.78	423.54	35.47	16.42	1021.00	52.77	1435.50	68.11	11.78	40.47	6194.24	260.22	1182.39	28.44	1373.76	1997.99
41	Captail Consumption Exp.	39.89	111.22	100.21	83.26	4.00	36.39	844.93	11.04	4.36	41.54	447.71	17.42	182.62	6.47	15.16	0.00
42	Indirect Business Taxes	22.68	61.43	0.00	0.00	1.00	22.55	17.23	1.56	1.46	0.00	0.00	2.90	0.00	0.00	0.00	0.00
43	Less Subsidies	0.00	0.00	0.00	0.00	0.00	21.25	184.95	0.00	0.00	3.00	0.00	0.00	0.00	0.00	7.15	0.00
44	Value Added	1104.50	835.30	317.25	201.85	1533.00	138.72	3143.94	137.03	30.02	288.29	9186.64	477.10	2541.02	127.37	1488.42	1997.99
45	Gross Input	2462.60	1378.26	464.46	280.56	2956.00	308.44	5109.23	353.35	96.69	475.11	12248.86	974.16	2941.00	259.88	1598.52	2031.86

TABLE 5.7B (Contd.): FLOW MATRIX OF THE 1985 INPUT-OUTPUT TABLE OF NIGERIA

	Activity Sectors	34	35	36	37	38	39	40	41	42	43
1	Agriculture	Com. Se	Pro. Gov. S	Int.Input	PFCON	GFCON	Investment	Export	Import	Final Dema	Gross Output
2	Livestock	0.00	0.00	4616.90	18170.12	23.54	0.00	1056.13	209.69	19040.10	23657.00
3	Fishing	0.00	0.00	312.14	4902.79	6.67	0.00	73.25	5.14	4977.57	5289.71
4	Forestry	0.00	0.00	66.34	1020.12	0.00	0.00	0.00	0.00	1020.12	1086.46
5	Crude Petroleum	0.00	0.00	368.82	939.15	0.98	0.00	60.86	0.00	1000.99	1369.81
6	Other Mining	0.00	0.00	2484.91	875.62	17.65	33.70	9510.75	136.04	10301.68	12786.59
7	Food	0.00	0.00	445.61	244.64	0.00	0.00	16.45	36.16	224.93	670.54
8	Drink, Bev. + Tobacco	0.00	0.00	444.41	1478.50	29.27	239.30	231.55	106.80	1871.82	2316.23
9	Textiles	2.00	0.00	85.96	1162.56	22.59	184.72	178.74	82.44	1466.17	1552.13
10	Footware + Leather	0.00	0.00	215.48	499.16	82.95	836.28	31.11	38.73	1410.77	1626.25
11	Wood & Wood Products	1.16	0.00	119.67	85.63	31.46	317.15	11.80	14.69	431.35	551.02
12	Paper & Paper products	0.00	0.00	164.63	657.09	11.35	-476.54	16.67	28.22	180.35	344.98
13	Drugs and Chemical	0.00	0.00	423.99	185.99	90.16	185.39	0.82	25.12	437.24	861.23
14	Refineries	7.22	0.00	632.29	870.89	52.53	229.47	3.83	28.15	1128.57	1760.86
15	Rubber and Plastic	4.73	0.00	634.89	366.97	16.66	72.78	1.22	8.93	448.70	1083.59
16	Iron and Steel	0.00	0.00	269.69	405.05	47.01	212.12	1.81	56.53	609.46	879.15
17	Fabricated Metal	2.37	0.00	647.91	0.00	115.08	108.85	1.77	150.00	75.70	723.61
18	Vehicle Assembly	0.00	0.00	449.98	526.63	13.55	87.99	15.09	106.83	536.43	986.41
19	Other Manufacturing	0.00	0.00	37.00	2410.79	69.74	420.10	72.05	510.08	2462.60	2499.60
20	Electricity	0.00	0.00	266.22	1135.63	8.83	5.70	0.88	0.00	1151.04	1417.26
21	Water Supply	3.84	0.00	296.83	91.55	116.71	0.00	0.00	0.00	208.26	505.09
22	Building and Construction	2.85	0.00	266.64	38.77	18.15	0.00	0.00	0.00	56.92	323.56
23	Air Transport	0.00	0.00	119.41	0.00	210.85	2670.74	0.00	0.00	2881.59	3001.00
24	Other Land Transport	1.26	0.00	246.03	82.41	49.28	0.00	20.91	43.19	109.41	355.44
25	Water Transport	12.11	0.00	3522.49	1020.25	632.61	0.00	197.30	214.42	1635.74	5158.23
26	Railway Transport	3.24	0.00	226.62	102.44	69.11	0.00	57.30	51.12	177.73	404.35
27	Communication	1.44	0.00	139.30	6.58	4.80	0.00	1.21	2.20	10.39	149.69
28	Distributive Trade	11.73	0.00	193.82	273.72	62.57	0.00	0.00	0.00	336.29	530.11
29	Hotels and Restaurants	10.72	0.00	2486.59	9764.44	54.83	0.00	0.00	0.00	9819.27	12305.86
30	Banking and Finance	0.00	0.00	85.78	942.18	5.20	0.00	0.00	0.00	947.38	1033.16
31	Insurance	14.09	0.00	371.63	2633.72	3.26	0.00	9.76	16.37	2630.37	3002.00
32	Real Estate and Business Ser.	12.38	0.00	190.52	138.47	0.37	0.00	0.00	6.48	132.36	322.88
33	Housing	8.67	0.00	554.94	2113.59	577.10	0.00	379.00	1961.11	1108.58	1663.52
34	Commty Soc and Per Services	12.73	0.00	396.47	1640.60	61.79	0.00	0.00	0.00	1702.39	2098.86
35	Producer of Government Ser.	0.00	0.00	108.28	686.90	0.00	0.00	0.00	0.00	686.90	795.18
36	Domestic Inter. Input	0.00	0.00	71.00	82.36	4835.50	0.00	133.19	215.55	4835.50	4906.50
37	Import	112.54	0.00	20741.19	55555.31	7342.15	5127.75	12083.45	4053.99	76054.67	92124.36
38	Total Inter Input	0.00	0.00	2312.37							
39	Wages	112.54	0.00	23053.56							
40	Operating Surplus	54.28	4813.44	11707.24							
41	Captail Consumption Exp.	542.27	0.00	53673.05							
42	Indirect Business Taxes	17.09	22.06	3860.76							
43	Less Subsidies	0.00	0.00	1416.66							
44	Value Added	0.00	0.00	1434.54							
45	Gross Input	613.64	4835.50	76054.17							
		726.18	4835.50	92124.73							

TABLE 5.7C: FLOW MATRIX OF THE 1995 INPUT-OUTPUT TABLE OF NIGERIA

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Activity Sectors	Agriculture	Livestock	Fishing	Forestry	Crude Petro	Other Min	Food	Drink, Bev	Textiles	Footware	Wood & W	Paper & P	Drugs & Ch	Refineries	Rubber & Pla	Iron & Steel	Fabricated
1	Agriculture	58341.35	3158.58	0.00	0.00	0.00	0.00	9668.54	0.00	2465.78	0.00	0.00	0.00	2143.41	0.00	687.24	1009.22	0.00
2	Livestock	0.00	432.48	0.00	0.00	0.00	0.00	2264.45	0.00	0.00	1324.89	0.00	0.00	2711.46	0.00	746.31	0.00	0.00
3	Fishing	0.00	0.00	40.00	0.00	0.00	0.00	37.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Forestry	0.00	0.00	0.00	1.75	0.00	0.00	24.70	0.00	0.00	0.00	31.35	686.54	255.48	0.00	396.27	672.34	1146.70
5	Crude Petroleum	0.00	0.00	5397.26	0.00	8416.32	142.14	2145.68	0.00	0.00	0.00	0.00	0.00	0.00	4014.36	0.00	132.46	0.00
6	Other Mining	0.00	0.00	206.84	0.00	168.43	2.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	247.16	0.00	26.81	0.00
7	Food	0.00	2756.85	22.41	0.00	0.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Drink, Bev + Tobacco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Textiles	0.00	0.00	0.00	0.00	83.09	12.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Footwear + Leather	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	Wood & Wood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Paper & Paper	0.00	0.00	6.67	0.00	167.89	31.71	447.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	Drugs and Chem.	7428.66	0.00	4.78	0.00	873.66	136.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	Refineries	2411.75	0.00	196.96	63.48	315.45	27.32	892.07	1487.98	768.96	654.77	743.64	2917.20	3861.79	15256.11	761.71	4661.23	7284.50
15	Rubber Plastic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Iron and Steel	0.00	0.00	0.00	0.00	1156.55	426.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Fabricated Metal	9861.44	0.00	11.03	70.40	229.06	17.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Vehicle Assem.	17265.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Other Manufac.	3000.00	0.00	0.00	120.00	0.00	0.00	0.00	208.21	0.00	0.00	0.00	0.00	182.71	0.00	0.00	91.37	126.62
20	Electricity	0.00	0.00	519.69	1.23	296.24	14.19	0.00	0.00	0.00	0.00	0.00	45.79	74.20	176.32	54.41	101.31	97.38
21	Water Supply	0.00	0.00	49.34	0.21	65.41	3.08	0.00	0.00	0.00	0.00	0.00	19.16	86.73	52.38	22.11	21.46	21.30
22	Building & Constructions	1037.92	0.00	0.00	17.22	602.60	104.40	73.50	61.87	217.44	112.32	67.89	121.90	846.38	648.11	46.38	147.39	117.34
23	Air Transport	206.14	4.89	28.42	8.91	215.47	21.77	1.42	1.45	1.07	2.19	1.09	1.41	27.32	60.45	11.78	36.45	12.67
24	Other Land Transport	1826.55	6.00	88.62	20.27	27646.24	1015.10	19.21	17.09	14.73	51.12	27.03	56.32	982.71	3546.82	276.33	1066.22	1341.27
25	Water Transport	42.81	2.36	4.87	6.12	161.82	2.56	6.88	3.23	4.44	13.16	3.91	13.86	4.39	11.76	2.46	9.48	11.04
26	Railway Transport	0.42	0.61	0.80	0.55	0.64	0.00	0.15	0.01	0.09	0.08	0.02	0.00	0.00	0.27	0.06	0.01	0.02
27	Communications	0.00	0.00	55.45	0.00	150.84	3.21	8.77	17.12	3.45	19.42	21.40	62.27	72.41	126.38	30.22	33.96	27.23
28	Distribution	3113.75	261.26	1594.65	0.00	2045.80	47.82	30.18	34.89	12.09	41.76	32.33	1049.22	1243.26	4842.39	284.41	789.99	1910.96
29	Hotels & Restaurants	0.00	0.00	0.00	0.00	419.01	18.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	Banking + Finance	0.00	0.00	1201.02	0.00	4859.61	126.88	27.34	120.88	143.28	121.73	241.44	967.74	749.21	2627.24	287.72	1142.89	1466.37
31	Insurance	0.00	0.00	67.82	0.00	89.67	1.96	6.52	3.08	3.01	4.61	2.76	4.68	5.87	21.34	3.96	7.82	16.48
32	Real Estate & Business Ser.	0.00	0.00	77.32	0.00	329.82	3.99	12.12	5.85	3.47	12.72	6.90	43.71	21.84	75.81	11.94	17.28	13.66
33	Housing	0.00	0.00	119.42	0.00	234.88	1.26	1.74	5.67	2.71	1.09	1.63	42.86	76.89	69.39	34.79	57.81	121.78
34	Comty Soc & Per Services	0.00	0.00	36.14	1.58	69.78	2.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	Producer of Gov. Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	Domestic Inter. Input	104536.54	6623.03	9729.51	311.72	48598.28	2163.74	15667.43	4967.33	3640.52	2359.86	1181.39	6032.66	13346.06	31776.29	3658.10	10025.50	13715.32
37	Import	2272.33	0.00	0.00	0.00	18311.55	51.17	35.07	396.01	34.18	12.09	22.74	652.09	1072.11	2671.28	7.75	739.09	246.13
38	Total Inter. Input	106808.87	6623.03	9729.51	311.72	66909.83	2214.91	15702.50	5363.34	3674.70	2371.95	1204.13	6684.75	14418.17	34447.57	3665.85	10764.59	13961.45
39	Wages	19441.91	413.81	4181.58	48.99	2244.27	434.37	237.91	112.40	132.70	143.96	132.33	59.07	841.38	2116.29	34.44	461.39	988.67
40	Operating Surplus	504384.51	65213.83	14742.77	7504.71	787825.50	319.71	2556.47	13918.88	11130.19	6026.55	6199.09	26.11	7464.57	24084.28	190.46	8084.24	4910.84
41	Capital Consumption Exp.	3647.98	76.99	142.93	6.83	3443.23	182.62	331.99	30.75	76.63	76.32	100.76	312.74	249.32	481.36	42.11	36.22	336.44
42	Indirect Business Taxes	15.00	525.64	17.67	174.42	464.19	40.22	1768.72	603.67	789.33	765.82	2031.76	51.90	946.69	4394.86	26.17	1184.88	281.67
43	Less Subsidies	5000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	Value Added	522489.40	66230.27	19084.95	7734.95	793977.19	976.92	4895.09	14665.70	12128.85	7012.65	8463.94	449.82	9501.96	31076.79	293.18	9766.73	6517.62
45	Gross Input	629298.27	72853.30	28814.46	8046.67	860887.02	3191.83	20597.59	20029.04	15803.55	9384.60	9668.07	7134.57	23920.13	65524.36	3959.03	20531.32	20479.07

TABLE 5.7C (Contd.): FLOW MATRIX OF THE 1995 INPUT-OUTPUT TABLE OF NIGERIA

	Activity Sectors	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	Agriculture	Vehicle As	Other man	Electricity	Water Su	Building &	Air Transpo	Other Lan	Water Tran	Railway	Commun	Distribution	Hotels &R	Banking &	Insurance	Real Estat	Housing	Com. Ser	Pro. Gov. S
2	Livestock	0.00	324.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41111.22	436.81	0.00	0.00	0.00	0.00	0.00	0.00
3	Fishing	0.00	111.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	152.61	0.00	0.00	0.00	0.00	0.00	0.00
4	Forestry	0.00	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	168.95	0.00	0.00	0.00	0.00	0.00	0.00
5	Crude Petroleum	1226.11	883.94	0.00	0.00	876.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Other Mining	0.00	364.12	64.37	1.28	1545.40	642.81	16721.30	161.22	0.28	4.85	13856.74	0.00	678.35	148.24	0.00	0.00	0.00	0.00
7	Food	0.00	22.41	3.78	0.00	42.82	84.21	160.36	21.41	0.41	0.97	448.19	0.00	39.51	2.87	0.00	0.00	0.00	0.00
8	Drink, Bev + Tobacco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Textiles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1621.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Footwear + Leather	0.00	0.00	380.55	122.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	Wood & Wood	0.00	0.00	0.00	0.00	185.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.54	0.28	2.68	0.00	104.22	0.00
12	Paper & Paper	0.00	0.00	0.00	0.00	0.00	721.04	2485.46	7.99	1.99	0.00	0.00	0.00	2.26	0.15	9.55	0.00	37.81	0.00
13	Drugs and Chem.	0.00	142.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.45	1481.63	0.00	65.49	10.79	6.79	0.00	74.07	0.00
14	Refineries	0.00	37.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11748.82	120.38	19.56	2.66	5.05	0.00	228.46	0.00
15	Rubber Plastic	10107.21	0.00	131.58	31.22	108.56	286.11	732.68	82.45	0.44	6.24	918.92	30.57	9.53	2.47	6.77	0.00	37.44	0.00
16	Iron and Steel	0.00	0.00	0.00	0.00	1586.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.70	1.92	8.10	0.00	0.00	0.00
17	Fabricated Metal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1000.01	0.00	3.13	0.87	39.85	0.00	523.27	0.00
18	Vehicle Assem.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Other Manufac.	109.48	18.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Electricity	0.00	72.41	164.38	76.07	97.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00
21	Water Supply	381.62	36.44	242.58	96.34	50.69	11.48	39.91	21.32	0.14	15.20	65.37	20.86	51.49	17.62	12.44	0.00	48.99	0.00
22	Building & Constructions	38.37	27.76	23.36	1.08	19.41	1.34	24.65	0.78	0.61	4.86	26.39	19.26	27.32	14.87	6.46	0.00	21.62	0.00
23	Air Transport	86.49	32.24	86.84	6.91	175.00	71.22	231.88	19.44	0.79	3.01	0.00	0.00	0.00	0.00	0.00	2010.77	0.00	0.00
24	Other Land Transport	21.28	11.08	21.01	0.37	92.87	28.91	81.72	2.81	0.87	31.24	341.26	6.29	54.29	42.38	18.89	0.00	47.32	0.00
25	Water Transport	0.00	842.21	26.56	0.24	146.16	146.34	960.04	27.34	0.46	43.27	15914.44	31.64	356.66	67.49	60.32	0.00	175.21	0.00
26	Railway Transport	0.00	2.14	13.07	1.10	71.23	9.33	56.18	1.96	0.84	17.23	106.33	2.82	8.38	1.26	5.77	0.00	4.98	0.00
27	Communications	0.00	0.03	0.79	0.00	1.31	0.00	0.93	0.00	0.00	0.21	1.07	0.00	0.00	0.00	0.00	0.00	0.44	0.00
28	Distribution	0.00	71.42	3.67	0.26	16.24	41.31	70.10	4.88	0.34	11.46	50.80	21.10	87.46	38.96	35.16	0.00	70.61	0.00
29	Hotels & Restaurants	0.00	862.20	27.10	10.41	70.14	420.61	5435.36	146.47	0.84	8.16	2434.27	342.62	333.46	89.33	87.21	0.00	135.39	0.00
30	Banking + Finance	0.00	0.00	0.00	0.00	0.00	32.66	99.88	2.98	0.11	33.99	1100.03	0.00	3.27	0.00	0.00	0.00	0.00	0.00
31	Insurance	0.00	968.43	209.09	49.52	81.66	211.24	1651.84	11.37	0.68	21.85	0.00	11.65	500.78	128.89	90.75	390.01	0.00	0.00
32	Real Estate & Business Ser.	0.00	21.36	41.93	19.39	23.48	6.39	41.71	1.21	0.00	1.78	0.00	1.09	9.60	1.17	6.44	12.14	0.00	0.00
33	Housing	0.00	17.39	63.06	2.43	105.14	0.00	12.94	0.00	0.10	222.03	70.62	38.48	5.57	0.96	47.28	0.00	70.61	0.00
34	Comty Soc & Per Services	0.00	148.22	8.14	0.00	49.96	2.31	68.63	0.91	0.00	15.72	14254.16	24.65	262.13	41.86	46.62	0.00	0.00	0.00
35	Producer of Gov. Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	268.10	211.94	0.00
36	Domestic Inter. Input	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	Import	11970.56	5020.94	1511.86	418.94	5345.76	2717.31	28875.57	514.54	8.90	462.52	106552.09	1429.78	2534.48	615.04	496.13	2681.02	1892.38	0.00
38	Total Inter. Input	3248.00	143.10	6.78	1.40	7332.56	17.39	1956.55	2.05	0.00	5.86	0.00	0.00	3.09	0.00	0.00	0.00	0.00	0.00
39	Wages	15218.56	5164.04	1518.64	420.34	12678.32	2734.70	30832.12	516.59	8.90	468.38	106552.09	1429.78	2537.57	615.04	496.13	2681.02	1892.38	0.00
40	Operating Surplus	1264.18	117.06	1455.01	387.11	2758.51	407.22	1920.36	126.07	5.41	573.54	18748.76	412.09	4329.08	96.25	339.86	0.00	487.80	122480.88
41	Capital Consumption Exp.	12487.36	1817.63	-479.35	-26.41	11007.77	421.07	42977.03	99.24	4.61	148.45	252732.76	2269.16	11483.44	87.46	714.86	46224.41	11013.98	0.00
42	Indirect Business Taxes	671.99	26.82	474.28	104.66	18.10	227.14	1768.40	68.43	0.46	108.01	2431.20	30.24	4392.16	9.27	37.75	0.00	44.82	56.02
43	Less Subsidies	1611.70	122.75	0.00	0.00	12.90	50.08	247.33	16.31	0.11	64.92	3804.65	15.54	1170.36	7.16	71.27	0.00	0.00	0.00
44	Value Added	0.00	0.00	140.56	17.81	0.00	28.54	0.00	11.26	9.76	85.74	0.00	0.00	0.00	0.00	0.00	0.00	8.04	0.00
45	Gross Input	16035.23	2084.26	1309.38	447.55	13797.28	1076.97	46913.12	298.79	0.83	809.18	277717.37	2727.03	21375.04	200.14	1163.74	46224.41	11538.56	122536.90
		31253.79	7248.30	2828.02	867.89	26475.60	3811.67	77745.24	815.38	9.73	1277.56	384269.46	4156.81	23912.61	815.18	1659.87	48905.43	13430.94	122536.90

		TABLE 5.7C (Contd.): FLOW MATRIX OF THE 1995 INPUT-OUTPUT TABLE OF NIGERIA							
	Activity Sectors	36	37	38	39	40	41	42	43
1	Agriculture	Int. Input	PFCON	GFCON	Investment	Export	Import	Final Deman	Gross Output
2	Livestock	119348.75	487236.48	722.01	0.00	68733.87	46740.84	509951.52	629300.27
3	Fishing	7746.66	10991.86	203.76	37226.31	17833.62	1145.91	65109.64	72856.30
4	Forestry	253.25	28565.21	0.00	0.00	0.00	0.00	28565.21	28818.46
5	Crude Petroleum	6206.50	1370.22	30.03	0.00	444.92	0.00	1845.17	8051.67
6	Other Mining	54443.18	244945.33	418.37	1147.90	576467.98	16529.74	806449.84	860893.02
7	Food	1486.07	846.31	120.78	607.61	287.04	148.98	1712.76	3198.83
8	Drink, Bev + Tobacco	5787.26	56967.41	1241.39	1404.31	541.32	45336.10	14818.33	20605.59
9	Textiles	1630.82	49154.62	1006.23	3148.22	2487.55	37389.40	18407.22	20038.04
10	Footwear + Leather	608.28	44981.68	742.33	2161.49	9281.16	41961.39	15205.27	15813.55
11	Wood & Wood	310.74	42869.99	466.48	917.80	6277.19	41446.60	9084.86	9395.60
12	Paper & Paper	3278.25	19842.48	761.39	486.39	0.00	14688.44	6401.82	9680.07
13	Drugs and Chem.	2467.93	22446.91	2468.59	1111.78	961.82	22309.46	4679.64	7147.57
14	Refineries	20619.51	26371.08	2487.92	4117.86	786.42	30448.66	3314.62	23934.13
15	Rubber Plastic	54812.11	31461.87	4461.86	32869.96	4611.38	62677.82	10727.25	65539.36
16	Iron and Steel	1621.61	39864.51	1907.22	4321.09	3679.86	47419.26	2353.42	3975.03
17	Fabricated Metal	3167.10	29226.86	11426.06	28891.41	0.00	52163.11	17381.22	20548.32
18	Vehicle Assem.	10207.73	27894.41	606.51	12481.32	5401.41	36094.31	10289.34	20497.07
19	Other Manufac.	17412.49	35326.76	2581.61	30821.34	0.00	54869.41	13860.30	31272.79
20	Electricity	4259.23	11350.42	344.51	471.03	1096.99	10253.88	3009.07	7268.30
21	Water Supply	2514.25	279.87	54.90	0.00	0.00	0.00	334.77	2849.02
22	Building & Constructions	621.32	239.11	29.46	0.00	0.00	0.00	268.57	889.89
23	Air Transport	6970.25	7006.12	6439.63	6082.60	0.00	0.00	19528.35	26498.60
24	Other Land Transport	1469.49	2411.38	242.36	128.14	0.00	415.70	2366.18	3835.67
25	Water Transport	56825.01	24936.25	1204.27	39857.03	17136.62	62188.94	20945.23	77770.24
26	Railway Transport	633.77	286.41	67.34	13.17	0.88	160.19	207.61	841.38
27	Communications	35.51	4.24	2.19	1.86	0.00	7.07	1.22	36.73
28	Distribution	1183.90	364.32	121.66	0.00	0.00	364.32	121.66	1305.56
29	Hotels & Restaurants	27767.33	274724.02	31674.72	50132.39	0.00	0.00	356531.13	384298.46
30	Banking + Finance	1740.19	815.48	1631.14	0.00	0.00	0.00	2446.62	4186.81
31	Insurance	18442.11	9871.04	62.12	0.00	571.73	5003.38	5501.51	23943.62
32	Real Estate & Business Ser.	459.27	396.06	48.79	0.00	32.68	89.62	387.91	847.18
33	Housing	1326.04	207738.82	6294.17	0.00	23472.80	237138.96	366.83	1692.87
34	Comty Soc & Per Services	15729.23	1919.83	21832.05	9458.32	0.00	0.00	33210.20	48939.43
35	Producer of Gov. Services	624.96	12840.98	0.00	0.00	0.00	0.00	12840.98	13465.94
36	Domestic Inter. Input	36.00	19772.24	122536.90	0.00	8260.85	28033.09	122536.90	122572.90
37	Import	451418.10	1775357.58	224276.75	267898.33	748408.09	895065.58	2120804.17	2572808.27
38	Total Inter. Input	39278.37							
39	Wages	490660.47							
40	Operating Surplus	187974.66							
41	Capital Consumption Exp.	1857607.18							
42	Indirect Business Taxes	20086.97							
43	Less Subsidies	21320.69							
44	Value Added	5345.71							
45	Gross Input	2120804.79							
		2572808.26							

TABLE 5.7D: FLOW MATRIX OF THE 2000 INPUT-OUTPUT TABLE OF NIGERIA

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Activity Sectors	Agriculture	Livestock	Fishing	Forestry	Crude Petro	Other Minin	Food	Drink, Bev. T	Textiles	Footwear +	Wood & W	Paper & Pa	Drugs & Ch	Refineries	Rubber
1	Agriculture	50831.84	5430.17	57916.26	0.00	0.00	0.00	31195.32	12549.68	14100.97	0.00	0.00	0.00	11507.85	0.00	7.85
2	Livestock	0.00	1652.78	0.00	0.00	0.00	0.00	5546.35	0.00	0.00	1402.04	0.00	0.00	1464.59	0.00	40.83
3	Fishing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Forestry	0.00	0.00	0.00	6.97	0.00	0.00	0.00	0.00	0.00	0.00	191.49	352.97	47.55	0.00	208.63
5	Crude Petroleum	0.00	0.00	780.52	0.00	18120.32	57.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31946.12	0.00
6	Other Mining	0.00	0.00	0.00	0.00	12.25	4.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Food	0.00	8667.73	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Drink, Bev. + Tobacco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Textiles	0.00	0.00	0.00	0.00	115.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Footware + Leather	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	Wood & Wood Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Paper & Paper products	0.00	0.00	0.01	0.00	448.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	Drugs and Chemical	5089.38	0.00	0.75	0.00	128.69	140.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	Refineries	2264.44	0.00	3.26	24.46	29.70	40.82	1533.35	1882.90	1461.11	412.47	746.48	869.21	809.40	44.28	728.62
15	Rubber and Plastic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Iron and Steel	0.00	0.00	0.00	0.00	11151.05	471.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Fabricated Metal	8602.11	0.00	0.01	20.40	39.55	10.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Vehicle Assembly	30403.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Other Manufacturing	3077.90	0.00	0.00	191.59	0.00	0.00	0.00	462.01	0.00	0.00	0.00	0.00	311.11	0.00	0.00
20	Electricity	0.00	0.00	0.49	42.34	52.09	5.46	79.04	158.24	521.97	71.87	30.36	57.34	23.08	167.41	79.46
21	Water Supply	0.00	0.00	0.15	9.39	22.08	4.45	94.96	31.76	90.19	6.66	8.95	11.18	92.32	22.64	8.80
22	Building and Construction	8884.73	0.00	0.00	196.48	1273.13	151.76	0.00	1249.41	1175.92	955.43	881.94	0.00	734.95	587.96	51.45
23	Air Transport	2114.13	0.00	1.14	29.96	2681.11	642.09	314.72	271.08	71.84	31.36	41.61	58.51	3.92	266.38	131.11
24	Other Land Transport	4979.16	0.00	2.86	125.07	21196.19	476.51	17160.54	2142.81	441.83	268.96	418.76	1069.98	1137.82	2547.89	744.62
25	Water Transport	48.21	0.00	3.91	6.41	20.28	4.62	21.07	36.44	12.98	22.41	15.57	25.39	21.86	29.81	26.32
26	Railway Transport	18.70	0.00	0.91	6.79	61.34	71.12	42.32	21.19	33.17	36.87	26.38	5.54	12.04	16.00	7.13
27	Communication	0.00	0.00	0.03	0.00	59.82	0.00	91.28	82.11	77.60	11.68	10.01	27.37	45.56	22.86	29.37
28	Distributive Trade	27395.26	1919.20	587.74	0.00	4012.76	6.98	16876.45	8283.86	4085.47	2140.06	2647.98	4833.44	6213.61	2455.02	3071.33
29	Hotels and Restaurants	0.00	0.00	0.00	0.00	1892.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	Banking and Finance	0.00	0.00	0.00	0.00	798.62	2.99	316.42	296.82	242.38	32.61	26.86	50.94	190.76	112.86	341.33
31	Insurance	0.00	0.00	1.60	0.00	62.14	1.32	77.56	55.01	10.81	16.56	15.29	33.36	21.74	37.01	10.50
32	Real Estate and Business Ser.	0.00	0.00	0.10	0.00	393.53	213.04	84.83	51.67	39.91	4.24	4.63	8.48	42.22	8.48	25.26
33	Housing	0.00	0.00	0.20	0.00	49.89	0.00	40.41	40.07	27.38	18.37	11.24	33.28	52.21	16.59	19.81
34	Commty Soc and Per Services	0.00	0.00	0.87	86.18	0.00	889.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	Producer of Government Ser.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	Domestic Inter. Input	143709.16	17669.88	59301.02	746.04	62620.82	3194.29	73474.62	27615.06	22393.53	5431.59	5077.55	7436.99	22732.59	38281.31	5532.41
37	Import	653.35	5.73	0.00	0.00	1105186.78	39.87	3.41	18.18	420.67	69.36	1186.92	386.12	910.15	4757.93	520.06
38	Total Inter Input	144362.51	17675.61	59301.02	746.04	1167807.59	3234.17	73478.03	27633.24	22814.20	5500.95	6264.47	7823.11	23642.74	43039.24	6052.47
39	Wages	103194.86	1775.37	11333.91	207.18	23089.19	168.27	4077.27	1778.01	1839.17	552.28	537.87	1066.52	2168.56	2487.88	1342.50
40	Operating Surplus	947935.29	108773.39	10743.28	22471.74	1302256.44	3617.33	4895.07	15872.48	22607.28	6507.16	5173.23	14663.09	6284.74	5477.17	10293.94
41	Captail Consumption Exp.	6623.53	93.10	207.88	10.40	6251.20	43.01	638.52	152.78	451.63	222.91	61.14	246.60	803.21	57.05	248.63
42	Indirect Business Taxes	61.93	2809.57	70.93	669.49	4738.07	0.00	6405.48	13767.24	10459.03	2522.41	2128.97	4560.66	4688.53	4499.46	3200.01
43	Less Subsidies	1320.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	Value Added	1056495.21	113451.43	22356.00	23358.81	1336334.90	3828.61	16016.33	31570.51	35357.12	9804.75	7901.20	20536.88	13945.04	12521.56	15085.08
45	Gross Input	1200857.71	131127.04	81657.02	24104.85	2504142.49	7062.78	89494.37	59203.75	58171.32	15305.70	14165.68	28359.99	37587.78	55560.81	21137.55

TABLE 5.7D (Contd.): FLOW MATRIX OF THE 2000 INPUT-OUTPUT TABLE OF NIGERIA

		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Activity Sectors	Iron & Steel	Fabricated M	Vehicle Ass	Other Manuf	Electricity	Water Sup	Building & C	Air Transpor	Other Land	Water Trai	Railway T.	Communi	Distribution	Hotel & Rest	Banking
1	Agriculture	2165.41	0.00	0.00	4339.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2104.58	0.00
2	Livestock	0.00	0.00	0.00	1228.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	585.98	0.00
3	Fishing	0.00	0.00	0.00	7666.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19905.81	0.00
4	Forestry	3.84	0.03	15.14	32.63	0.00	0.00	74.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Crude Petroleum	0.00	0.00	0.00	2926.48	639.16	113.14	1701.83	9199.26	68368.18	65.39	47.52	56.62	51806.80	0.00	11428.15
6	Other Mining	968.36	0.00	0.00	487.16	0.00	0.00	904.43	19.62	35.81	22.26	15.04	0.00	0.00	0.00	0.00
7	Food	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Drink, Bev. + Tobacco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1013.71	0.00	0.00
9	Textiles	0.00	0.00	0.00	0.00	3086.14	180.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Footware + Leather	0.00	0.00	0.00	0.00	0.00	0.00	1029.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.13
11	Wood & Wood Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	486.98	1710.42	24.15	22.85	0.00	0.00	0.00	4.26
12	Paper & Paper products	0.00	0.00	0.00	1023.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.66	1460.51	0.00	28.30
13	Drugs and Chemical	0.00	0.00	0.00	341.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22358.34	344.21	0.19
14	Refineries	10073.22	1221.09	5825.81	226.65	52.06	33.29	89.52	267.73	539.95	42.61	16.64	7.59	249.33	3.29	5.36
15	Rubber and Plastic	0.00	0.00	0.00	0.00	0.00	0.00	3898.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	196.89
16	Iron and Steel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14450.95	0.00	89.62
17	Fabricated Metal	0.00	0.00	14.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Vehicle Assembly	0.00	0.00	1261.55	63.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Other Manufacturing	1106.59	231.00	0.00	391.37	211.07	20.92	849.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Electricity	636.10	39.78	24.68	18.26	187.85	42.29	22.38	3.84	8.92	5.69	1.51	11.89	0.00	14.87	19.18
21	Water Supply	100.29	21.62	12.73	4.95	128.62	23.83	31.16	6.52	18.87	5.94	2.55	7.09	489.56	16.58	21.17
22	Building and Construction	29.40	146.99	73.49	0.00	831.82	72.50	1226.68	207.33	1384.82	24.33	10.46	26.06	0.00	0.00	0.00
23	Air Transport	1106.41	221.48	181.32	14.32	16.14	19.38	62.89	29.71	48.33	19.82	28.13	11.19	2153.11	6.98	131.47
24	Other Land Transport	3671.06	601.34	4664.87	676.19	98.39	122.39	881.14	220.22	2432.82	49.67	30.38	341.08	35910.75	101.68	1115.46
25	Water Transport	28.44	26.36	31.16	11.73	2.06	9.33	31.64	2.06	26.16	1.04	1.56	2.84	21.23	15.27	7.28
26	Railway Transport	14.80	3.01	5.23	1.18	2.07	3.40	2.18	8.62	5.35	0.71	3.57	2.28	4.63	7.31	7.49
27	Communication	113.98	27.37	113.65	8.30	3.81	4.09	23.19	18.19	68.34	28.22	4.69	20.67	1243.06	31.54	98.66
28	Distributive Trade	2472.62	715.62	16434.37	870.38	144.31	227.53	504.13	1426.38	4502.64	48.49	28.65	72.66	232286.83	655.32	2381.68
29	Hotels and Restaurants	0.00	0.00	0.00	0.00	0.00	0.00	0.00	387.98	1116.86	33.92	9.19	442.43	0.00	0.00	33.01
30	Banking and Finance	2207.32	164.38	682.69	22.10	72.31	171.42	48.66	187.61	601.11	6.82	11.88	12.41	0.00	5.92	248.81
31	Insurance	32.76	23.20	89.18	9.34	26.30	10.74	18.28	19.91	22.04	9.82	2.38	6.22	0.00	2.40	31.99
32	Real Estate and Business Ser.	42.22	18.12	84.25	13.98	61.58	104.52	193.45	211.80	821.32	16.21	2.55	173.52	96.37	72.66	6.01
33	Housing	63.23	20.59	26.83	390.84	3.14	5.72	39.46	10.34	13.24	6.89	9.45	15.38	8351.22	19.97	122.74
34	Commty Soc and Per Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	Producer of Government Ser.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	Domestic Inter. Input	24836.04	3481.99	29541.25	20767.40	5566.83	1165.44	11632.94	12714.10	81725.18	411.98	249.00	1271.58	371896.40	23894.36	16016.85
37	Import	37416.95	2743.76	18219.87	346.50	29.43	31.96	128.10	192.60	716.31	53.39	16.11	6.47	1386.33	55.62	2.19
38	Total Inter Input	62252.99	6225.75	47761.11	21113.90	5596.26	1197.40	11761.05	12906.70	82441.49	465.37	265.11	1278.04	373282.72	23949.98	16019.04
39	Wages	4259.59	1152.44	4261.62	2143.73	5478.21	3169.48	12470.90	473.21	2233.95	862.24	159.90	4575.02	84146.43	1819.11	7628.14
40	Operating Surplus	14095.77	13962.92	9967.75	298.15	-4239.91	-4076.65	35091.14	3368.96	96442.58	137.98	249.64	-2988.39	285527.40	1756.09	19986.14
41	Captail Consumption Exp.	0.00	345.91	970.94	189.23	659.27	242.85	28.20	592.06	2121.93	133.62	6.24	173.28	3170.78	42.99	9562.12
42	Indirect Business Taxes	13449.20	4370.50	4359.57	270.56	1746.19	1097.16	617.55	647.39	1970.71	130.31	8.12	863.55	29435.72	982.42	6986.19
43	Less Subsidies	0.00	0.00	0.00	0.00	103.60	68.24	0.00	37.85	0.00	19.07	20.05	138.01	0.00	0.00	0.00
44	Value Added	31804.56	19831.76	19559.89	2901.67	3540.16	364.60	48207.80	5043.77	102769.17	1245.08	403.85	2485.45	402280.33	4600.61	44162.59
45	Gross Input	94057.54	26057.51	67321.00	24015.57	9136.42	1562.00	59968.84	17950.47	185210.66	1710.45	668.96	3763.49	775563.06	28550.59	60181.63

TABLE 5.7D (Contd.): FLOW MATRIX OF THE 2000 INPUT-OUTPUT TABLE OF NIGERIA

		31	32	33	34	35	36	37	38	39	40	41	42	43
	Activity Sectors	Insurance	Real Estate	Housing	Com. Service	Pro. Gov. Ser	Int.Input	PFCON	GFCON	Investment	Export	Import	Final Demand	Gross Output
1	Agriculture	0.00	0.00	0.00	0.00	0.00	192151.30	667105.28	26605.87	4633.76	313976.77	3613.27	1008708.41	1200859.71
2	Livestock	0.00	0.00	0.00	0.00	0.00	11924.64	31198.73	2246.45	32735.85	53057.06	31.68	119206.40	131131.04
3	Fishing	0.00	0.00	0.00	0.00	0.00	27578.36	13621.48	1513.34	33920.66	5029.18	0.00	54084.66	81663.02
4	Forestry	0.00	0.00	0.00	0.00	0.00	941.79	14452.85	1292.30	0.00	7425.91	0.00	23171.06	24112.85
5	Crude Petroleum	310.77	0.00	0.00	0.00	0.00	197578.04	536511.78	2937.88	31138.40	1746760.56	10774.16	2306574.45	2504152.49
6	Other Mining	0.00	0.00	0.00	0.00	0.00	2480.96	3004.06	0.00	440.08	1370.20	220.52	4593.82	7074.78
7	Food	0.00	0.00	0.00	0.00	0.00	8681.94	71110.58	4947.95	949.07	3837.67	18.83	80826.42	89508.36
8	Drink, Bev. + Tobacco	0.00	0.00	0.00	0.00	0.00	1029.71	50838.03	1500.05	2099.44	3853.07	100.54	58190.05	59219.76
9	Textiles	0.00	0.00	0.00	0.00	0.00	3400.91	46806.59	911.46	2034.35	7362.47	2326.46	54788.41	58189.32
10	Footware + Leather	16.89	1.16	0.00	186.95	0.00	1293.16	5747.83	936.89	1049.10	6682.31	383.59	14032.53	15325.70
11	Wood & Wood Products	1.88	2.71	0.00	124.64	0.00	2399.89	11352.83	1498.60	680.64	0.00	1744.28	11787.80	14187.68
12	Paper & Paper products	14.71	32.03	0.00	199.42	0.00	3292.04	9912.02	13799.21	2201.95	1314.15	2135.38	25091.95	28383.99
13	Drugs and Chemical	0.09	15.29	0.00	620.16	0.00	29064.56	9112.66	3630.06	2.32	837.67	5033.49	8549.22	37613.78
14	Refineries	4.43	24.21	0.00	34.64	0.00	29595.92	30574.52	15792.43	2169.62	3769.50	26313.18	25992.88	55588.80
15	Rubber and Plastic	103.30	10.16	0.00	0.00	0.00	4239.02	7170.73	8871.78	1582.08	2180.09	2876.15	16928.53	21167.55
16	Iron and Steel	36.53	3556.42	0.00	3702.87	0.00	33490.48	21019.39	39746.35	0.00	0.00	166.67	60599.06	94089.55
17	Fabricated Metal	0.00	0.00	0.00	0.00	0.00	8721.05	5680.48	8972.77	0.00	6648.20	3930.99	17370.46	26091.51
18	Vehicle Assembly	0.00	0.00	0.00	0.00	0.00	31763.93	26332.69	10311.38	0.00	0.00	1050.99	35593.08	67357.01
19	Other Manufacturing	0.00	0.00	0.00	270.12	0.00	7161.35	13181.76	4209.66	47.19	1369.89	1916.29	16892.22	24053.57
20	Electricity	20.06	18.46	0.00	49.88	0.00	2454.79	4290.75	2725.76	0.00	0.00	294.88	6721.63	9176.42
21	Water Supply	6.95	14.92	0.00	35.24	0.00	1394.12	225.74	28.75	0.00	0.00	44.61	209.88	1604.00
22	Building and Construction	0.00	1020.85	7555.29	0.00	0.00	28797.17	3776.74	17363.05	10820.34	0.00	744.46	31215.68	60012.85
23	Air Transport	30.99	104.30	0.00	52.98	0.00	10943.91	4884.44	2494.31	2286.21	0.00	2612.40	7052.56	17996.47
24	Other Land Transport	8.36	506.32	0.00	1065.39	0.00	105258.51	60426.48	18073.17	4141.68	0.00	2641.18	80000.15	185258.66
25	Water Transport	8.86	2.51	0.00	9.26	0.00	584.07	221.61	347.11	1013.14	0.00	405.48	1176.38	1760.45
26	Railway Transport	9.14	3.44	0.00	1.36	0.00	497.27	623.14	181.25	77.24	0.00	657.94	223.69	720.96
27	Communication	47.21	118.38	0.00	162.28	0.00	2647.31	186.19	686.86	332.91	0.00	35.77	1170.19	3817.50
28	Distributive Trade	27.45	1450.10	0.00	1536.64	0.00	350370.96	410139.16	7676.00	15099.83	0.00	7666.91	425248.09	775619.05
29	Hotels and Restaurants	8.98	0.00	0.00	0.00	0.00	3982.77	20982.57	3950.83	0.00	0.00	307.58	24625.82	28608.59
30	Banking and Finance	28.13	134.38	161.85	0.00	0.00	7240.39	13796.11	7420.11	31694.88	102.04	11.90	53001.24	60241.63
31	Insurance	14.12	8.68	33.72	0.00	0.00	765.98	365.83	743.95	111.62	22.76	3.74	1240.42	2006.40
32	Real Estate and Business Ser.	3.51	201.09	0.00	205.01	0.00	3268.55	26395.74	1661.20	2327.75	29207.03	39475.60	20116.12	23384.67
33	Housing	67.51	85.14	0.00	0.00	0.00	9627.17	61598.27	44085.58	60753.84	0.00	1553.20	164884.49	174511.66
34	Commty Soc and Per Services	0.00	0.00	2867.28	4682.90	0.00	8594.50	28830.86	15973.63	7266.47	0.00	106.74	51964.22	60558.72
35	Producer of Government Ser.	0.00	0.00	0.00	0.00	0.00	70.00	119772.20	332787.04	0.00	14260.85	134033.05	332787.04	332857.04
36	Domestic Inter. Input	769.87	7310.56	10618.14	12939.73	0.00	1133286.50	2211477.90	273135.98	251610.44	2194806.52	119198.86	3939448.49	6277905.52
37	Import	0.64	7137.95	280.85	19.30	106401.30	1289418.16							
38	Total Inter Input	770.51	14448.51	10898.99	12959.03	106401.30	2422704.66							
39	Wages	855.87	1672.13	0.00	3375.02	226298.55	522732.39							
40	Operating Surplus	72.06	2482.95	163546.67	44103.02	0.00	3167435.90							
41	Captail Consumption Exp.	162.12	47.99	0.00	65.47	87.19	34795.77							
42	Indirect Business Taxes	83.84	4669.10	0.00	0.00	0.00	132353.86							
43	Less Subsidies	0.00	0.00	0.00	11.83	0.00	1805.05							
44	Value Added	1173.89	8872.17	163546.67	47531.68	226385.74	3939448.87							
45	Gross Input	1944.40	23320.68	174445.66	60490.72	332787.04	6277905.53							

Table 5.8A:TECHNOLOGY MATRIX OF THE 1981 I-O FOR NIGERIA																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		Agricultu	Livestoc	Fishing	Forestry	Oil (Petr	Other Mi	Food	Drink, B	Textiles	Footwea	Wood +	Paper +	Drugs +	Refineri	Rubber	Iron + St	Fabricate	Vehicle	Other Mi	Electricit	Water S	Buildi
1	Agriculture	0.0939	0.0000	0.0000	0.0000	0.0000	0.0210	0.7350	0.4154	0.1129	0.1531	0.0002	0.1196	0.0895	0.0000	0.0212	0.0379	0.0000	0.0000	0.0122	0.0291	0.0000	0.0225
2	Livestocks and Dairy Products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0782	0.0000	0.0000	0.0208	0.0000	0.0195	0.0000	0.0000	0.0000	0.3756	0.0000	0.0000	0.0000
3	Fishing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0044	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0383	0.0000	0.0163	0.0000	0.0315	0.0000	0.0000	0.0000	0.0196	0.0000	0.0000	0.0000
5	Oil (Petroleum)	0.0393	0.0000	0.0769	0.0000	0.0074	0.0417	0.0052	0.0088	0.0193	0.0063	0.0242	0.0308	0.0212	0.5636	0.0448	0.1008	0.0507	0.0158	0.0125	0.0000	0.0912	0.0180
6	Other Mining	0.0000	0.0000	0.0000	0.0000	0.0035	0.0189	0.0011	0.0000	0.0171	0.0000	0.0000	0.0372	0.0159	0.0000	0.0000	0.0907	0.0589	0.0000	0.0415	0.0572	0.0000	0.0382
7	Food	0.0000	0.0753	0.0616	0.0000	0.0035	0.0000	0.0006	0.0078	0.0000	0.0514	0.0000	0.0000	0.0310	0.0000	0.0000	0.0000	0.0000	0.0000	0.0242	0.0000	0.0000	0.0000
8	Drink, Beverage & Tobacco	0.0000	0.0000	0.0000	0.0000	0.0024	0.0000	0.0024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	Textiles	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	0.0000	0.0156	0.0336	0.0000	0.0329	0.0000	0.0000	0.0531	0.5335	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	Footwear and Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0427	0.0000	0.0002	0.0000	0.0000	0.0000	0.0071	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	Wood and Woods Products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0049	0.0000	0.0535	0.0175	0.0329	0.0016	0.0000	0.0174	0.0292	0.0052	0.0051	0.0114	0.0000	0.0000	0.0488
12	Paper and Paper Products	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0023	0.0059	0.0167	0.0701	0.0168	0.0284	0.0109	0.0000	0.0223	0.0208	0.0371	0.0034	0.0000	0.0000	0.0000	0.0000
13	Drugs and Chemical	0.0000	0.0000	0.0000	0.0000	0.0012	0.0000	0.0054	0.0009	0.0239	0.0639	0.1098	0.0090	0.0144	0.0109	0.0131	0.2020	0.0315	0.0750	0.0073	0.0256	0.0000	0.0530
14	Refineries	0.0196	0.0000	0.0010	0.0011	0.0001	0.0157	0.0019	0.0047	0.0053	0.0018	0.0020	0.0024	0.0052	0.0006	0.0056	0.2051	0.0069	0.0177	0.0052	0.0002	0.0001	0.0002
15	Rubber and Plastic Products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0043	0.0000	0.0068	0.0622	0.0290	0.0003	0.0047	0.0000	0.0253	0.0397	0.0000	0.0144	0.0049	0.0000	0.0000	0.0000
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0775	0.0020	0.0106	0.0278	0.0000	0.0197	0.0000	0.0000	0.0000	0.0251	0.0000	0.0000	0.0369	0.0207	0.0202	0.0000	0.0759
17	Fabricated Metal	0.0000	0.0000	0.0000	0.0000	0.0008	0.0000	0.0009	0.0135	0.0000	0.0000	0.0021	0.0259	0.0022	0.0000	0.0279	0.0421	0.0371	0.0222	0.0000	0.0000	0.0000	0.0000
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0273	0.0000	0.0289	0.0000	0.0000	0.0000
19	Other Manufacturing (Miscella)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	0.0077	0.0034	0.0122	0.2567	0.0134	0.0041	0.0000	0.0439	0.0376	0.0173	0.0517	0.0201	0.0000	0.0000	0.0000
20	Electricity Generation	0.0000	0.0000	0.0459	0.0000	0.0010	0.0289	0.0004	0.0015	0.0080	0.0126	0.0372	0.0057	0.0094	0.0016	0.0278	0.0361	0.0167	0.0134	0.0088	0.0000	0.0000	0.0077
21	Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0020	0.0143	0.0192	0.0101	0.0041	0.0100	0.0043	0.0145	0.0101	0.0037	0.0197	0.0000	0.0000	0.0000	0.0000
22	Building and Construction	0.0000	0.0000	0.0639	0.0000	0.0000	0.0189	0.0007	0.0125	0.0148	0.0324	0.0097	0.0170	0.0283	0.0000	0.0361	0.0466	0.0142	0.0003	0.0000	0.0301	0.0837	0.0000
23	Air Transport	0.0000	0.0000	0.0002	0.0000	0.0004	0.0014	0.0014	0.0020	0.0011	0.0022	0.0004	0.0041	0.0043	0.0103	0.0014	0.0072	0.0012	0.0029	0.0004	0.0013	0.0032	0.0025
24	Other Land Transport	0.0000	0.0000	0.0018	0.0012	0.0019	0.0314	0.0004	0.0019	0.0018	0.0065	0.0026	0.0097	0.0094	0.0903	0.0125	0.0759	0.0127	0.0571	0.0035	0.0039	0.0084	0.0189
25	Water Transport	0.0000	0.0000	0.0005	0.0001	0.0009	0.0063	0.0018	0.0028	0.0021	0.0027	0.0026	0.0001	0.0003	0.0084	0.0031	0.0127	0.0016	0.0063	0.0005	0.0005	0.0027	0.0014
26	Railway Transport	0.0000	0.0000	0.0008	0.0000	0.0004	0.0078	0.0008	0.0052	0.0012	0.0009	0.0003	0.0031	0.0001	0.0024	0.0040	0.0037	0.0004	0.0008	0.0000	0.0031	0.0037	0.0021
27	Communication	0.0000	0.0000	0.0019	0.0000	0.0001	0.0000	0.0011	0.0023	0.0011	0.0006	0.0007	0.0018	0.0017	0.0013	0.0018	0.0117	0.0011	0.0011	0.0001	0.0017	0.0010	0.0018
28	Distribution	0.0143	0.0332	0.0387	0.0000	0.0025	0.0583	0.0038	0.0294	0.0249	0.0021	0.1328	0.0473	0.0150	0.0425	0.0487	0.1600	0.2720	0.1100	0.0108	0.0463	0.0955	0.0282
29	Hotels and Restaurants	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	Banking and Finance	0.0000	0.0000	0.0123	0.0004	0.0002	0.0006	0.0019	0.0018	0.0016	0.0011	0.0014	0.0003	0.0007	0.0011	0.0111	0.1015	0.0034	0.0082	0.0002	0.0040	0.0066	0.0030
31	Insurance	0.0000	0.0000	0.0093	0.0001	0.0001	0.0005	0.0005	0.0005	0.0001	0.0002	0.0011	0.0002	0.0001	0.0004	0.0013	0.0287	0.0009	0.0021	0.0004	0.0005	0.0053	0.0013
32	Real Estate and Business Ser.	0.0000	0.0000	0.0216	0.0000	0.0007	0.0126	0.0004	0.0003	0.0007	0.0002	0.0004	0.0002	0.0001	0.0002	0.0014	0.0038	0.0006	0.0017	0.0002	0.0294	0.0373	0.0025
33	Housing	0.0000	0.0000	0.0014	0.0000	0.0002	0.0000	0.0002	0.0003	0.0003	0.0013	0.0018	0.0033	0.0010	0.0003	0.0018	0.0097	0.0012	0.0009	0.0005	0.0008	0.0016	0.0022
34	Commty Soc and Per services	0.0000	0.0000	0.0003	0.0005	0.0000	0.0058	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0096	0.0000	0.0000	0.0000
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	Domestic Inter. Input	0.1670	0.1085	0.3381	0.0034	0.0296	0.3472	0.7779	0.5428	0.3208	0.7110	0.7174	0.4299	0.3181	0.7382	0.5162	1.8540	0.6015	0.4668	0.6235	0.2540	0.3402	0.3284
37	Import	0.1683	0.1085	0.3381	0.0034	0.0573	0.3472	0.7985	0.5538	0.3440	0.7211	0.7348	0.4516	0.3522	0.7430	0.5636	2.1435	0.6250	0.5291	0.6294	0.2560	0.3408	0.4819
38	Total Inter. Input	0.1079	0.0188	0.2623	0.0139	0.0112	0.0329	0.0527	0.1108	0.2271	0.0627	0.1063	0.1962	0.0908	0.0669	0.1264	0.2871	0.1045	0.0849	0.1061	0.2838	0.3446	0.1925
39	Wages	0.7079	0.8665	0.3786	0.9697	0.9117	0.6049	0.1170	0.0670	0.2764	0.1672	0.1026	0.2595	0.4749	0.0534	0.2459	0.0000	0.2115	0.3616	0.1879	0.2988	0.0000	0.3228
40	Operating Surplus	0.0320	0.0063	0.0201	0.0019	0.0192	0.0150	0.0148	0.0580	0.0615	0.0182	0.0343	0.0461	0.0266	0.0410	0.0304	0.2110	0.0257	0.0156	0.0493	0.1613	0.3146	0.0021
41	Capital Consumption Exp	0.0000	0.0000	0.0009	0.0677	0.0005	0.0000	0.0170	0.2103	0.0911	0.0307	0.0221	0.0466	0.0554	0.0958	0.0337	0.0786	0.0333	0.0089	0.0273	0.0000	0.0000	0.0007
42	Indirect Business Taxes	0.0161	0.0000	0.0000	0.0566	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.7202	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
43	Less Subsidies	0.8317	0.8915	0.6619	0.9966	0.9427	0.6528	0.2015	0.4462	0.6560	0.2789	0.2652	0.5484	0.6478	0.2570	0.4364	-1.1435	0.3750	0.4709	0.3706	0.7440	0.6592	0.5181
44	Value Added	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
45	Gross Input																						

		Table 5.8A (Contd.):TECHNOLOGY MATRIX OF THE 1981 I-O FOR NIGERIA												
		23	24	25	26	27	28	29	30	31	32	33	34	35
		Air Tran	Other La	Water Tr	Railway	Commu	Distribut	Hotels +	Bankin F	Insuranc	Real Es	Housing	Commty	Pro G
1	Agriculture	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1322	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	Livestocks and Dairy Products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0299	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	Fishing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	Oil (Petroleum)	0.0297	0.2906	0.0107	0.0364	0.0339	0.0316	0.0000	0.0061	0.0021	0.0000	0.0000	0.0000	0.0000
6	Other Mining	0.0015	0.0028	0.0030	0.0079	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	Food	0.0001	0.0000	0.0002	0.0010	0.0000	0.0000	0.0140	0.0024	0.0010	0.0037	0.0000	0.0000	0.0000
8	Drink, Beverage & Tobacco	0.0001	0.0000	0.0002	0.0003	0.0000	0.0000	0.0242	0.0011	0.0007	0.0038	0.0000	0.0027	0.0000
9	Textiles	0.0017	0.0000	0.0003	0.0006	0.0000	0.0000	0.0000	0.0006	0.0001	0.0043	0.0000	0.0000	0.0000
10	Footwear and Leather	0.0023	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0021	0.0000
11	Wood and Woods Products	0.0003	0.0000	0.0024	0.0027	0.0000	0.0000	0.0000	0.0005	0.0010	0.0000	0.0000	0.0000	0.0000
12	Paper and Paper Products	0.0077	0.0009	0.0024	0.0154	0.0474	0.0241	0.0040	0.0568	0.0080	0.0036	0.0000	0.0000	0.0000
13	Drugs and Chemical	0.0001	0.0000	0.0001	0.0001	0.0045	0.0319	0.0000	0.0000	0.0000	0.0060	0.0000	0.0132	0.0000
14	Refineries	0.0287	0.0266	0.0164	0.0942	0.0004	0.0000	0.0000	0.0011	0.0005	0.0000	0.0000	0.0086	0.0000
15	Rubber and Plastic Products	0.0833	0.0118	0.0390	0.0731	0.0000	0.0388	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0287	0.0000	0.0000	0.0000	0.0000	0.0000	0.0062	0.0000
17	Fabricated Metal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing (Miscella)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Electricity Generation	0.0032	0.0006	0.0015	0.0022	0.0082	0.0015	0.0099	0.0024	0.0134	0.0065	0.0000	0.0070	0.0000
21	Water Supply	0.0028	0.0005	0.0022	0.0012	0.0000	0.0000	0.0083	0.0059	0.0053	0.0034	0.0000	0.0052	0.0000
22	Building and Construction	0.0919	0.0028	0.0165	0.0143	0.0519	0.0186	0.0000	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000
23	Air Transport	0.0275	0.0006	0.0046	0.0228	0.0032	0.0094	0.0176	0.0024	0.0135	0.0073	0.0000	0.0023	0.0000
24	Other Land Transport	0.0197	0.0060	0.0025	0.0585	0.0542	0.0190	0.0112	0.0282	0.0347	0.0209	0.0000	0.0112	0.0000
25	Water Transport	0.0213	0.0010	0.0118	0.0316	0.0035	0.0004	0.0130	0.0013	0.0107	0.0137	0.0000	0.0059	0.0000
26	Railway Transport	0.0091	0.0002	0.0057	0.0254	0.0026	0.0003	0.0011	0.0005	0.0041	0.0002	0.0000	0.0030	0.0000
27	Communication	0.0045	0.0007	0.0083	0.0156	0.0039	0.0097	0.0095	0.0049	0.0184	0.0184	0.0000	0.0141	0.0000
28	Distribution	0.1907	0.0512	0.1308	0.0820	0.0784	0.0103	0.1156	0.0071	0.0354	0.0150	0.0000	0.0214	0.0000
29	Hotels and Restaurants	0.0060	0.0011	0.0067	0.0131	0.0112	0.0000	0.0000	0.0003	0.0003	0.0000	0.0000	0.0000	0.0000
30	Banking and Finance	0.0200	0.0067	0.0182	0.0455	0.0066	0.0000	0.0043	0.0045	0.0039	0.0188	0.0000	0.0148	0.0000
31	Insurance	0.0106	0.0049	0.0068	0.0337	0.0043	0.0000	0.0144	0.0025	0.0043	0.0210	0.0000	0.0135	0.0000
32	Real Estate and Business Ser.	0.0655	0.0177	0.0249	0.0300	0.0458	0.0096	0.0212	0.0100	0.0027	0.0177	0.0000	0.0067	0.0000
33	Housing	0.0066	0.0008	0.0021	0.0008	0.0032	0.0126	0.0109	0.0072	0.0088	0.0127	0.0000	0.0196	0.0000
34	Commty Soc and Per services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	Domestic Inter. Input	0.6349	0.4276	0.3175	0.6086	0.3632	0.2465	0.4916	0.1456	0.1690	0.1803	0.0167	0.1575	0.0000
37	Import	0.6610	0.4500	0.3508	0.6217	0.3690	0.2465	0.4916	0.1459	0.1696	0.1803	0.0167	0.1575	0.0000
38	Total Inter. Input	0.2905	0.1250	0.5818	1.3360	0.4506	0.2087	0.1923	0.2008	0.2404	0.6634	0.0000	0.0762	0.9996
39	Wages	0.0000	0.2687	0.0000	0.0000	0.1051	0.5056	0.2901	0.3777	0.5761	0.1468	0.9833	0.7481	0.0000
40	Operating Surplus	0.1664	0.1460	0.1355	0.0983	0.0752	0.0392	0.0222	0.2756	0.0140	0.0365	0.0000	0.0245	0.0004
41	Capital Consumption Exp	0.0000	0.0104	0.0000	0.0000	0.0000	0.0000	0.0037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
42	Indirect Business Taxes	0.1180	0.0000	0.0682	1.0560	0.0000	0.0000	0.0000	0.0000	0.0000	0.0271	0.0000	0.0064	0.0000
43	Less Subsidies	0.3390	0.5500	0.6492	0.3783	0.6310	0.7535	0.5084	0.8541	0.8304	0.8197	0.9833	0.8425	1.0000
44	Value Added	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
45	Gross Input													

Table 5.8B:TECHNOLOGY MATRIX OF THE 1985 I-O FOR NIGERIA

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Activity Sectors	Agricult	Livestoc	Fishing	Forestry	Crude P	Other Mi	Food	Drink, E	Textiles	Footwe	Wood &	Paper &	Drugs &	Refineri	Rubber	Iron & S	Fabricat	Vehicle	Other M	Electricit	Water S	Buildin	Air Tran
1	Agriculture	0.1347	0.0000	0.0000	0.0000	0.0000	0.0000	0.2073	0.1250	0.1341	0.0000	0.0000	0.0000	0.1015	0.0000	0.0001	0.0479	0.0000	0.0000	0.1326	0.0000	0.0000	0.0000	0.0000
2	Livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0643	0.0000	0.0000	0.0706	0.0000	0.0000	0.0226	0.0000	0.0013	0.0000	0.0000	0.0000	0.0206	0.0000	0.0000	0.0000	0.0000
3	Fishing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2215	0.1572	0.0102	0.0000	0.0916	0.0021	0.0000	0.0023	0.0127	0.0000	0.0000	0.0125	0.0000
5	Crude Petroleum	0.0000	0.0000	0.1962	0.0000	0.0046	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5444	0.0000	0.0000	0.0000	0.0000	0.0123	0.2032	0.1573	0.0018	0.0067
6	Other Mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2143	0.0000	0.0000	0.0245	0.0000	0.0000	0.0794	0.0017
7	Food	0.0000	0.0717	0.0013	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0088	0.0000	0.0000	0.0000	0.0001
8	Drink, Bev. + Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0266	0.0000	0.0000	0.0000	0.0001
9	Textiles	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0830	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000	0.0205	0.0000	0.0000	0.0000	0.0002
10	Footware + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0213	0.0000	0.0000	0.0000	0.0000	0.0117	0.0017	0.0000	0.0305	0.0000	0.0000	0.0000	0.0000	0.0001
11	Wood & Wood Products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0143	0.0000	0.0000	0.0000	0.0013	0.0039	0.0265	0.0203	0.0147	0.0000	0.0000	0.0048	0.0003
12	Paper & Paper products	0.0000	0.0000	0.0001	0.0000	0.0003	0.0000	0.0000	0.0132	0.0000	0.0000	0.0000	0.0201	0.0065	0.0000	0.0090	0.0460	0.0238	0.0325	0.0083	0.0000	0.0000	0.0006	0.0035
13	Drugs and Chemical	0.0009	0.0000	0.0013	0.0000	0.0001	0.0399	0.0000	0.0044	0.0000	0.0000	0.0000	0.0000	0.0999	0.0105	0.0001	0.0220	0.0239	0.1010	0.0082	0.0001	0.0000	0.0063	0.0001
14	Refineries	0.0021	0.0000	0.0057	0.0004	0.0001	0.0627	0.0086	0.0158	0.0117	0.0100	0.0298	0.0134	0.0060	0.0005	0.0111	0.1878	0.0165	0.0305	0.0194	0.0003	0.0003	0.0004	0.0253
15	Rubber and Plastic	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0808	0.0000	0.0000	0.0000	0.0000	0.0629	0.0146	0.0016	0.0000	0.0000	0.0000	0.0000	0.0000	0.0628
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0006	0.0108	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0052	0.0000	0.0021	0.4128	0.1369	0.0487	0.0163	0.0000	0.0000	0.0098	0.0000
17	Fabricated Metal	0.0147	0.0000	0.0000	0.0003	0.0001	0.0161	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0447	0.0000	0.0040	0.0000	0.0000	0.0025	0.0000
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing	0.0087	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0016	0.0000	0.0000	0.0000	0.0000	0.0010	0.0000	0.0000	0.0086	0.0013	0.0000	0.0054	0.0024	0.0016	0.0000	0.0000
20	Electricity	0.0000	0.0000	0.0113	0.0000	0.0001	0.0036	0.0046	0.0090	0.0246	0.0103	0.0086	0.0058	0.0039	0.0120	0.0067	0.0627	0.0031	0.0007	0.0005	0.0023	0.0020	0.0000	0.0028
21	Water Supply	0.0000	0.0000	0.0085	0.0000	0.0001	0.0010	0.0038	0.0048	0.0177	0.0061	0.0049	0.0033	0.0031	0.0080	0.0048	0.0556	0.0040	0.0010	0.0005	0.0014	0.0008	0.0000	0.0008
22	Building and Construction	0.0000	0.0000	0.0000	0.0000	0.0004	0.0077	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0079	0.0099	0.0000	0.0156
23	Air Transport	0.0000	0.0000	0.0002	0.0000	0.0006	0.0044	0.0076	0.0094	0.0029	0.0053	0.0169	0.0044	0.0040	0.0099	0.0052	0.0061	0.0041	0.0071	0.0009	0.0011	0.0005	0.0011	0.0132
24	Other Land Transport	0.0000	0.0000	0.0028	0.0010	0.0133	0.1102	0.0447	0.0423	0.0061	0.0155	0.0386	0.0464	0.0203	0.0968	0.0260	0.2813	0.0313	0.0671	0.0057	0.0078	0.0092	0.0140	0.0204
25	Water Transport	0.0000	0.0000	0.0005	0.0001	0.0008	0.0053	0.0088	0.0105	0.0032	0.0065	0.0107	0.0056	0.0043	0.0081	0.0082	0.0107	0.0026	0.0106	0.0008	0.0019	0.0022	0.0025	0.0182
26	Railway Transport	0.0000	0.0000	0.0008	0.0000	0.0005	0.0152	0.0079	0.0073	0.0030	0.0021	0.0011	0.0034	0.0008	0.0023	0.0069	0.0032	0.0007	0.0008	0.0001	0.0014	0.0005	0.0004	0.0080
27	Communication	0.0000	0.0000	0.0019	0.0000	0.0001	0.0000	0.0024	0.0032	0.0029	0.0013	0.0019	0.0020	0.0016	0.0013	0.0021	0.0099	0.0017	0.0028	0.0002	0.0007	0.0009	0.0009	0.0040
28	Distributive Trade	0.0041	0.0121	0.0084	0.0000	0.0011	0.0003	0.1292	0.0951	0.0448	0.0711	0.1449	0.1018	0.0631	0.0410	0.0638	0.0631	0.0133	0.1176	0.0213	0.0075	0.0069	0.0576	0.2493
29	Hotels and Restaurants	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
30	Banking and Finance	0.0000	0.0000	0.0347	0.0003	0.0006	0.0013	0.0048	0.0058	0.0040	0.0026	0.0025	0.0030	0.0035	0.0035	0.0126	0.0866	0.0056	0.0085	0.0011	0.0057	0.0054	0.0031	0.0185
31	Insurance	0.0000	0.0000	0.0095	0.0001	0.0001	0.0011	0.0010	0.0020	0.0014	0.0005	0.0019	0.0005	0.0007	0.0013	0.0015	0.0242	0.0015	0.0022	0.0006	0.0020	0.0024	0.0011	0.0068
32	Real Estate and Business Ser.	0.0000	0.0000	0.0497	0.0000	0.0024	0.0411	0.0019	0.0017	0.0013	0.0004	0.0007	0.0005	0.0013	0.0004	0.0015	0.0032	0.0010	0.0018	0.0003	0.0688	0.0771	0.0012	0.0604
33	Housing	0.0000	0.0000	0.0042	0.0000	0.0001	0.0000	0.0016	0.0023	0.0015	0.0031	0.0031	0.0036	0.0027	0.0014	0.0021	0.0082	0.0019	0.0010	0.0009	0.0007	0.0031	0.0029	0.0025
34	Commty Soc and Per Services	0.0000	0.0000	0.0013	0.0004	0.0000	0.0225	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0164	0.0000	0.0000	0.0000	0.0000
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	Domestic Inter. Input	0.1652	0.0838	0.3382	0.0026	0.0265	0.3482	0.4986	0.3535	0.3423	0.3077	0.5017	0.3710	0.3665	0.7415	0.3327	1.5764	0.3474	0.4868	0.3843	0.3152	0.2800	0.2030	0.5272
37	Import	0.1688	0.0838	0.3382	0.0026	0.0501	0.3482	0.5450	0.3691	0.3647	0.3321	0.5324	0.4064	0.3982	0.7518	0.5044	1.9656	0.3860	0.5515	0.3939	0.3169	0.2805	0.4814	0.5503
38	Total Inter Input	0.1062	0.0144	0.2668	0.0088	0.0154	0.0259	0.1189	0.1567	0.2200	0.1503	0.1874	0.2123	0.0844	0.0646	0.1435	0.2425	0.1712	0.0476	0.1735	0.3909	0.3642	0.1715	0.1565
39	Wages	0.6964	0.8967	0.3625	0.9768	0.9062	0.6068	0.2643	0.0948	0.2676	0.4006	0.1808	0.2809	0.4412	0.0515	0.2792	0.0000	0.3463	0.3755	0.3073	0.0764	0.0585	0.3454	0.1711
40	Operating Surplus	0.0315	0.0051	0.0287	0.0022	0.0263	0.0191	0.0334	0.0821	0.0595	0.0435	0.0605	0.0499	0.0247	0.0396	0.0345	0.1782	0.0420	0.0162	0.0807	0.2158	0.2968	0.0014	0.1180
41	Captail Consumption Exp.	0.0000	0.0000	0.0037	0.0544	0.0020	0.0000	0.0383	0.2973	0.0882	0.0735	0.0389	0.0504	0.0515	0.0925	0.0383	0.0664	0.0545	0.0092	0.0446	0.0000	0.0000	0.0003	0.0731
42	Indirect Business Taxes	0.0028	0.0000	0.0000	0.0448	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.4526	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0689
43	Less Subsidies	0.8312	0.9162	0.6618	0.9974	0.9499	0.6518	0.4550	0.6309	0.6353	0.6679	0.4676	0.5936	0.6018	0.2482	0.4956	-0.9656	0.6140	0.4485	0.6061	0.6831	0.7195	0.5186	0.4497
44	Value Added	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
45	Gross Input																							

		Table 5.8B (Contd.):TECHNOLOGY MATRIX OF THE 1985 I-O FOR NIGERIA											
	Activity Sectors	24	25	26	27	28	29	30	31	32	33	34	35
1	Agriculture	Other La	Water T	Railway	Commu	Distribut	Hotel &	Banking	Insuranc	Real Es	Housing	Com. S	Pro. Gov. Ser
2	Livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.1559	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	Fishing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0545	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0603	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	Crude Petroleum	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	Other Mining	0.2452	0.0098	0.0291	0.0049	0.0156	0.0000	0.0035	0.0051	0.0000	0.0000	0.0000	0.0000
7	Food	0.0024	0.0027	0.0063	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	Drink, Bev. + Tobacco	0.0000	0.0002	0.0008	0.0002	0.0000	0.0316	0.0013	0.0010	0.0010	0.0000	0.0000	0.0000
9	Textiles	0.0000	0.0002	0.0002	0.0000	0.0000	0.0191	0.0007	0.0005	0.0010	0.0000	0.0028	0.0000
10	Footware + Leather	0.0000	0.0003	0.0005	0.0019	0.0023	0.0000	0.0003	0.0003	0.0012	0.0000	0.0000	0.0000
11	Wood & Wood Products	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0016	0.0000
12	Paper & Paper products	0.0000	0.0022	0.0022	0.0000	0.0017	0.0000	0.0003	0.0008	0.0000	0.0000	0.0000	0.0000
13	Drugs and Chemical	0.0008	0.0051	0.0123	0.0192	0.0021	0.0032	0.0397	0.0833	0.0041	0.0000	0.0000	0.0000
14	Refineries	0.0000	0.0001	0.0001	0.0002	0.0029	0.0000	0.0000	0.0000	0.0028	0.0000	0.0099	0.0000
15	Rubber and Plastic	0.0224	0.0292	0.0751	0.0009	0.0000	0.0000	0.0006	0.0035	0.0000	0.0000	0.0065	0.0000
16	Iron and Steel	0.0099	0.0642	0.0969	0.0000	0.0022	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000
17	Fabricated Metal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Electricity	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	Water Supply	0.0005	0.0014	0.0018	0.0101	0.0047	0.0079	0.0014	0.0107	0.0017	0.0000	0.0053	0.0000
22	Building and Construction	0.0004	0.0020	0.0009	0.0067	0.0056	0.0065	0.0034	0.0042	0.0009	0.0000	0.0039	0.0000
23	Air Transport	0.0023	0.0152	0.0114	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000
24	Other Land Transport	0.0005	0.0053	0.0182	0.0027	0.0050	0.0035	0.0014	0.0108	0.0019	0.0000	0.0017	0.0000
25	Water Transport	0.0061	0.0533	0.0466	0.0672	0.1766	0.0088	0.0263	0.0804	0.0068	0.0000	0.0167	0.0000
26	Railway Transport	0.0008	0.0109	0.0252	0.0051	0.0003	0.0021	0.0007	0.0183	0.0030	0.0000	0.0045	0.0000
27	Communication	0.0002	0.0053	0.0203	0.0022	0.0002	0.0001	0.0003	0.0033	0.0001	0.0000	0.0020	0.0000
28	Distributive Trade	0.0006	0.0077	0.0124	0.0096	0.0027	0.0075	0.0042	0.0301	0.0049	0.0000	0.0162	0.0000
29	Hotels and Restaurants	0.0471	0.2730	0.1688	0.0069	0.0125	0.1223	0.0163	0.0744	0.0121	0.0000	0.0148	0.0000
30	Banking and Finance	0.0009	0.0061	0.0104	0.0285	0.0000	0.0000	0.0002	0.0002	0.0000	0.0000	0.0000	0.0000
31	Insurance	0.0056	0.0195	0.0363	0.0140	0.0000	0.0034	0.0066	0.0416	0.0079	0.0000	0.0194	0.0000
32	Real Estate and Business Ser.	0.0042	0.0091	0.0269	0.0058	0.0000	0.0011	0.0045	0.0227	0.0056	0.0000	0.0170	0.0000
33	Housing	0.0149	0.0568	0.0756	0.1864	0.0002	0.0137	0.0139	0.0495	0.0066	0.0000	0.0119	0.0000
34	Commty Soc and Per Services	0.0007	0.0019	0.0006	0.0132	0.0153	0.0086	0.0105	0.0686	0.0065	0.0000	0.0175	0.0000
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	Domestic Inter. Input	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	Import	0.3658	0.5816	0.6791	0.3883	0.2500	0.5102	0.1359	0.5094	0.0689	0.0167	0.1550	0.0000
38	Total Inter Input	0.3847	0.6122	0.6895	0.3932	0.2500	0.5102	0.1360	0.5099	0.0689	0.0167	0.1550	0.0000
39	Wages	0.2018	0.1594	0.1285	0.4405	0.2077	0.2018	0.3999	0.3558	0.0667	0.0000	0.0747	0.9954
40	Operating Surplus	0.2810	0.1928	0.1218	0.0852	0.5057	0.2671	0.4020	0.1094	0.8594	0.9833	0.7467	0.0000
41	Captail Consumption Exp.	0.1654	0.0312	0.0451	0.0874	0.0366	0.0179	0.0621	0.0249	0.0095	0.0000	0.0235	0.0046
42	Indirect Business Taxes	0.0034	0.0044	0.0151	0.0000	0.0000	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
43	Less Subsidies	0.0362	0.0000	0.0000	0.0063	0.0000	0.0000	0.0000	0.0000	0.0045	0.0000	0.0000	0.0000
44	Value Added	0.6153	0.3878	0.3105	0.6068	0.7500	0.4898	0.8640	0.4901	0.9311	0.9833	0.8450	1.0000
45	Gross Input	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Table 5.8C:TECHNOLOGY MATRIX OF THE 1995 I-O FOR NIGERIA

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	Activity Sectors	Agricultu	Livestock	Fishing	Forestry	Crude F	Other M	Food	Drink, B	Textiles	Footwar	Wood &	Paper &	Drugs &	Refineri	Rubber &	Iron & S	Fabricat	Vehicle A	Other m	Electricit	Water S	Building
1	Agriculture	0.0927	0.0434	0.0000	0.0000	0.0000	0.0000	0.4694	0.0000	0.1560	0.0000	0.0000	0.0000	0.0896	0.0000	0.1736	0.0492	0.0000	0.0000	0.0448	0.0000	0.0000	0.0000
2	Livestock	0.0000	0.0059	0.0000	0.0000	0.0000	0.0000	0.1099	0.0000	0.0000	0.1412	0.0000	0.0000	0.1134	0.0000	0.1885	0.0000	0.0000	0.0000	0.0154	0.0000	0.0000	0.0000
3	Fishing	0.0000	0.0000	0.0014	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0012	0.0000	0.0000	0.0000	0.0032	0.0962	0.0107	0.0000	0.1001	0.0327	0.0560	0.0392	0.1220	0.0000	0.0000	0.0331
5	Crude Petroleum	0.0000	0.0000	0.1873	0.0000	0.0098	0.0445	0.1042	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0613	0.0000	0.0065	0.0000	0.0000	0.0502	0.0228	0.0015	0.0584
6	Other Mining	0.0000	0.0000	0.0072	0.0000	0.0002	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0038	0.0000	0.0013	0.0000	0.0000	0.0031	0.0013	0.0000	0.0016
7	Food	0.0000	0.0378	0.0008	0.0000	0.0000	0.0000	0.0000	0.1498	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	Drink, Bev + Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	Textiles	0.0000	0.0000	0.0000	0.0000	0.0001	0.0039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1346	0.1409	0.0000
10	Footwear + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0070
11	Wood & Wood	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	Paper & Paper	0.0000	0.0000	0.0002	0.0000	0.0002	0.0099	0.0217	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0196	0.0000	0.0000	0.0000
13	Drugs and Chem.	0.0118	0.0000	0.0002	0.0000	0.0010	0.0427	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0051	0.0000	0.0000	0.0000
14	Refineries	0.0038	0.0000	0.0068	0.0079	0.0004	0.0086	0.0433	0.0743	0.0487	0.0698	0.0769	0.4089	0.1614	0.2328	0.1924	0.2270	0.3557	0.3234	0.0000	0.0465	0.0360	0.0041
15	Rubber Plastic	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0599
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0013	0.1336	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	Fabricated Metal	0.0157	0.0000	0.0004	0.0087	0.0003	0.0056	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	Vehicle Assem.	0.0274	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0035	0.0025	0.0000	0.0000	0.0000
19	Other Manufac.	0.0048	0.0000	0.0000	0.0149	0.0000	0.0000	0.0000	0.0104	0.0000	0.0000	0.0000	0.0000	0.0076	0.0000	0.0000	0.0045	0.0062	0.0000	0.0100	0.0581	0.0876	0.0037
20	Electricity	0.0000	0.0000	0.0180	0.0002	0.0003	0.0044	0.0000	0.0000	0.0000	0.0000	0.0000	0.0064	0.0031	0.0027	0.0137	0.0049	0.0048	0.0122	0.0050	0.0858	0.1110	0.0019
21	Water Supply	0.0000	0.0000	0.0017	0.0000	0.0001	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0027	0.0036	0.0008	0.0056	0.0010	0.0010	0.0012	0.0038	0.0083	0.0012	0.0007
22	Building & Constructions	0.0016	0.0000	0.0000	0.0021	0.0007	0.0327	0.0036	0.0031	0.0138	0.0120	0.0070	0.0171	0.0354	0.0099	0.0117	0.0072	0.0057	0.0028	0.0044	0.0307	0.0080	0.0066
23	Air Transport	0.0003	0.0001	0.0010	0.0011	0.0003	0.0068	0.0001	0.0001	0.0001	0.0002	0.0001	0.0002	0.0011	0.0009	0.0030	0.0018	0.0006	0.0007	0.0015	0.0074	0.0004	0.0035
24	Other Land Transport	0.0029	0.0001	0.0031	0.0025	0.0321	0.3180	0.0009	0.0009	0.0009	0.0054	0.0028	0.0079	0.0411	0.0541	0.0698	0.0519	0.0655	0.0000	0.1162	0.0094	0.0003	0.0055
25	Water Transport	0.0001	0.0000	0.0002	0.0008	0.0002	0.0008	0.0003	0.0002	0.0003	0.0014	0.0004	0.0019	0.0002	0.0002	0.0006	0.0005	0.0005	0.0000	0.0003	0.0046	0.0013	0.0027
26	Railway Transport	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000
27	Communications	0.0000	0.0000	0.0019	0.0000	0.0002	0.0010	0.0004	0.0009	0.0002	0.0021	0.0022	0.0087	0.0030	0.0019	0.0076	0.0017	0.0013	0.0000	0.0099	0.0013	0.0003	0.0006
28	Distribution	0.0049	0.0036	0.0553	0.0000	0.0024	0.0150	0.0015	0.0017	0.0008	0.0044	0.0033	0.1471	0.0520	0.0739	0.0718	0.0385	0.0933	0.0000	0.1190	0.0096	0.0120	0.0026
29	Hotels & Restaurants	0.0000	0.0000	0.0000	0.0000	0.0005	0.0057	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	Banking + Finance	0.0000	0.0000	0.0417	0.0000	0.0056	0.0398	0.0013	0.0060	0.0091	0.0130	0.0250	0.1356	0.0313	0.0401	0.0727	0.0557	0.0716	0.0000	0.1336	0.0739	0.0571	0.0031
31	Insurance	0.0000	0.0000	0.0024	0.0000	0.0001	0.0006	0.0003	0.0002	0.0002	0.0005	0.0003	0.0007	0.0002	0.0003	0.0010	0.0004	0.0008	0.0000	0.0029	0.0148	0.0223	0.0009
32	Real Estate & Business Ser.	0.0000	0.0000	0.0027	0.0000	0.0004	0.0013	0.0006	0.0003	0.0002	0.0014	0.0007	0.0061	0.0009	0.0012	0.0030	0.0008	0.0007	0.0000	0.0024	0.0223	0.0028	0.0040
33	Housing	0.0000	0.0000	0.0041	0.0000	0.0003	0.0004	0.0001	0.0003	0.0002	0.0001	0.0002	0.0060	0.0032	0.0011	0.0088	0.0028	0.0059	0.0000	0.0204	0.0029	0.0000	0.0019
34	Comty Soc & Per Services	0.0000	0.0000	0.0013	0.0002	0.0001	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	Producer of Gov. Services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	Domestic Inter. Input	0.1661	0.0909	0.3377	0.0387	0.0565	0.6779	0.7606	0.2480	0.2304	0.2515	0.1222	0.8456	0.5579	0.4850	0.9240	0.4883	0.6697	0.3830	0.6927	0.5346	0.4827	0.2019
37	Import	0.1697	0.0909	0.3377	0.0387	0.0777	0.6939	0.7623	0.2678	0.2325	0.2527	0.1245	0.9370	0.6028	0.5257	0.9259	0.5243	0.6817	0.4869	0.7124	0.5370	0.4843	0.4789
38	Total Inter. Input	0.0309	0.0057	0.1451	0.0061	0.0026	0.1361	0.0116	0.0056	0.0084	0.0153	0.0137	0.0083	0.0352	0.0323	0.0087	0.0225	0.0483	0.0404	0.0161	0.5145	0.4460	0.1042
39	Wages	0.8015	0.8951	0.5116	0.9326	0.9151	0.1002	0.1241	0.6949	0.7043	0.6422	0.6412	0.0037	0.3121	0.3676	0.0481	0.3938	0.2398	0.3995	0.2508	-0.1695	-0.0304	0.4158
40	Operating Surplus	0.0058	0.0011	0.0050	0.0008	0.0040	0.0572	0.0161	0.0015	0.0048	0.0081	0.0104	0.0438	0.0104	0.0073	0.0106	0.0018	0.0164	0.0215	0.0037	0.1677	0.1206	0.0007
41	Capital Consumption Exp.	0.0000	0.0072	0.0006	0.0217	0.0005	0.0126	0.0859	0.0301	0.0499	0.0816	0.2102	0.0073	0.0396	0.0671	0.0066	0.0577	0.0138	0.0516	0.0169	0.0000	0.0000	0.0005
42	Indirect Business Taxes	0.0079	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0497	0.0205	0.0000
43	Less Subsidies	0.8303	0.9091	0.6623	0.9613	0.9223	0.3061	0.2377	0.7322	0.7675	0.7473	0.8755	0.0630	0.3972	0.4743	0.0741	0.4757	0.3183	0.5131	0.2876	0.4630	0.5157	0.5211
44	Value Added	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

		Table 5.8C (Contd.):TECHNOLOGY MATRIX OF THE 1995 I-O FOR NIGERIA												
	Activity Sectors	23	24	25	26	27	28	29	30	31	32	33	34	35
1	Agriculture	Air Transp	Other La	Water Tr	Railway	Commu	Distributi	Hotels &	Banking	Insuran	Real Es	Housing	Com. Se	Pro. Gov. Ser
2	Livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.1070	0.1051	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	Fishing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0367	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0406	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	Crude Petroleum	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	Other Mining	0.1686	0.2151	0.1977	0.0288	0.0038	0.0361	0.0000	0.0284	0.1818	0.0000	0.0000	0.0000	0.0000
7	Food	0.0221	0.0021	0.0263	0.0421	0.0008	0.0012	0.0000	0.0017	0.0035	0.0000	0.0000	0.0000	0.0000
8	Drink, Bev + Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	Textiles	0.0000	0.0000	0.0000	0.0000	0.0000	0.0042	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	Footwear + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	Wood & Wood	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0003	0.0016	0.0000	0.0078	0.0000
12	Paper & Paper	0.1892	0.0320	0.0098	0.2045	0.0000	0.0000	0.0000	0.0001	0.0002	0.0058	0.0000	0.0028	0.0000
13	Drugs and Chem.	0.0000	0.0000	0.0000	0.0000	0.0160	0.0039	0.0000	0.0027	0.0132	0.0041	0.0000	0.0055	0.0000
14	Refineries	0.0000	0.0000	0.0000	0.0000	0.0000	0.0306	0.0290	0.0008	0.0033	0.0030	0.0000	0.0170	0.0000
15	Rubber Plastic	0.0751	0.0094	0.1011	0.0452	0.0049	0.0024	0.0074	0.0004	0.0030	0.0041	0.0000	0.0028	0.0000
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0024	0.0049	0.0000	0.0000	0.0000
17	Fabricated Metal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0026	0.0000	0.0001	0.0011	0.0240	0.0000	0.0390	0.0000
18	Vehicle Assem.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufac.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Electricity	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0074	0.0000
21	Water Supply	0.0030	0.0005	0.0261	0.0144	0.0119	0.0002	0.0050	0.0022	0.0216	0.0075	0.0000	0.0036	0.0000
22	Building & Constructions	0.0004	0.0003	0.0010	0.0627	0.0038	0.0001	0.0046	0.0011	0.0182	0.0039	0.0000	0.0016	0.0000
23	Air Transport	0.0187	0.0030	0.0238	0.0812	0.0024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0411	0.0000	0.0000
24	Other Land Transport	0.0076	0.0011	0.0034	0.0894	0.0245	0.0009	0.0015	0.0023	0.0520	0.0114	0.0000	0.0035	0.0000
25	Water Transport	0.0384	0.0123	0.0335	0.0473	0.0339	0.0414	0.0076	0.0149	0.0828	0.0363	0.0000	0.0130	0.0000
26	Railway Transport	0.0024	0.0007	0.0024	0.0863	0.0135	0.0003	0.0007	0.0004	0.0015	0.0035	0.0000	0.0004	0.0000
27	Communications	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	Distribution	0.0108	0.0009	0.0060	0.0349	0.0090	0.0001	0.0051	0.0037	0.0478	0.0212	0.0000	0.0053	0.0000
29	Hotels & Restaurants	0.1103	0.0699	0.1796	0.0863	0.0064	0.0063	0.0824	0.0139	0.1096	0.0525	0.0000	0.0101	0.0000
30	Banking + Finance	0.0086	0.0013	0.0037	0.0113	0.0266	0.0029	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
31	Insurance	0.0554	0.0212	0.0139	0.0699	0.0171	0.0000	0.0028	0.0209	0.1581	0.0547	0.0080	0.0000	0.0000
32	Real Estate & Business Ser.	0.0017	0.0005	0.0015	0.0000	0.0014	0.0000	0.0003	0.0004	0.0014	0.0039	0.0002	0.0000	0.0000
33	Housing	0.0000	0.0002	0.0000	0.0103	0.1738	0.0002	0.0093	0.0002	0.0012	0.0285	0.0000	0.0053	0.0000
34	Comty Soc & Per Services	0.0006	0.0009	0.0011	0.0000	0.0123	0.0371	0.0059	0.0110	0.0514	0.0281	0.0000	0.0000	0.0000
35	Producer of Gov. Services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0055	0.0158	0.0000
36	Domestic Inter. Input	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	Import	0.7129	0.3714	0.6310	0.9147	0.3620	0.2773	0.3440	0.1060	0.7545	0.2989	0.0548	0.1409	0.0000
38	Total Inter. Input	0.7175	0.3966	0.6336	0.9147	0.3666	0.2773	0.3440	0.1061	0.7545	0.2989	0.0548	0.1409	0.0000
39	Wages	0.1068	0.0247	0.1546	0.5560	0.4489	0.0488	0.0991	0.1810	0.1181	0.2048	0.0000	0.0363	0.9995
40	Operating Surplus	0.1105	0.5528	0.1217	0.4738	0.1162	0.6577	0.5459	0.4802	0.1073	0.4307	0.9452	0.8200	0.0000
41	Capital Consumption Exp.	0.0596	0.0227	0.0839	0.0473	0.0845	0.0063	0.0073	0.1837	0.0114	0.0227	0.0000	0.0033	0.0005
42	Indirect Business Taxes	0.0131	0.0032	0.0200	0.0113	0.0508	0.0099	0.0037	0.0489	0.0088	0.0429	0.0000	0.0000	0.0000
43	Less Subsidies	0.0075	0.0000	0.0138	1.0031	0.0671	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000
44	Value Added	0.2825	0.6034	0.3664	0.0853	0.6334	0.7227	0.6560	0.8939	0.2455	0.7011	0.9452	0.8591	1.0000
		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

	Table 5.8D:TECHNOLOGY MATRIX OF THE 2000 I-O FOR NIGERIA																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	Activity Sectors	Agricultu	Livestock	Fishing	Forestry	Crude P	Other M	Food	Drink, Bi	Textiles	Footwe	Wood &	Paper &	Drugs &	Refineri	Rubber	Iron & St	Fabricat	Vehicle	Other M	Electricit	Water Su	Building
1	Agriculture	0.0423	0.0414	0.7093	0.0000	0.0000	0.0000	0.3486	0.2120	0.2424	0.0000	0.0000	0.0000	0.3062	0.0000	0.0004	0.0230	0.0000	0.0000	0.1807	0.0000	0.0000	0.0000
2	Livestock	0.0000	0.0126	0.0000	0.0000	0.0000	0.0000	0.0620	0.0000	0.0000	0.0916	0.0000	0.0000	0.0390	0.0000	0.0019	0.0000	0.0000	0.0000	0.0511	0.0000	0.0000	0.0000
3	Fishing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3192	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0135	0.0124	0.0013	0.0000	0.0099	0.0000	0.0000	0.0002	0.0014	0.0000	0.0000	0.0012
5	Crude Petroleum	0.0000	0.0000	0.0096	0.0000	0.0072	0.0082	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5750	0.0000	0.0000	0.0000	0.0000	0.1219	0.0700	0.0724	0.0284
6	Other Mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0103	0.0000	0.0000	0.0203	0.0000	0.0000	0.0151
7	Food	0.0000	0.0661	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	Drink, Bev. + Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	Textiles	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3378	0.1158	0.0000
10	Footware + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0172
11	Wood & Wood Products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	Paper & Paper products	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0426	0.0000	0.0000	0.0000
13	Drugs and Chemical	0.0042	0.0000	0.0000	0.0000	0.0001	0.0199	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0142	0.0000	0.0000	0.0000
14	Refineries	0.0019	0.0000	0.0000	0.0010	0.0000	0.0058	0.0171	0.0318	0.0251	0.0269	0.0527	0.0306	0.0215	0.0008	0.0345	0.1071	0.0469	0.0865	0.0094	0.0057	0.0213	0.0015
15	Rubber and Plastic	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0650
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0045	0.0667	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	Fabricated Metal	0.0072	0.0000	0.0000	0.0008	0.0000	0.0015	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000
18	Vehicle Assembly	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0187	0.0026	0.0000	0.0000
19	Other Manufacturing	0.0026	0.0000	0.0000	0.0079	0.0000	0.0000	0.0000	0.0078	0.0000	0.0000	0.0000	0.0000	0.0083	0.0000	0.0000	0.0118	0.0089	0.0000	0.0163	0.0231	0.0134	0.0142
20	Electricity	0.0000	0.0000	0.0000	0.0018	0.0000	0.0008	0.0009	0.0027	0.0090	0.0047	0.0021	0.0020	0.0006	0.0030	0.0038	0.0068	0.0015	0.0004	0.0008	0.0206	0.0271	0.0004
21	Water Supply	0.0000	0.0000	0.0000	0.0004	0.0000	0.0006	0.0011	0.0005	0.0016	0.0004	0.0006	0.0004	0.0025	0.0004	0.0004	0.0011	0.0008	0.0002	0.0002	0.0141	0.0153	0.0005
22	Building and Construction	0.0074	0.0000	0.0000	0.0082	0.0005	0.0215	0.0000	0.0211	0.0202	0.0624	0.0623	0.0000	0.0196	0.0106	0.0024	0.0003	0.0056	0.0011	0.0000	0.0910	0.0464	0.0205
23	Air Transport	0.0018	0.0000	0.0000	0.0012	0.0011	0.0909	0.0035	0.0046	0.0012	0.0020	0.0029	0.0021	0.0001	0.0048	0.0062	0.0118	0.0085	0.0027	0.0006	0.0018	0.0124	0.0010
24	Other Land Transport	0.0041	0.0000	0.0000	0.0052	0.0085	0.0675	0.1917	0.0362	0.0076	0.0176	0.0296	0.0377	0.0303	0.0459	0.0352	0.0390	0.0231	0.0693	0.0282	0.0108	0.0784	0.0147
25	Water Transport	0.0000	0.0000	0.0000	0.0003	0.0000	0.0007	0.0002	0.0006	0.0002	0.0015	0.0011	0.0009	0.0006	0.0005	0.0012	0.0003	0.0010	0.0005	0.0005	0.0002	0.0060	0.0005
26	Railway Transport	0.0000	0.0000	0.0000	0.0003	0.0000	0.0101	0.0005	0.0004	0.0006	0.0024	0.0019	0.0002	0.0003	0.0003	0.0003	0.0002	0.0001	0.0001	0.0000	0.0002	0.0022	0.0000
27	Communication	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0014	0.0013	0.0008	0.0007	0.0010	0.0012	0.0004	0.0014	0.0012	0.0011	0.0017	0.0003	0.0004	0.0026	0.0004
28	Distributive Trade	0.0228	0.0146	0.0072	0.0000	0.0016	0.0010	0.1886	0.1399	0.0702	0.1398	0.1869	0.1704	0.1653	0.0442	0.1453	0.0263	0.0275	0.2441	0.0362	0.0158	0.1457	0.0084
29	Hotels and Restaurants	0.0000	0.0000	0.0000	0.0000	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	Banking and Finance	0.0000	0.0000	0.0000	0.0000	0.0003	0.0004	0.0035	0.0050	0.0042	0.0021	0.0019	0.0018	0.0051	0.0020	0.0161	0.0235	0.0063	0.0101	0.0009	0.0079	0.1097	0.0008
31	Insurance	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0009	0.0009	0.0002	0.0011	0.0011	0.0012	0.0006	0.0007	0.0005	0.0003	0.0009	0.0013	0.0004	0.0029	0.0069	0.0003
32	Real Estate and Business Ser.	0.0000	0.0000	0.0000	0.0000	0.0002	0.0302	0.0009	0.0009	0.0007	0.0003	0.0003	0.0003	0.0011	0.0002	0.0012	0.0004	0.0007	0.0013	0.0006	0.0067	0.0669	0.0032
33	Housing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0007	0.0005	0.0012	0.0008	0.0012	0.0014	0.0003	0.0009	0.0007	0.0008	0.0004	0.0163	0.0003	0.0037	0.0007
34	Commty Soc and Per Services	0.0000	0.0000	0.0000	0.0036	0.0000	0.1259	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	Domestic Inter. Input	0.1197	0.1348	0.7262	0.0309	0.0250	0.4523	0.8210	0.4664	0.3850	0.3549	0.3584	0.2622	0.6048	0.6890	0.2617	0.2641	0.1336	0.4388	0.8647	0.6093	0.7461	0.1940
37	Import	0.1202	0.1348	0.7262	0.0309	0.4664	0.4579	0.8210	0.4667	0.3922	0.3594	0.4422	0.2759	0.6290	0.7746	0.2863	0.6619	0.2389	0.7095	0.8792	0.6125	0.7666	0.1961
38	Total Inter Input	0.0859	0.0135	0.1388	0.0086	0.0092	0.0238	0.0456	0.0300	0.0316	0.0361	0.0380	0.0376	0.0577	0.0448	0.0635	0.0453	0.0442	0.0633	0.0893	0.5996	2.0291	0.2080
39	Wages	0.7894	0.8295	0.1316	0.9322	0.5200	0.5122	0.0547	0.2681	0.3886	0.4251	0.3652	0.5170	0.1672	0.0986	0.4870	0.1499	0.5359	0.1481	0.0124	-0.4641	-2.6099	0.5852
40	Operating Surplus	0.0055	0.0007	0.0025	0.0004	0.0025	0.0061	0.0071	0.0026	0.0078	0.0146	0.0043	0.0087	0.0214	0.0010	0.0118	0.0000	0.0133	0.0144	0.0079	0.0722	0.1555	0.0005
41	Captail Consumption Exp.	0.0001	0.0214	0.0009	0.0278	0.0019	0.0000	0.0716	0.2325	0.1798	0.1648	0.1503	0.1608	0.1247	0.0810	0.1514	0.1430	0.1677	0.0648	0.0113	0.1911	0.7024	0.0103
42	Indirect Business Taxes	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0113	0.0437	0.0000
43	Less Subsidies	0.8798	0.8652	0.2738	0.9691	0.5336	0.5421	0.1790	0.5333	0.6078	0.6406	0.5578	0.7241	0.3710	0.2254	0.7137	0.3381	0.7611	0.2905	0.1208	0.3875	0.2334	0.8039
44	Value Added	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

		Table 5.8D (Contd.):TECHNOLOGY MATRIX OF THE 2000 I-O FOR NIGERIA													
		23	24	25	26	27	28	29	30	31	32	33	34	35	
	Activity Sectors	Air Tran	Other La	Water T	Railway	Commu	Distributi	Hotel &	Banking	Insuranc	Real Est	Housing	Com. Se	Pro. Gov. Ser	
1	Agriculture	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0737	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0306
2	Livestock	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0205	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0019
3	Fishing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6972	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0044
4	Forestry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
5	Crude Petroleum	0.5125	0.3691	0.0382	0.0710	0.0150	0.0668	0.0000	0.1899	0.1598	0.0000	0.0000	0.0000	0.0000	0.0315
6	Other Mining	0.0011	0.0002	0.0130	0.0225	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004
7	Food	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014
8	Drink, Bev. + Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002
9	Textiles	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005
10	Footware + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0087	0.0000	0.0000	0.0031	0.0000	0.0002
11	Wood & Wood Products	0.0271	0.0092	0.0141	0.0342	0.0000	0.0000	0.0000	0.0001	0.0010	0.0001	0.0000	0.0021	0.0000	0.0004
12	Paper & Paper products	0.0000	0.0000	0.0000	0.0000	0.0164	0.0019	0.0000	0.0005	0.0076	0.0014	0.0000	0.0033	0.0000	0.0005
13	Drugs and Chemical	0.0000	0.0000	0.0000	0.0000	0.0000	0.0288	0.0121	0.0000	0.0000	0.0007	0.0000	0.0103	0.0000	0.0046
14	Refineries	0.0149	0.0029	0.0249	0.0249	0.0020	0.0003	0.0001	0.0001	0.0023	0.0010	0.0000	0.0006	0.0000	0.0047
15	Rubber and Plastic	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0033	0.0531	0.0004	0.0000	0.0000	0.0000	0.0007
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0186	0.0000	0.0015	0.0188	0.1525	0.0000	0.0612	0.0000	0.0053
17	Fabricated Metal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0051
19	Other Manufacturing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0045	0.0000	0.0011
20	Electricity	0.0002	0.0000	0.0033	0.0023	0.0032	0.0000	0.0005	0.0003	0.0103	0.0008	0.0000	0.0008	0.0000	0.0004
21	Water Supply	0.0004	0.0001	0.0035	0.0038	0.0019	0.0006	0.0006	0.0004	0.0036	0.0006	0.0000	0.0006	0.0000	0.0002
22	Building and Construction	0.0116	0.0075	0.0142	0.0156	0.0069	0.0000	0.0000	0.0000	0.0000	0.0438	0.0433	0.0000	0.0000	0.0046
23	Air Transport	0.0017	0.0003	0.0116	0.0421	0.0030	0.0028	0.0002	0.0022	0.0159	0.0045	0.0000	0.0009	0.0000	0.0017
24	Other Land Transport	0.0123	0.0131	0.0290	0.0454	0.0906	0.0463	0.0036	0.0185	0.0043	0.0217	0.0000	0.0176	0.0000	0.0168
25	Water Transport	0.0001	0.0001	0.0006	0.0023	0.0008	0.0000	0.0005	0.0001	0.0046	0.0001	0.0000	0.0002	0.0000	0.0001
26	Railway Transport	0.0005	0.0000	0.0004	0.0053	0.0006	0.0000	0.0003	0.0001	0.0047	0.0001	0.0000	0.0000	0.0000	0.0001
27	Communication	0.0010	0.0004	0.0165	0.0070	0.0055	0.0016	0.0011	0.0016	0.0243	0.0051	0.0000	0.0027	0.0000	0.0004
28	Distributive Trade	0.0795	0.0243	0.0283	0.0428	0.0193	0.2995	0.0230	0.0396	0.0141	0.0622	0.0000	0.0254	0.0000	0.0558
29	Hotels and Restaurants	0.0216	0.0060	0.0198	0.0137	0.1176	0.0000	0.0000	0.0005	0.0046	0.0000	0.0000	0.0000	0.0000	0.0006
30	Banking and Finance	0.0105	0.0032	0.0040	0.0178	0.0033	0.0000	0.0002	0.0041	0.0145	0.0058	0.0009	0.0000	0.0000	0.0011
31	Insurance	0.0011	0.0001	0.0057	0.0036	0.0017	0.0000	0.0001	0.0005	0.0073	0.0004	0.0002	0.0000	0.0000	0.0001
32	Real Estate and Business Ser.	0.0118	0.0044	0.0095	0.0038	0.0461	0.0001	0.0025	0.0001	0.0018	0.0086	0.0000	0.0034	0.0000	0.0005
33	Housing	0.0006	0.0001	0.0040	0.0141	0.0041	0.0108	0.0007	0.0020	0.0347	0.0037	0.0000	0.0000	0.0000	0.0015
34	Commty Soc and Per Services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0164	0.0774	0.0000	0.0014
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	Domestic Inter. Input	0.7083	0.4413	0.2409	0.3722	0.3379	0.4795	0.8369	0.2661	0.3959	0.3135	0.0609	0.2139	0.0000	0.1804
37	Import	0.7190	0.4451	0.2721	0.3963	0.3396	0.4813	0.8389	0.2662	0.3963	0.6196	0.0625	0.2142	0.3197	0.3858
38	Total Inter Input	0.0264	0.0121	0.5041	0.2390	1.2156	0.1085	0.0637	0.1268	0.4402	0.0717	0.0000	0.0558	0.6800	0.0833
39	Wages	0.1877	0.5207	0.0807	0.3732	-0.7940	0.3682	0.0615	0.3321	0.0371	0.1065	0.9375	0.7291	0.0000	0.5046
40	Operating Surplus	0.0330	0.0115	0.0781	0.0093	0.0460	0.0041	0.0015	0.1589	0.0834	0.0021	0.0000	0.0011	0.0003	0.0055
41	Captail Consumption Exp.	0.0361	0.0106	0.0762	0.0121	0.2295	0.0380	0.0344	0.1161	0.0431	0.2002	0.0000	0.0000	0.0000	0.0211
42	Indirect Business Taxes	0.0021	0.0000	0.0111	0.0300	0.0367	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0003
43	Less Subsidies	0.2810	0.5549	0.7279	0.6037	0.6604	0.5187	0.1611	0.7338	0.6037	0.3804	0.9375	0.7858	0.6803	0.6142
44	Value Added	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Table 5.9A: LEONTIEF INVERSE MATRIX 1981FOR NIGERIA																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		Agricultur	Livestoc	Fishing	Forestry	Oil (Petr	Other M	Food	Drink, Be	Textiles	Footwea	Wood +	Paper +	Drugs +	Refineri	Rubber	Iron + St	Fabricat	Vehicle	Other Ma	Electricity	Water S
1	Agriculture	1.1042	0.0619	0.0568	0.0000	0.0048	0.0410	0.8153	0.4703	0.1403	0.2594	0.0446	0.1488	0.1327	0.0056	0.0515	0.1692	0.0213	0.0248	0.0665	0.0439	0.0068
2	Livestocks and Dairy Products	0.0001	1.0002	0.0009	0.0000	0.0001	0.0029	0.0010	0.0044	0.0035	0.0982	0.1064	0.0101	0.0237	0.0007	0.0417	0.0291	0.0108	0.0248	0.3866	0.0019	0.0012
3	Fishing	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0002	0.0012	0.0001	0.0000	0.0000	0.0003	0.0003	0.0001	0.0003	0.0045	0.0000	0.0000
4	Forestry	0.0000	0.0001	0.0004	1.0000	0.0000	0.0010	0.0004	0.0007	0.0013	0.0068	0.0481	0.0025	0.0171	0.0004	0.0351	0.0089	0.0023	0.0039	0.0213	0.0009	0.0006
5	Oil (Petroleum)	0.0577	0.0058	0.0901	0.0011	1.0093	0.0965	0.0516	0.0463	0.0484	0.0458	0.0622	0.0599	0.0425	0.6028	0.0822	0.3256	0.0924	0.0751	0.0375	0.0218	0.1070
6	Other Mining	0.0004	0.0004	0.0072	0.0000	0.0040	1.0332	0.0023	0.0044	0.0249	0.0116	0.0230	0.0460	0.0202	0.0036	0.0152	0.1264	0.0714	0.0131	0.0483	0.0642	0.0057
7	Food	0.0002	0.0755	0.0625	0.0000	0.0036	0.0017	1.0012	0.0089	0.0018	0.0648	0.0192	0.0023	0.0338	0.0027	0.0060	0.0134	0.0035	0.0067	0.0551	0.0016	0.0011
8	Drink, Beverage & Tobacco	0.0001	0.0002	0.0005	0.0000	0.0025	0.0004	0.0026	1.0002	0.0001	0.0003	0.0002	0.0002	0.0002	0.0015	0.0003	0.0011	0.0003	0.0003	0.0003	0.0002	0.0004
9	Textiles	0.0004	0.0010	0.0051	0.0000	0.0004	0.0483	0.0031	0.0084	1.0359	0.0486	0.0235	0.0406	0.0040	0.0018	0.0774	0.5718	0.0132	0.0271	0.0166	0.0172	0.0065
10	Footwear and Leather	0.0000	0.0000	0.0001	0.0000	0.0000	0.0007	0.0000	0.0001	0.0003	1.0447	0.0003	0.0003	0.0001	0.0001	0.0003	0.0078	0.0002	0.0004	0.0002	0.0002	0.0001
11	Wood and Woods Products	0.0001	0.0002	0.0039	0.0000	0.0002	0.0047	0.0005	0.0069	0.0032	0.0642	1.0253	0.0368	0.0041	0.0006	0.0238	0.0401	0.0100	0.0092	0.0135	0.0031	0.0051
12	Paper and Paper Products	0.0006	0.0013	0.0034	0.0000	0.0024	0.0072	0.0037	0.0093	0.0211	0.0821	0.0268	1.0347	0.0132	0.0037	0.0317	0.0551	0.0504	0.0130	0.0035	0.0042	0.0047
13	Drugs and Chemical	0.0011	0.0020	0.0096	0.0000	0.0016	0.0263	0.0076	0.0085	0.0363	0.0856	0.1345	0.0223	1.0200	0.0148	0.0347	0.2541	0.0544	0.0958	0.0208	0.0377	0.0119
14	Refineries	0.0219	0.0017	0.0047	0.0011	0.0006	0.0380	0.0190	0.0182	0.0166	0.0121	0.0145	0.0101	0.0103	1.0048	0.0175	0.2304	0.0152	0.0318	0.0150	0.0096	0.0038
15	Rubber and Plastic Products	0.0008	0.0019	0.0033	0.0000	0.0004	0.0099	0.0059	0.0039	0.0114	0.0729	0.0420	0.0066	0.0074	0.0053	1.0340	0.0646	0.0156	0.0257	0.0099	0.0051	0.0063
16	Iron and Steel	0.0006	0.0014	0.0086	0.0000	0.0005	0.0875	0.0032	0.0145	0.0345	0.0114	0.0374	0.0105	0.0057	0.0025	0.0378	1.0444	0.0197	0.0464	0.0292	0.0306	0.0108
17	Fabricated Metal	0.0001	0.0002	0.0007	0.0000	0.0010	0.0045	0.0015	0.0151	0.0025	0.0053	0.0064	0.0287	0.0032	0.0009	0.0327	0.0501	1.0421	0.0265	0.0025	0.0017	0.0009
18	Vehicle Assembly	0.0000	0.0000	0.0001	0.0000	0.0000	0.0003	0.0001	0.0007	0.0003	0.0012	0.0081	0.0015	0.0003	0.0000	0.0025	0.0031	0.0291	1.0024	0.0298	0.0001	0.0001
19	Other Manufacturing (Miscella)	0.0001	0.0003	0.0017	0.0000	0.0002	0.0055	0.0018	0.0110	0.0068	0.0354	0.2735	0.0253	0.0062	0.0006	0.0555	0.0584	0.0250	0.0594	1.0275	0.0025	0.0022
20	Electricity Generation	0.0002	0.0003	0.0479	0.0000	0.0012	0.0351	0.0012	0.0034	0.0117	0.0210	0.0463	0.0109	0.0115	0.0031	0.0345	0.0563	0.0235	0.0195	0.0136	1.0045	0.0026
21	Water Supply	0.0001	0.0002	0.0007	0.0000	0.0001	0.0025	0.0017	0.0028	0.0160	0.0240	0.0135	0.0059	0.0107	0.0048	0.0177	0.0253	0.0061	0.0226	0.0019	0.0013	1.0008
22	Building and Construction	0.0005	0.0011	0.0680	0.0000	0.0005	0.0297	0.0023	0.0161	0.0223	0.0467	0.0249	0.0244	0.0326	0.0042	0.0478	0.0836	0.0284	0.0139	0.0058	0.0364	0.0882
23	Air Transport	0.0005	0.0005	0.0017	0.0000	0.0006	0.0044	0.0021	0.0033	0.0026	0.0044	0.0039	0.0059	0.0053	0.0118	0.0038	0.0170	0.0057	0.0062	0.0018	0.0031	0.0054
24	Other Land Transport	0.0026	0.0012	0.0076	0.0014	0.0024	0.0478	0.0035	0.0075	0.0098	0.0148	0.0162	0.0172	0.0138	0.0951	0.0239	0.1249	0.0292	0.0711	0.0126	0.0133	0.0160
25	Water Transport	0.0003	0.0002	0.0016	0.0001	0.0011	0.0092	0.0022	0.0038	0.0033	0.0043	0.0044	0.0014	0.0010	0.0098	0.0050	0.0202	0.0035	0.0083	0.0020	0.0023	0.0042
26	Railway Transport	0.0001	0.0001	0.0015	0.0000	0.0005	0.0092	0.0011	0.0057	0.0020	0.0022	0.0014	0.0041	0.0006	0.0031	0.0052	0.0080	0.0018	0.0018	0.0009	0.0041	0.0044
27	Communication	0.0002	0.0005	0.0036	0.0000	0.0002	0.0031	0.0015	0.0033	0.0024	0.0021	0.0037	0.0032	0.0024	0.0024	0.0041	0.0188	0.0051	0.0040	0.0014	0.0037	0.0035
28	Distribution	0.0176	0.0357	0.0503	0.0002	0.0041	0.0909	0.0199	0.0497	0.0442	0.0406	0.1688	0.0767	0.0283	0.0563	0.0865	0.2591	0.3110	0.1461	0.0439	0.0634	0.1078
29	Hotels and Restaurants	0.0000	0.0000	0.0001	0.0000	0.0002	0.0003	0.0001	0.0002	0.0001	0.0001	0.0001	0.0002	0.0001	0.0004	0.0002	0.0008	0.0002	0.0003	0.0001	0.0002	0.0002
30	Banking and Finance	0.0002	0.0004	0.0145	0.0004	0.0004	0.0116	0.0026	0.0041	0.0060	0.0044	0.0070	0.0024	0.0020	0.0029	0.0170	0.1123	0.0071	0.0149	0.0044	0.0085	0.0094
31	Insurance	0.0001	0.0001	0.0105	0.0001	0.0002	0.0044	0.0007	0.0014	0.0016	0.0014	0.0030	0.0011	0.0007	0.0015	0.0034	0.0328	0.0023	0.0045	0.0018	0.0025	0.0070
32	Real Estate and Business Ser.	0.0003	0.0005	0.0251	0.0000	0.0010	0.0178	0.0012	0.0021	0.0034	0.0036	0.0057	0.0033	0.0023	0.0046	0.0060	0.0181	0.0072	0.0075	0.0027	0.0327	0.0407
33	Housing	0.0003	0.0005	0.0029	0.0000	0.0003	0.0028	0.0006	0.0013	0.0016	0.0030	0.0052	0.0049	0.0017	0.0015	0.0041	0.0164	0.0060	0.0040	0.0018	0.0026	0.0040
34	Commty Soc and Per services	0.0000	0.0000	0.0004	0.0005	0.0000	0.0060	0.0000	0.0001	0.0002	0.0004	0.0028	0.0005	0.0002	0.0000	0.0006	0.0013	0.0007	0.0006	0.0101	0.0004	0.0001
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

		Table 5.9A (Contd.): LEONTIEF INVERSE MATRIX 1981FOR NIGERIA													
		22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	Agriculture	Building	Air Trans	Other La	Water Tr	Railway	Commun	Distribut	Hotels +	Bahkin	Insuranc	Real Es	Housing	Commty	Producer of G
2	Livestocks and Dairy Products	0.0496	0.0175	0.0040	0.0082	0.0153	0.0149	0.0165	0.1773	0.0117	0.0046	0.0085	0.0008	0.0061	0.0000
3	Fishing	0.0089	0.0059	0.0008	0.0029	0.0050	0.0018	0.0038	0.0308	0.0007	0.0006	0.0006	0.0001	0.0009	0.0000
4	Forestry	0.0001	0.0004	0.0001	0.0004	0.0007	0.0006	0.0000	0.0503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	Oil (Petroleum)	0.0041	0.0041	0.0006	0.0020	0.0034	0.0007	0.0024	0.0005	0.0002	0.0003	0.0004	0.0001	0.0004	0.0000
6	Other Mining	0.0618	0.0843	0.3163	0.0372	0.1357	0.0646	0.0566	0.0290	0.0214	0.0204	0.0127	0.0010	0.0159	0.0000
7	Food	0.0523	0.0108	0.0051	0.0063	0.0136	0.0068	0.0075	0.0028	0.0032	0.0022	0.0016	0.0009	0.0021	0.0000
8	Drink, Beverage & Tobacco	0.0040	0.0024	0.0015	0.0013	0.0030	0.0013	0.0021	0.0201	0.0027	0.0013	0.0042	0.0001	0.0009	0.0000
9	Textiles	0.0002	0.0008	0.0009	0.0006	0.0012	0.0007	0.0002	0.0244	0.0013	0.0008	0.0040	0.0000	0.0028	0.0000
10	Footwear and Leather	0.0476	0.0188	0.0027	0.0079	0.0119	0.0070	0.0221	0.0043	0.0034	0.0022	0.0061	0.0008	0.0047	0.0000
11	Wood and Woods Products	0.0007	0.0027	0.0000	0.0002	0.0003	0.0001	0.0003	0.0001	0.0000	0.0001	0.0000	0.0000	0.0023	0.0000
12	Paper and Paper Products	0.0537	0.0092	0.0009	0.0053	0.0073	0.0051	0.0043	0.0015	0.0028	0.0019	0.0007	0.0009	0.0008	0.0000
13	Drugs and Chemical	0.0079	0.0206	0.0044	0.0102	0.0275	0.0535	0.0296	0.0099	0.0599	0.0114	0.0074	0.0001	0.0035	0.0000
14	Refineries	0.0828	0.0219	0.0042	0.0102	0.0122	0.0148	0.0443	0.0077	0.0023	0.0034	0.0084	0.0014	0.0172	0.0000
15	Rubber and Plastic Products	0.0222	0.0376	0.0281	0.0203	0.1038	0.0051	0.0094	0.0066	0.0029	0.0034	0.0020	0.0004	0.0116	0.0000
16	Iron and Steel	0.0099	0.1015	0.0151	0.0485	0.0879	0.0064	0.0445	0.0087	0.0017	0.0047	0.0064	0.0002	0.0029	0.0000
17	Fabricated Metal	0.0862	0.0192	0.0031	0.0083	0.0097	0.0084	0.0343	0.0060	0.0013	0.0025	0.0018	0.0014	0.0080	0.0000
18	Vehicle Assembly	0.0046	0.0045	0.0010	0.0021	0.0039	0.0021	0.0038	0.0012	0.0018	0.0006	0.0006	0.0001	0.0006	0.0000
19	Other Manufacturing (Miscella)	0.0007	0.0004	0.0001	0.0002	0.0003	0.0001	0.0003	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
20	Electricity Generation	0.0186	0.0083	0.0011	0.0041	0.0068	0.0028	0.0052	0.0014	0.0017	0.0010	0.0008	0.0003	0.0009	0.0000
21	Water Supply	0.0166	0.0105	0.0021	0.0049	0.0083	0.0110	0.0058	0.0140	0.0034	0.0144	0.0079	0.0003	0.0083	0.0000
22	Building and Construction	0.0034	0.0061	0.0012	0.0038	0.0045	0.0012	0.0021	0.0091	0.0064	0.0057	0.0041	0.0001	0.0059	0.0000
23	Air Transport	1.0121	0.1077	0.0055	0.0244	0.0272	0.0577	0.0270	0.0115	0.0032	0.0054	0.0043	0.0169	0.0042	0.0000
24	Other Land Transport	0.0050	1.0332	0.0021	0.0075	0.0285	0.0057	0.0111	0.0205	0.0033	0.0150	0.0087	0.0001	0.0035	0.0000
25	Water Transport	0.0336	0.0385	1.0122	0.0123	0.0815	0.0621	0.0268	0.0185	0.0310	0.0391	0.0254	0.0006	0.0163	0.0000
26	Railway Transport	0.0039	0.0254	0.0022	1.0137	0.0366	0.0052	0.0019	0.0148	0.0018	0.0118	0.0149	0.0001	0.0069	0.0000
27	Communication	0.0034	0.0111	0.0006	0.0066	1.0279	0.0034	0.0011	0.0020	0.0009	0.0047	0.0007	0.0001	0.0034	0.0000
28	Distribution	0.0042	0.0099	0.0021	0.0113	0.0202	1.0066	0.0112	0.0124	0.0057	0.0195	0.0199	0.0001	0.0153	0.0000
29	Hotels and Restaurants	0.0654	0.2284	0.0587	0.1481	0.1228	0.0968	1.0302	0.1373	0.0162	0.0481	0.0259	0.0011	0.0306	0.0000
30	Banking and Finance	0.0002	0.0067	0.0012	0.0070	0.0142	0.0115	0.0003	1.0004	0.0004	0.0008	0.0004	0.0000	0.0003	0.0000
31	Insurance	0.0131	0.0273	0.0079	0.0213	0.0522	0.0097	0.0051	0.0075	1.0054	0.0057	0.0205	0.0002	0.0166	0.0000
32	Real Estate and Business Ser.	0.0046	0.0145	0.0057	0.0085	0.0376	0.0066	0.0018	0.0164	0.0031	1.0053	0.0222	0.0001	0.0144	0.0000
33	Housing	0.0065	0.0750	0.0197	0.0295	0.0397	0.0507	0.0126	0.0278	0.0119	0.0071	1.0213	0.0001	0.0094	0.0000
34	Commty Soc and Per services	0.0045	0.0119	0.0021	0.0050	0.0046	0.0059	0.0139	0.0137	0.0080	0.0099	0.0140	1.0001	0.0206	0.0000
35	Producer of Government Serv.	0.0005	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000

Table 5.9B: LEONTIEF INVERSE MATRIX 1985 FOR NIGERIA

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	Activity Sectors	Agricult	Livestoct	Fishing	Forestry	Crude P	Other M	Food	Drink, Be	Textiles	Footwea	Wood &	Paper &	Drugs &	Refinerie	Rubber	Iron & S	Fabricat	Vehicle	Other Ma	Electrici	Water S	Building
1	Agriculture	1.1578	0.0173	0.0006	0.0000	0.0002	0.0071	0.2413	0.1458	0.1695	0.0014	0.0003	0.0002	0.1326	0.0016	0.0006	0.1058	0.0190	0.0188	0.1674	0.0006	0.0004	0.0026
2	Livestock	0.0003	1.0046	0.0001	0.0000	0.0000	0.0011	0.0647	0.0002	0.0001	0.0727	0.0001	0.0000	0.0253	0.0003	0.0023	0.0022	0.0010	0.0049	0.0217	0.0001	0.0001	0.0003
3	Fishing	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000
4	Forestry	0.0005	0.0001	0.0005	1.0000	0.0001	0.0017	0.0007	0.0028	0.0003	0.0086	0.2253	0.1608	0.0130	0.0006	0.1003	0.0247	0.0145	0.0154	0.0183	0.0004	0.0004	0.0144
5	Crude Petroleum	0.0036	0.0030	0.2077	0.0005	1.0088	0.0791	0.0300	0.0327	0.0227	0.0215	0.0425	0.0305	0.0200	0.5835	0.0247	0.3998	0.0817	0.0692	0.0395	0.2095	0.1633	0.0207
6	Other Mining	0.0012	0.0001	0.0001	0.0000	0.0003	1.0084	0.0006	0.0006	0.0003	0.0003	0.0004	0.0003	0.0025	0.0006	0.0011	0.3707	0.0534	0.0187	0.0314	0.0009	0.0010	0.0840
7	Food	0.0001	0.0721	0.0014	0.0000	0.0000	0.0002	1.0047	0.0001	0.0000	0.0052	0.0000	0.0000	0.0019	0.0001	0.0002	0.0007	0.0002	0.0004	0.0105	0.0001	0.0001	0.0000
8	Drink, Bev. + Tobacco	0.0003	0.0000	0.0001	0.0000	0.0000	0.0004	0.0001	1.0001	0.0001	0.0000	0.0000	0.0000	0.0051	0.0001	0.0000	0.0010	0.0003	0.0006	0.0269	0.0001	0.0001	0.0001
9	Textiles	0.0003	0.0001	0.0001	0.0000	0.0001	0.0002	0.0005	0.0004	1.0907	0.0002	0.0004	0.0003	0.0003	0.0002	0.0002	0.0011	0.0018	0.0005	0.0227	0.0002	0.0002	0.0002
10	Footware + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	1.0229	0.0000	0.0000	0.0000	0.0000	0.0128	0.0034	0.0005	0.0314	0.0001	0.0000	0.0000	0.0001
11	Wood & Wood Products	0.0007	0.0001	0.0001	0.0000	0.0000	0.0007	0.0004	0.0004	0.0002	0.0003	1.0149	0.0002	0.0003	0.0002	0.0016	0.0079	0.0293	0.0213	0.0155	0.0001	0.0001	0.0052
12	Paper & Paper products	0.0008	0.0001	0.0029	0.0000	0.0005	0.0032	0.0013	0.0148	0.0008	0.0015	0.0011	1.0213	0.0088	0.0012	0.0114	0.0945	0.0399	0.0400	0.0112	0.0010	0.0011	0.0024
13	Drugs and Chemical	0.0020	0.0001	0.0018	0.0000	0.0002	0.0472	0.0011	0.0058	0.0007	0.0005	0.0010	0.0006	1.1119	0.0120	0.0007	0.0640	0.0374	0.1164	0.0125	0.0005	0.0005	0.0118
14	Refineries	0.0041	0.0009	0.0063	0.0005	0.0008	0.0732	0.0124	0.0194	0.0144	0.0129	0.0332	0.0160	0.0108	1.0044	0.0152	0.3651	0.0725	0.0539	0.0303	0.0011	0.0011	0.0110
15	Rubber and Plastic	0.0002	0.0003	0.0005	0.0000	0.0004	0.0046	0.0033	0.0033	0.0013	0.0902	0.0034	0.0022	0.0017	0.0031	1.0709	0.0389	0.0087	0.0078	0.0014	0.0007	0.0006	0.0016
16	Iron and Steel	0.0045	0.0001	0.0003	0.0001	0.0011	0.0234	0.0010	0.0007	0.0007	0.0004	0.0001	0.0001	0.0105	0.0008	0.0040	1.7136	0.2460	0.0847	0.0305	0.0005	0.0004	0.0194
17	Fabricated Metal	0.0178	0.0003	0.0001	0.0003	0.0002	0.0171	0.0037	0.0023	0.0026	0.0000	0.0001	0.0001	0.0021	0.0001	0.0001	0.0080	1.0481	0.0006	0.0073	0.0001	0.0001	0.0040
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing	0.0102	0.0002	0.0001	0.0000	0.0000	0.0004	0.0022	0.0030	0.0016	0.0001	0.0000	0.0000	0.0024	0.0001	0.0001	0.0163	0.0038	0.0010	1.0072	0.0025	0.0017	0.0002
20	Electricity	0.0005	0.0005	0.0118	0.0000	0.0002	0.0068	0.0058	0.0101	0.0275	0.0119	0.0102	0.0068	0.0057	0.0127	0.0084	0.1173	0.0212	0.0091	0.0044	1.0026	0.0024	0.0022
21	Water Supply	0.0004	0.0004	0.0090	0.0000	0.0002	0.0036	0.0049	0.0059	0.0199	0.0075	0.0063	0.0043	0.0047	0.0086	0.0063	0.1022	0.0197	0.0081	0.0036	0.0017	1.0010	0.0018
22	Building and Construction	0.0000	0.0001	0.0004	0.0000	0.0004	0.0086	0.0007	0.0008	0.0007	0.0006	0.0009	0.0006	0.0005	0.0011	0.0007	0.0078	0.0015	0.0012	0.0005	0.0082	0.0102	1.0010
23	Air Transport	0.0002	0.0007	0.0008	0.0000	0.0007	0.0065	0.0090	0.0107	0.0039	0.0068	0.0188	0.0056	0.0053	0.0110	0.0067	0.0202	0.0085	0.0107	0.0027	0.0016	0.0010	0.0024
24	Other Land Transport	0.0038	0.0076	0.0116	0.0011	0.0146	0.1355	0.0750	0.0681	0.0202	0.0373	0.0745	0.0714	0.0434	0.1178	0.0485	0.6247	0.1342	0.1365	0.0328	0.0146	0.0153	0.0437
25	Water Transport	0.0002	0.0007	0.0012	0.0001	0.0009	0.0077	0.0098	0.0116	0.0041	0.0080	0.0120	0.0063	0.0055	0.0093	0.0097	0.0283	0.0078	0.0141	0.0026	0.0025	0.0028	0.0037
26	Railway Transport	0.0001	0.0006	0.0011	0.0000	0.0006	0.0163	0.0084	0.0078	0.0035	0.0030	0.0016	0.0037	0.0012	0.0030	0.0079	0.0140	0.0031	0.0022	0.0013	0.0016	0.0007	0.0019
27	Communication	0.0001	0.0003	0.0028	0.0000	0.0002	0.0017	0.0033	0.0041	0.0036	0.0021	0.0028	0.0026	0.0024	0.0019	0.0030	0.0223	0.0055	0.0051	0.0014	0.0013	0.0015	0.0016
28	Distributive Trade	0.0064	0.0228	0.0132	0.0002	0.0027	0.0241	0.1450	0.1113	0.0556	0.0886	0.1633	0.1139	0.0805	0.0557	0.0813	0.1989	0.0577	0.1592	0.0392	0.0121	0.0114	0.0666
29	Hotels and Restaurants	0.0000	0.0000	0.0002	0.0000	0.0003	0.0004	0.0004	0.0004	0.0002	0.0002	0.0004	0.0003	0.0002	0.0005	0.0003	0.0018	0.0004	0.0005	0.0001	0.0001	0.0001	0.0001
30	Banking and Finance	0.0006	0.0005	0.0363	0.0003	0.0009	0.0067	0.0064	0.0076	0.0054	0.0048	0.0042	0.0041	0.0057	0.0055	0.0153	0.1618	0.0302	0.0188	0.0053	0.0069	0.0066	0.0057
31	Insurance	0.0002	0.0002	0.0104	0.0001	0.0002	0.0038	0.0020	0.0029	0.0020	0.0012	0.0028	0.0011	0.0015	0.0023	0.0025	0.0489	0.0091	0.0057	0.0022	0.0027	0.0031	0.0021
32	Real Estate and Business Ser.	0.0003	0.0005	0.0541	0.0000	0.0030	0.0479	0.0065	0.0070	0.0069	0.0043	0.0059	0.0041	0.0044	0.0072	0.0061	0.0605	0.0125	0.0097	0.0041	0.0712	0.0793	0.0068
33	Housing	0.0002	0.0005	0.0060	0.0000	0.0003	0.0021	0.0043	0.0047	0.0030	0.0051	0.0062	0.0057	0.0047	0.0029	0.0042	0.0252	0.0067	0.0058	0.0027	0.0017	0.0041	0.0045
34	Commty Soc and Per Services	0.0002	0.0000	0.0013	0.0004	0.0000	0.0227	0.0000	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001	0.0000	0.0001	0.0086	0.0013	0.0004	0.0172	0.0001	0.0000	0.0019
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 5.9B (Contd.): LEONTIEF INVERSE MATRIX 1985 FOR NIGERIA

	Activity Sectors	23	24	25	26	27	28	29	30	31	32	33	34	35
1	Agriculture	Air Tran	Other La	Water T	Railway	Commu	Distributi	Hotel &	Banking	Insuranc	Real Est	Housing	Com. Se	Pro. Gov. Ser
2	Livestock	0.0018	0.0004	0.0019	0.0031	0.0062	0.0009	0.1921	0.0006	0.0009	0.0010	0.0000	0.0023	0.0000
3	Fishing	0.0006	0.0001	0.0006	0.0010	0.0017	0.0001	0.0569	0.0001	0.0002	0.0002	0.0000	0.0004	0.0000
4	Forestry	0.0004	0.0001	0.0004	0.0007	0.0018	0.0000	0.0603	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
5	Crude Petroleum	0.0082	0.0014	0.0090	0.0141	0.0038	0.0013	0.0010	0.0067	0.0149	0.0010	0.0002	0.0008	0.0000
6	Other Mining	0.0502	0.2664	0.0652	0.1084	0.0308	0.0662	0.0288	0.0147	0.0440	0.0042	0.0003	0.0148	0.0000
7	Food	0.0035	0.0028	0.0046	0.0081	0.0005	0.0006	0.0004	0.0001	0.0006	0.0001	0.0014	0.0014	0.0000
8	Drink, Bev. + Tobacco	0.0005	0.0001	0.0006	0.0015	0.0015	0.0000	0.0358	0.0014	0.0012	0.0010	0.0000	0.0001	0.0000
9	Textiles	0.0003	0.0001	0.0004	0.0006	0.0008	0.0000	0.0192	0.0007	0.0007	0.0011	0.0000	0.0029	0.0000
10	Footware + Leather	0.0010	0.0002	0.0012	0.0013	0.0024	0.0026	0.0004	0.0004	0.0007	0.0013	0.0000	0.0001	0.0000
11	Wood & Wood Products	0.0009	0.0001	0.0010	0.0014	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0017	0.0000
12	Paper & Paper products	0.0011	0.0002	0.0030	0.0030	0.0001	0.0018	0.0004	0.0003	0.0011	0.0000	0.0001	0.0001	0.0000
13	Drugs and Chemical	0.0074	0.0019	0.0092	0.0198	0.0223	0.0027	0.0048	0.0415	0.0905	0.0053	0.0000	0.0034	0.0000
14	Refineries	0.0019	0.0007	0.0021	0.0026	0.0010	0.0034	0.0011	0.0002	0.0007	0.0033	0.0002	0.0115	0.0000
15	Rubber and Plastic	0.0303	0.0236	0.0346	0.0832	0.0037	0.0046	0.0029	0.0022	0.0089	0.0006	0.0002	0.0090	0.0000
16	Iron and Steel	0.0721	0.0113	0.0727	0.1112	0.0020	0.0049	0.0014	0.0007	0.0042	0.0015	0.0000	0.0014	0.0000
17	Fabricated Metal	0.0007	0.0004	0.0007	0.0010	0.0001	0.0002	0.0008	0.0000	0.0001	0.0001	0.0003	0.0057	0.0000
18	Vehicle Assembly	0.0001	0.0001	0.0002	0.0002	0.0001	0.0000	0.0030	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000
19	Other Manufacturing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Electricity	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0018	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000
21	Water Supply	0.0056	0.0013	0.0045	0.0058	0.0114	0.0052	0.0099	0.0020	0.0129	0.0021	0.0000	0.0065	0.0000
22	Building and Construction	0.0035	0.0011	0.0049	0.0042	0.0076	0.0060	0.0083	0.0038	0.0059	0.0012	0.0000	0.0049	0.0000
23	Air Transport	0.0167	0.0026	0.0162	0.0131	0.0034	0.0009	0.0006	0.0004	0.0023	0.0003	0.0167	0.0007	0.0000
24	Other Land Transport	1.0163	0.0014	0.0085	0.0225	0.0038	0.0055	0.0050	0.0019	0.0129	0.0023	0.0000	0.0025	0.0000
25	Water Transport	0.0810	1.0232	0.1188	0.1086	0.0783	0.1846	0.0390	0.0346	0.1132	0.0117	0.0007	0.0283	0.0000
26	Railway Transport	0.0206	0.0016	1.0131	0.0296	0.0065	0.0008	0.0032	0.0013	0.0206	0.0034	0.0001	0.0055	0.0000
27	Communication	0.0093	0.0005	0.0064	1.0225	0.0026	0.0004	0.0008	0.0005	0.0042	0.0002	0.0000	0.0023	0.0000
28	Distributive Trade	0.0061	0.0012	0.0099	0.0159	1.0115	0.0031	0.0086	0.0047	0.0325	0.0053	0.0000	0.0173	0.0000
29	Hotels and Restaurants	0.2787	0.0531	0.3010	0.2142	0.0243	1.0250	0.1384	0.0247	0.1051	0.0163	0.0011	0.0235	0.0000
30	Banking and Finance	0.0066	0.0011	0.0067	0.0116	0.0290	0.0003	1.0003	0.0004	0.0015	0.0002	0.0000	0.0006	0.0000
31	Insurance	0.0224	0.0067	0.0235	0.0433	0.0174	0.0015	0.0069	1.0076	0.0459	0.0086	0.0001	0.0218	0.0000
32	Real Estate and Business Ser.	0.0087	0.0046	0.0110	0.0302	0.0078	0.0010	0.0023	0.0050	1.0250	0.0060	0.0000	0.0182	0.0000
33	Housing	0.0680	0.0171	0.0648	0.0894	0.1944	0.0050	0.0214	0.0164	0.0634	1.0088	0.0001	0.0185	0.0000
34	Commty Soc and Per Services	0.0086	0.0022	0.0086	0.0081	0.0162	0.0161	0.0117	0.0116	0.0738	0.0074	1.0001	0.0199	0.0000
35	Producer of Government Ser.	0.0001	0.0001	0.0001	0.0002	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000

Table 5.9C: LEONTIEF INVERSE MATRIX 1995 FOR NIGERIA

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	Activity Sectors	Agricultur	Livestock	Fishing	Forestry	Crude P	Other M	Food	Drink, E	Textiles	Footwar	Wood &	Paper &	Drugs &	Refineri	Rubber	Iron & St	Fabricate	Vehicle	Other m	Electrici	Water Sup
1	Agriculture	1.1053	0.0688	0.0087	0.0014	0.0010	0.0213	0.5279	0.0811	0.1735	0.0115	0.0017	0.0251	0.1173	0.0134	0.2184	0.0636	0.0180	0.0049	0.0695	0.0340	0.0371
2	Livestock	0.0017	1.0103	0.0005	0.0003	0.0002	0.0060	0.1120	0.0171	0.0005	0.1429	0.0002	0.0012	0.1156	0.0007	0.1915	0.0006	0.0009	0.0003	0.0171	0.0018	0.0020
3	Fishing	0.0000	0.0001	1.0014	0.0000	0.0000	0.0003	0.0018	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0001
4	Forestry	0.0031	0.0003	0.0005	1.0027	0.0002	0.0080	0.0050	0.0023	0.0011	0.0006	0.0036	0.0979	0.0137	0.0008	0.1020	0.0342	0.0577	0.0400	0.1264	0.0099	0.0128
5	Crude Petroleum	0.0048	0.0048	0.1996	0.0039	1.0180	0.1345	0.1159	0.0270	0.0075	0.0114	0.0106	0.0603	0.0350	0.1063	0.0476	0.0488	0.0619	0.0357	0.0940	0.0535	0.0294
6	Other Mining	0.0002	0.0000	0.0076	0.0002	0.0003	1.0026	0.0005	0.0005	0.0004	0.0005	0.0005	0.0029	0.0013	0.0054	0.0017	0.0030	0.0025	0.0018	0.0041	0.0028	0.0012
7	Food	0.0001	0.0382	0.0008	0.0000	0.0000	0.0003	1.0043	0.1504	0.0000	0.0054	0.0000	0.0002	0.0044	0.0001	0.0073	0.0001	0.0001	0.0000	0.0007	0.0001	0.0001
8	Drink, Bev + Tobacco	0.0000	0.0000	0.0003	0.0000	0.0000	0.0002	0.0001	1.0001	0.0000	0.0001	0.0001	0.0008	0.0003	0.0004	0.0004	0.0003	0.0006	0.0001	0.0006	0.0001	0.0002
9	Textiles	0.0001	0.0000	0.0031	0.0001	0.0002	0.0051	0.0002	0.0001	1.0001	0.0001	0.0001	0.0019	0.0013	0.0008	0.0032	0.0012	0.0013	0.0023	0.0016	0.1490	0.1581
10	Footwear + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0001	1.0001	0.0001	0.0002	0.0003	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0004	0.0002
11	Wood & Wood	0.0004	0.0001	0.0009	0.0005	0.0012	0.0127	0.0006	0.0004	0.0003	0.0005	1.0004	0.0022	0.0024	0.0030	0.0040	0.0030	0.0037	0.0012	0.0050	0.0033	0.0015
12	Paper & Paper	0.0002	0.0009	0.0009	0.0003	0.0003	0.0105	0.0220	0.0036	0.0001	0.0003	0.0002	1.0015	0.0008	0.0007	0.0011	0.0007	0.0011	0.0003	0.0212	0.0022	0.0027
13	Drugs and Chem.	0.0134	0.0010	0.0028	0.0003	0.0013	0.0453	0.0069	0.0015	0.0023	0.0006	0.0005	0.0067	1.0039	0.0038	0.0061	0.0032	0.0048	0.0013	0.0108	0.0022	0.0024
14	Refineries	0.0298	0.0046	0.0135	0.0152	0.0022	0.0779	0.0834	0.1101	0.0688	0.0928	0.1012	0.5415	0.2182	1.3082	0.2647	0.3020	0.4703	0.4264	0.0228	0.0833	0.0697
15	Rubber Plastic	0.0002	0.0000	0.0002	0.0002	0.0001	0.0024	0.0004	0.0003	0.0009	0.0008	0.0005	0.0016	0.0024	0.0009	1.0011	0.0007	0.0008	0.0005	0.0006	0.0025	0.0011
16	Iron and Steel	0.0001	0.0000	0.0016	0.0001	0.0014	0.1344	0.0003	0.0002	0.0001	0.0002	0.0002	0.0012	0.0005	0.0012	0.0007	1.0007	0.0008	0.0004	0.0012	0.0012	0.0005
17	Fabricated Metal	0.0174	0.0011	0.0006	0.0088	0.0003	0.0060	0.0084	0.0013	0.0027	0.0002	0.0001	0.0013	0.0020	0.0003	0.0043	0.0013	1.0008	0.0004	0.0022	0.0006	0.0007
18	Vehicle Assem.	0.0304	0.0019	0.0002	0.0001	0.0000	0.0006	0.0145	0.0023	0.0048	0.0003	0.0000	0.0007	0.0033	0.0004	0.0060	0.0018	0.0005	1.0037	0.0045	0.0011	0.0013
19	Other Manufac.	0.0057	0.0004	0.0015	0.0152	0.0001	0.0019	0.0028	0.0110	0.0010	0.0002	0.0001	0.0027	0.0093	0.0005	0.0043	0.0059	0.0079	0.0017	1.0133	0.0658	0.0965
20	Electricity	0.0007	0.0001	0.0205	0.0004	0.0005	0.0070	0.0009	0.0006	0.0004	0.0005	0.0005	0.0100	0.0051	0.0044	0.0174	0.0070	0.0074	0.0151	0.0073	1.0970	0.1237
21	Water Supply	0.0002	0.0000	0.0021	0.0001	0.0001	0.0018	0.0003	0.0002	0.0001	0.0002	0.0002	0.0036	0.0041	0.0013	0.0063	0.0016	0.0018	0.0018	0.0045	0.0101	1.0033
22	Building & Constructions	0.0029	0.0004	0.0018	0.0026	0.0010	0.0386	0.0063	0.0052	0.0151	0.0132	0.0083	0.0247	0.0391	0.0142	0.0171	0.0116	0.0122	0.0080	0.0082	0.0384	0.0160
23	Air Transport	0.0005	0.0001	0.0017	0.0012	0.0004	0.0083	0.0005	0.0004	0.0003	0.0006	0.0004	0.0021	0.0020	0.0018	0.0045	0.0027	0.0019	0.0015	0.0030	0.0103	0.0034
24	Other Land Transport	0.0081	0.0011	0.0173	0.0064	0.0339	0.3459	0.0135	0.0108	0.0068	0.0125	0.0102	0.0538	0.0617	0.0831	0.0963	0.0775	0.1043	0.0277	0.1355	0.0325	0.0243
25	Water Transport	0.0001	0.0001	0.0004	0.0008	0.0002	0.0015	0.0005	0.0003	0.0004	0.0015	0.0005	0.0026	0.0005	0.0005	0.0012	0.0008	0.0010	0.0003	0.0009	0.0056	0.0022
26	Railway Transport	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000
27	Communications	0.0002	0.0001	0.0025	0.0003	0.0003	0.0026	0.0010	0.0014	0.0005	0.0025	0.0026	0.0110	0.0040	0.0030	0.0091	0.0028	0.0030	0.0011	0.0114	0.0043	0.0034
28	Distribution	0.0115	0.0048	0.0610	0.0047	0.0055	0.0590	0.0173	0.0140	0.0082	0.0139	0.0125	0.1976	0.0772	0.1055	0.1051	0.0702	0.1403	0.0350	0.1408	0.0353	0.0381
29	Hotels & Restaurants	0.0001	0.0000	0.0004	0.0000	0.0006	0.0066	0.0002	0.0001	0.0001	0.0001	0.0001	0.0010	0.0005	0.0006	0.0008	0.0005	0.0007	0.0002	0.0010	0.0004	0.0003
30	Banking + Finance	0.0041	0.0006	0.0482	0.0038	0.0071	0.0657	0.0105	0.0137	0.0130	0.0180	0.0304	0.1658	0.0457	0.0577	0.0919	0.0738	0.0981	0.0203	0.1489	0.1043	0.0915
31	Insurance	0.0001	0.0000	0.0028	0.0001	0.0001	0.0012	0.0004	0.0003	0.0003	0.0006	0.0004	0.0013	0.0006	0.0006	0.0017	0.0007	0.0013	0.0005	0.0034	0.0170	0.0247
32	Real Estate & Business Ser.	0.0002	0.0001	0.0039	0.0001	0.0005	0.0026	0.0012	0.0009	0.0005	0.0020	0.0014	0.0094	0.0023	0.0024	0.0057	0.0020	0.0022	0.0011	0.0051	0.0266	0.0069
33	Housing	0.0008	0.0002	0.0074	0.0006	0.0006	0.0047	0.0013	0.0014	0.0008	0.0011	0.0012	0.0165	0.0074	0.0063	0.0147	0.0070	0.0132	0.0022	0.0284	0.0089	0.0065
34	Comty Soc & Per Services	0.0000	0.0000	0.0013	0.0002	0.0001	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001	0.0000	0.0002	0.0001	0.0000
35	Producer of Gov. Services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

		Table 5.9C (Contd.): LEONTIEF INVERSE MATRIX 1995 FOR NIGERIA													
		22	23	24	25	26	27	28	29	30	31	32	33	34	35
	Activity Sectors	Building	Air Trans	Other La	Water Tr	Railway	Commu	Distribut	Hotels &	Banking	Insuran	Real Es	Housing	Com. Se	Pro. Gov. Ser
1	Agriculture	0.0144	0.0180	0.0096	0.0267	0.0231	0.0087	0.1242	0.1334	0.0025	0.0193	0.0114	0.0007	0.0071	0.0000
2	Livestock	0.0127	0.0013	0.0005	0.0015	0.0027	0.0016	0.0040	0.0410	0.0003	0.0017	0.0019	0.0005	0.0034	0.0000
3	Fishing	0.0000	0.0004	0.0001	0.0002	0.0006	0.0011	0.0001	0.0407	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0401	0.0020	0.0004	0.0019	0.0060	0.0024	0.0013	0.0010	0.0004	0.0027	0.0022	0.0017	0.0032	0.0000
5	Crude Petroleum	0.0672	0.2052	0.2284	0.2376	0.1078	0.0280	0.0494	0.0178	0.0351	0.2315	0.0209	0.0032	0.0089	0.0000
6	Other Mining	0.0020	0.0234	0.0024	0.0276	0.0478	0.0021	0.0014	0.0006	0.0019	0.0058	0.0009	0.0001	0.0004	0.0000
7	Food	0.0005	0.0001	0.0001	0.0002	0.0002	0.0001	0.0008	0.0016	0.0000	0.0002	0.0001	0.0000	0.0001	0.0000
8	Drink, Bev + Tobacco	0.0001	0.0006	0.0003	0.0009	0.0006	0.0001	0.0043	0.0004	0.0001	0.0006	0.0003	0.0000	0.0001	0.0000
9	Textiles	0.0007	0.0009	0.0002	0.0044	0.0130	0.0029	0.0001	0.0017	0.0006	0.0065	0.0020	0.0000	0.0009	0.0000
10	Footwear + Leather	0.0071	0.0002	0.0000	0.0002	0.0007	0.0003	0.0000	0.0000	0.0003	0.0005	0.0017	0.0003	0.0079	0.0000
11	Wood & Wood	0.0014	0.1931	0.0331	0.0130	0.2262	0.0081	0.0018	0.0010	0.0012	0.0142	0.0100	0.0001	0.0044	0.0000
12	Paper & Paper	0.0003	0.0012	0.0005	0.0014	0.0022	0.0173	0.0040	0.0006	0.0030	0.0153	0.0051	0.0001	0.0060	0.0000
13	Drugs and Chem.	0.0008	0.0058	0.0028	0.0081	0.0073	0.0027	0.0327	0.0335	0.0015	0.0084	0.0055	0.0001	0.0181	0.0000
14	Refineries	0.0242	0.1249	0.0182	0.1435	0.1184	0.0272	0.0176	0.0228	0.0039	0.0288	0.0235	0.0012	0.0253	0.0000
15	Rubber Plastic	0.0605	0.0015	0.0003	0.0018	0.0057	0.0013	0.0002	0.0002	0.0004	0.0029	0.0053	0.0025	0.0002	0.0000
16	Iron and Steel	0.0005	0.0038	0.0008	0.0046	0.0074	0.0048	0.0029	0.0006	0.0005	0.0028	0.0252	0.0002	0.0399	0.0000
17	Fabricated Metal	0.0006	0.0005	0.0002	0.0007	0.0007	0.0002	0.0020	0.0021	0.0001	0.0004	0.0002	0.0000	0.0001	0.0000
18	Vehicle Assem.	0.0004	0.0005	0.0003	0.0007	0.0007	0.0002	0.0034	0.0037	0.0001	0.0005	0.0003	0.0000	0.0002	0.0000
19	Other Manufac.	0.0048	0.0006	0.0002	0.0023	0.0080	0.0016	0.0010	0.0018	0.0003	0.0036	0.0013	0.0002	0.0085	0.0000
20	Electricity	0.0035	0.0047	0.0010	0.0301	0.0285	0.0165	0.0006	0.0074	0.0027	0.0280	0.0102	0.0002	0.0050	0.0000
21	Water Supply	0.0012	0.0008	0.0005	0.0016	0.0639	0.0051	0.0003	0.0050	0.0013	0.0192	0.0045	0.0001	0.0019	0.0000
22	Building & Constructions	1.0085	0.0236	0.0041	0.0288	0.0929	0.0058	0.0036	0.0026	0.0010	0.0066	0.0032	0.0415	0.0019	0.0000
23	Air Transport	0.0041	1.0090	0.0014	0.0049	0.0933	0.0277	0.0011	0.0022	0.0026	0.0550	0.0131	0.0002	0.0041	0.0000
24	Other Land Transport	0.0162	0.0692	1.0259	0.0698	0.0933	0.0496	0.0480	0.0170	0.0187	0.1095	0.0482	0.0010	0.0209	0.0000
25	Water Transport	0.0029	0.0030	0.0009	1.0030	0.0882	0.0147	0.0004	0.0009	0.0005	0.0029	0.0041	0.0001	0.0006	0.0000
26	Railway Transport	0.0001	0.0000	0.0000	0.0000	1.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	Communications	0.0015	0.0124	0.0013	0.0070	0.0390	1.0141	0.0005	0.0058	0.0039	0.0504	0.0230	0.0001	0.0060	0.0000
28	Distribution	0.0127	0.1316	0.0756	0.2015	0.1384	0.0342	1.0152	0.0927	0.0173	0.1355	0.0666	0.0008	0.0194	0.0000
29	Hotels & Restaurants	0.0002	0.0097	0.0017	0.0048	0.0143	0.0275	0.0030	1.0005	0.0004	0.0025	0.0010	0.0000	0.0003	0.0000
30	Banking + Finance	0.0115	0.0729	0.0259	0.0292	0.1043	0.0377	0.0048	0.0096	1.0236	0.1792	0.0663	0.0087	0.0079	0.0000
31	Insurance	0.0011	0.0020	0.0006	0.0022	0.0026	0.0026	0.0001	0.0007	0.0005	1.0027	0.0044	0.0003	0.0002	0.0000
32	Real Estate & Business Ser.	0.0048	0.0030	0.0006	0.0025	0.0195	0.1823	0.0005	0.0110	0.0011	0.0113	1.0339	0.0002	0.0069	0.0000
33	Housing	0.0034	0.0071	0.0042	0.0098	0.0085	0.0199	0.0380	0.0103	0.0120	0.0600	0.0331	1.0003	0.0015	0.0000
34	Comty Soc & Per Services	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0004	0.0002	0.0056	1.0160	0.0000
35	Producer of Gov. Services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000

Table 5.9D: LEONTIEF INVERSE MATRIX 2000 FOR NIGERIA

	Activity Sectors	1 Agricultu	2 Livestoc	3 Fishing	4 Forestry	5 Crude P	6 Other Mi	7 Food	8 Drink, B	9 Textiles	10 Footwea	11 Wood &	12 Paper &	13 Drugs &	14 Refineri	15 Rubber	16 Iron & S	17 Fabricat	18 Vehicle	19 Other M	20 Electrici	21 Water S	22 Building	23 Air Tr
1	Agriculture	1.0573	0.0819	0.7899	0.0067	0.0026	0.0495	0.4369	0.2658	0.2850	0.0393	0.0360	0.0275	0.3767	0.0443	0.0276	0.0553	0.0176	0.0457	0.5147	0.1504	0.1053	0.0230	0.0626
2	Livestock	0.0010	1.0178	0.0032	0.0006	0.0001	0.0034	0.0674	0.0031	0.0021	0.0954	0.0025	0.0018	0.0434	0.0027	0.0037	0.0022	0.0013	0.0030	0.0581	0.0047	0.0051	0.0036	0.0036
3	Fishing	0.0024	0.0019	1.0073	0.0031	0.0009	0.0079	0.0104	0.0086	0.0047	0.0049	0.0053	0.0039	0.0100	0.0067	0.0040	0.0079	0.0051	0.0066	0.3353	0.0156	0.0149	0.0071	0.0224
4	Forestry	0.0001	0.0001	0.0003	1.0003	0.0000	0.0003	0.0004	0.0003	0.0002	0.0003	0.0138	0.0126	0.0016	0.0003	0.0100	0.0002	0.0001	0.0005	0.0023	0.0005	0.0005	0.0020	0.0006
5	Crude Petroleum	0.0244	0.0270	0.0805	0.0091	1.0145	0.1517	0.2002	0.1096	0.0719	0.0871	0.1159	0.0896	0.1156	0.6659	0.0927	0.1311	0.0659	0.1717	0.2563	0.1738	0.2656	0.0677	0.6123
6	Other Mining	0.0003	0.0002	0.0009	0.0004	0.0001	1.0028	0.0012	0.0012	0.0009	0.0016	0.0016	0.0005	0.0013	0.0009	0.0005	0.0110	0.0005	0.0008	0.0219	0.0029	0.0025	0.0160	0.0021
7	Food	0.0004	0.0677	0.0018	0.0001	0.0001	0.0015	1.0067	0.0015	0.0011	0.0073	0.0013	0.0010	0.0045	0.0017	0.0011	0.0010	0.0005	0.0016	0.0063	0.0020	0.0025	0.0008	0.0019
8	Drink, Bev. + Tobacco	0.0001	0.0001	0.0004	0.0000	0.0000	0.0003	0.0008	1.0005	0.0004	0.0005	0.0006	0.0005	0.0007	0.0004	0.0004	0.0002	0.0001	0.0008	0.0006	0.0004	0.0008	0.0002	0.0005
9	Textiles	0.0002	0.0003	0.0009	0.0007	0.0001	0.0014	0.0017	0.0018	1.0039	0.0024	0.0016	0.0013	0.0015	0.0020	0.0019	0.0031	0.0010	0.0011	0.0018	0.3489	0.1290	0.0007	0.0011
10	Footware + Leather	0.0002	0.0001	0.0005	0.0002	0.0000	0.0012	0.0006	0.0007	0.0006	1.0014	0.0014	0.0002	0.0008	0.0005	0.0003	0.0003	0.0002	0.0004	0.0007	0.0022	0.0016	0.0177	0.0006
11	Wood & Wood Products	0.0003	0.0004	0.0009	0.0002	0.0001	0.0046	0.0032	0.0013	0.0007	0.0010	1.0012	0.0010	0.0013	0.0014	0.0011	0.0013	0.0008	0.0017	0.0017	0.0012	0.0026	0.0006	0.0283
12	Paper & Paper products	0.0004	0.0003	0.0011	0.0004	0.0002	0.0014	0.0019	0.0016	0.0009	0.0011	0.0013	1.0010	0.0019	0.0011	0.0009	0.0012	0.0008	0.0016	0.0450	0.0023	0.0027	0.0010	0.0013
13	Drugs and Chemical	0.0077	0.0039	0.0132	0.0008	0.0005	0.0295	0.0221	0.0144	0.0098	0.0117	0.0140	0.0118	1.0177	0.0100	0.0107	0.0066	0.0039	0.0184	0.0329	0.0123	0.0194	0.0045	0.0130
14	Refineries	0.0067	0.0038	0.0115	0.0018	0.0009	0.0239	0.0315	0.0405	0.0320	0.0335	0.0597	0.0359	0.0323	1.0089	0.0397	0.1125	0.0497	0.0969	0.0266	0.0251	0.0392	0.0077	0.0256
15	Rubber and Plastic	0.0008	0.0004	0.0016	0.0006	0.0001	0.0028	0.0021	0.0027	0.0024	0.0051	0.0052	0.0008	0.0029	0.0020	1.0010	0.0010	0.0009	0.0015	0.0023	0.0084	0.0063	0.0670	0.0024
16	Iron and Steel	0.0028	0.0033	0.0097	0.0009	0.0050	0.0884	0.0184	0.0116	0.0079	0.0100	0.0118	0.0096	0.0142	0.0121	0.0091	1.0070	0.0037	0.0155	0.0178	0.0128	0.0283	0.0056	0.0158
17	Fabricated Metal	0.0079	0.0010	0.0073	0.0010	0.0001	0.0032	0.0053	0.0032	0.0030	0.0013	0.0014	0.0011	0.0043	0.0018	0.0010	0.0012	1.0006	0.0020	0.0062	0.0028	0.0029	0.0007	0.0021
18	Vehicle Assembly	0.0286	0.0038	0.0264	0.0006	0.0003	0.0061	0.0195	0.0117	0.0111	0.0048	0.0051	0.0038	0.0158	0.0066	0.0038	0.0046	0.0021	1.0256	0.0252	0.0104	0.0108	0.0027	0.0077
19	Other Manufacturing	0.0034	0.0007	0.0039	0.0084	0.0001	0.0037	0.0037	0.0105	0.0025	0.0023	0.0025	0.0013	0.0116	0.0020	0.0013	0.0133	0.0097	0.0019	1.0209	0.0280	0.0182	0.0155	0.0022
20	Electricity	0.0002	0.0002	0.0007	0.0019	0.0001	0.0022	0.0019	0.0034	0.0098	0.0054	0.0030	0.0026	0.0015	0.0037	0.0044	0.0077	0.0020	0.0013	0.0020	1.0255	0.0306	0.0010	0.0011
21	Water Supply	0.0002	0.0002	0.0004	0.0005	0.0000	0.0014	0.0019	0.0011	0.0021	0.0010	0.0012	0.0009	0.0031	0.0009	0.0009	0.0015	0.0011	0.0009	0.0010	0.0158	1.0171	0.0008	0.0010
22	Building and Construction	0.0098	0.0026	0.0127	0.0091	0.0009	0.0322	0.0149	0.0304	0.0286	0.0698	0.0703	0.0052	0.0307	0.0184	0.0078	0.0071	0.0089	0.0097	0.0163	0.1124	0.0683	1.0256	0.0221
23	Air Transport	0.0028	0.0013	0.0044	0.0015	0.0013	0.0956	0.0093	0.0083	0.0041	0.0051	0.0064	0.0046	0.0047	0.0084	0.0087	0.0152	0.0098	0.0070	0.0084	0.0066	0.0190	0.0042	1.0060
24	Other Land Transport	0.0154	0.0235	0.0354	0.0078	0.0103	0.1041	0.2528	0.0745	0.0349	0.0507	0.0677	0.0675	0.0768	0.0813	0.0637	0.0650	0.0368	0.1202	0.0863	0.0544	0.1415	0.0317	0.0550
25	Water Transport	0.0001	0.0001	0.0002	0.0003	0.0000	0.0009	0.0005	0.0008	0.0004	0.0017	0.0013	0.0010	0.0008	0.0007	0.0014	0.0005	0.0011	0.0007	0.0009	0.0007	0.0065	0.0007	0.0004
26	Railway Transport	0.0001	0.0001	0.0001	0.0003	0.0000	0.0103	0.0007	0.0005	0.0007	0.0025	0.0020	0.0003	0.0005	0.0004	0.0004	0.0004	0.0002	0.0002	0.0005	0.0007	0.0026	0.0003	0.0007
27	Communication	0.0003	0.0004	0.0009	0.0001	0.0001	0.0016	0.0027	0.0025	0.0021	0.0018	0.0018	0.0019	0.0025	0.0013	0.0023	0.0019	0.0014	0.0032	0.0018	0.0021	0.0052	0.0009	0.0022
28	Distributive Trade	0.0686	0.0718	0.1478	0.0083	0.0075	0.1198	0.4426	0.3015	0.1810	0.2778	0.3493	0.3046	0.3637	0.1636	0.2695	0.1069	0.0748	0.4612	0.2559	0.1860	0.3918	0.0688	0.2353
29	Hotels and Restaurants	0.0004	0.0004	0.0012	0.0002	0.0009	0.0037	0.0032	0.0016	0.0011	0.0012	0.0014	0.0012	0.0017	0.0020	0.0013	0.0014	0.0009	0.0021	0.0023	0.0017	0.0033	0.0007	0.0236
30	Banking and Finance	0.0009	0.0009	0.0023	0.0003	0.0006	0.0059	0.0076	0.0073	0.0061	0.0041	0.0041	0.0034	0.0080	0.0045	0.0179	0.0255	0.0074	0.0130	0.0048	0.0140	0.1172	0.0030	0.0133
31	Insurance	0.0001	0.0001	0.0002	0.0000	0.0000	0.0006	0.0012	0.0012	0.0004	0.0013	0.0013	0.0013	0.0009	0.0009	0.0007	0.0006	0.0010	0.0016	0.0008	0.0034	0.0076	0.0005	0.0014
32	Real Estate and Business Ser.	0.0004	0.0004	0.0011	0.0002	0.0003	0.0336	0.0036	0.0023	0.0018	0.0015	0.0017	0.0013	0.0028	0.0016	0.0022	0.0019	0.0014	0.0029	0.0031	0.0099	0.0714	0.0045	0.0134
33	Housing	0.0012	0.0013	0.0035	0.0004	0.0002	0.0033	0.0079	0.0057	0.0037	0.0056	0.0060	0.0055	0.0075	0.0039	0.0049	0.0031	0.0023	0.0072	0.0223	0.0053	0.0117	0.0024	0.0052
34	Commty Soc and Per Services	0.0004	0.0005	0.0019	0.0040	0.0001	0.1383	0.0026	0.0016	0.0012	0.0014	0.0016	0.0011	0.0020	0.0018	0.0011	0.0024	0.0006	0.0018	0.0060	0.0023	0.0028	0.0028	0.0021
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	Domestic Inter. Input	0.2458	0.3187	1.1743	0.0708	0.0483	0.9370	1.5878	0.9335	0.7189	0.7418	0.8015	0.6075	1.1652	1.0644	0.5981	0.6021	0.3142	1.0300	1.7889	1.2456	1.5548	0.3919	1.1890

		Table 5.9D (Contd.): LEONTIEF INVERSE MATRIX 2000 FOR NIGERIA											
		24	25	26	27	28	29	30	31	32	33	34	35
	Activity Sectors	Other La	Water T	Railway	Commu	Distribut	Hotel &	Banking	Insuran	Real Est	Housing	Com. Se	Pro. G
1	Agriculture	0.0319	0.0359	0.0427	0.1065	0.0579	0.6823	0.0190	0.0359	0.0326	0.0048	0.0262	0.0000
2	Livestock	0.0019	0.0019	0.0025	0.0047	0.0043	0.0266	0.0012	0.0029	0.0020	0.0004	0.0022	0.0000
3	Fishing	0.0084	0.0188	0.0158	0.0879	0.0068	0.7093	0.0033	0.0100	0.0052	0.0009	0.0047	0.0000
4	Forestry	0.0003	0.0004	0.0007	0.0004	0.0003	0.0004	0.0001	0.0008	0.0003	0.0001	0.0002	0.0000
5	Crude Petroleum	0.4218	0.1107	0.1870	0.1076	0.1857	0.1266	0.2304	0.2279	0.0728	0.0083	0.0438	0.0000
6	Other Mining	0.0008	0.0137	0.0236	0.0008	0.0010	0.0014	0.0003	0.0009	0.0028	0.0008	0.0011	0.0000
7	Food	0.0011	0.0009	0.0012	0.0015	0.0018	0.0046	0.0007	0.0012	0.0010	0.0002	0.0007	0.0000
8	Drink, Bev. + Tobacco	0.0002	0.0002	0.0003	0.0003	0.0022	0.0007	0.0002	0.0003	0.0003	0.0000	0.0002	0.0000
9	Textiles	0.0006	0.0021	0.0020	0.0021	0.0010	0.0018	0.0005	0.0048	0.0013	0.0001	0.0009	0.0000
10	Footware + Leather	0.0004	0.0005	0.0007	0.0005	0.0004	0.0007	0.0008	0.0091	0.0011	0.0009	0.0035	0.0000
11	Wood & Wood Products	0.0099	0.0152	0.0367	0.0016	0.0015	0.0015	0.0007	0.0023	0.0011	0.0001	0.0028	0.0000
12	Paper & Paper products	0.0007	0.0009	0.0010	0.0174	0.0037	0.0018	0.0010	0.0088	0.0023	0.0002	0.0043	0.0000
13	Drugs and Chemical	0.0064	0.0061	0.0091	0.0096	0.0496	0.0318	0.0050	0.0068	0.0085	0.0011	0.0160	0.0000
14	Refineries	0.0086	0.0306	0.0342	0.0102	0.0121	0.0172	0.0038	0.0128	0.0229	0.0011	0.0118	0.0000
15	Rubber and Plastic	0.0013	0.0021	0.0025	0.0018	0.0013	0.0025	0.0038	0.0547	0.0042	0.0030	0.0006	0.0000
16	Iron and Steel	0.0084	0.0082	0.0109	0.0149	0.0356	0.0171	0.0069	0.0267	0.1611	0.0020	0.0714	0.0000
17	Fabricated Metal	0.0012	0.0010	0.0014	0.0019	0.0019	0.0077	0.0007	0.0013	0.0011	0.0002	0.0008	0.0000
18	Vehicle Assembly	0.0044	0.0036	0.0051	0.0071	0.0070	0.0281	0.0028	0.0046	0.0042	0.0007	0.0029	0.0000
19	Other Manufacturing	0.0013	0.0013	0.0018	0.0019	0.0024	0.0050	0.0008	0.0018	0.0036	0.0009	0.0066	0.0000
20	Electricity	0.0005	0.0041	0.0032	0.0040	0.0008	0.0017	0.0006	0.0117	0.0024	0.0001	0.0017	0.0000
21	Water Supply	0.0004	0.0039	0.0044	0.0025	0.0014	0.0014	0.0006	0.0043	0.0012	0.0001	0.0010	0.0000
22	Building and Construction	0.0130	0.0212	0.0265	0.0165	0.0088	0.0172	0.0032	0.0090	0.0503	0.0450	0.0040	0.0000
23	Air Transport	0.0026	0.0149	0.0474	0.0060	0.0072	0.0066	0.0038	0.0193	0.0087	0.0004	0.0032	0.0000
24	Other Land Transport	1.0361	0.0513	0.0774	0.1195	0.0977	0.0609	0.0347	0.0329	0.0520	0.0040	0.0370	0.0000
25	Water Transport	0.0003	1.0008	0.0026	0.0010	0.0002	0.0009	0.0002	0.0049	0.0003	0.0000	0.0003	0.0000
26	Railway Transport	0.0001	0.0007	1.0058	0.0008	0.0001	0.0005	0.0002	0.0049	0.0003	0.0000	0.0001	0.0000
27	Communication	0.0010	0.0174	0.0081	1.0067	0.0031	0.0026	0.0021	0.0255	0.0060	0.0002	0.0034	0.0000
28	Distributive Trade	0.1020	0.1021	0.1561	0.1263	1.5390	0.2521	0.0995	0.1085	0.1603	0.0119	0.0893	0.0000
29	Hotels and Restaurants	0.0072	0.0230	0.0170	0.1198	0.0019	1.0022	0.0015	0.0091	0.0017	0.0001	0.0010	0.0000
30	Banking and Finance	0.0048	0.0061	0.0209	0.0061	0.0031	0.0041	1.0053	0.0184	0.0111	0.0012	0.0027	0.0000
31	Insurance	0.0003	0.0060	0.0039	0.0019	0.0002	0.0005	0.0006	1.0077	0.0006	0.0002	0.0001	0.0000
32	Real Estate and Business Ser.	0.0053	0.0120	0.0069	0.0485	0.0017	0.0045	0.0008	0.0044	1.0101	0.0003	0.0045	0.0000
33	Housing	0.0023	0.0064	0.0175	0.0072	0.0184	0.0068	0.0039	0.0377	0.0067	1.0004	0.0019	0.0000
34	Commty Soc and Per Services	0.0012	0.0028	0.0047	0.0015	0.0020	0.0033	0.0008	0.0019	0.0014	0.0181	1.0847	0.0000
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
36	Domestic Inter. Input	0.6864	0.5270	0.7817	0.8471	1.0624	2.0323	0.4398	0.7135	0.6416	0.1078	0.4358	0.0000

Table 6.1A: Income Multiplier (1981)																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		Agricultur	Livestoc	Fishing	Forestry	Oil (Petrol	Other Mi	Food	Drink, Be	Textiles	Footwea	Wood +	Paper +	Drugs +	Refiner	Rubber	Iron + St	Fabricate	Vehicle A	Other Ma
1	Agriculture	0.7817	0.0438	0.0402	0.0000	0.0034	0.0290	0.5772	0.3329	0.0993	0.1836	0.0316	0.1053	0.0939	0.0040	0.0365	0.1198	0.0151	0.0176	0.0471
2	Livestocks and Dairy Products	0.0001	0.8667	0.0008	0.0000	0.0001	0.0025	0.0009	0.0038	0.0030	0.0851	0.0922	0.0088	0.0205	0.0006	0.0361	0.0252	0.0094	0.0215	0.3350
3	Fishing	0.0000	0.0000	0.3786	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0005	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0001	0.0017
4	Forestry	0.0000	0.0001	0.0004	0.9697	0.0000	0.0010	0.0004	0.0007	0.0013	0.0066	0.0466	0.0024	0.0166	0.0004	0.0340	0.0086	0.0022	0.0038	0.0207
5	Oil (Petroleum)	0.0526	0.0053	0.0821	0.0010	0.9202	0.0880	0.0470	0.0422	0.0441	0.0418	0.0567	0.0546	0.0387	0.5496	0.0749	0.1668	0.0842	0.0685	0.0342
6	Other Mining	0.0002	0.0002	0.0044	0.0000	0.0024	0.6250	0.0014	0.0027	0.0151	0.0070	0.0139	0.0278	0.0122	0.0022	0.0092	0.0765	0.0432	0.0079	0.0292
7	Food	0.0000	0.0088	0.0073	0.0000	0.0004	0.0002	0.1171	0.0010	0.0002	0.0076	0.0022	0.0003	0.0040	0.0003	0.0007	0.0016	0.0004	0.0008	0.0064
8	Drink, Beverage & Tobacco	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0002	0.0670	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000
9	Textiles	0.0001	0.0003	0.0014	0.0000	0.0001	0.0134	0.0009	0.0023	0.2863	0.0134	0.0065	0.0112	0.0011	0.0005	0.0214	0.1080	0.0036	0.0075	0.0046
10	Footwear and Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.1747	0.0001	0.0001	0.0000	0.0000	0.0001	0.0013	0.0000	0.0001	0.0000
11	Wood and Woods Products	0.0000	0.0000	0.0004	0.0000	0.0000	0.0005	0.0001	0.0007	0.0003	0.0066	0.1052	0.0038	0.0004	0.0001	0.0024	0.0041	0.0010	0.0009	0.0014
12	Paper and Paper Products	0.0002	0.0003	0.0009	0.0000	0.0006	0.0019	0.0010	0.0024	0.0055	0.0213	0.0070	0.2685	0.0034	0.0010	0.0082	0.0143	0.0131	0.0034	0.0009
13	Drugs and Chemical	0.0005	0.0009	0.0046	0.0000	0.0008	0.0125	0.0036	0.0040	0.0172	0.0407	0.0639	0.0106	0.4844	0.0070	0.0165	0.1207	0.0258	0.0455	0.0099
14	Refineries	0.0012	0.0001	0.0003	0.0001	0.0000	0.0020	0.0010	0.0010	0.0009	0.0006	0.0008	0.0005	0.0006	0.0537	0.0009	0.0123	0.0008	0.0017	0.0008
15	Rubber and Plastic Products	0.0002	0.0005	0.0008	0.0000	0.0001	0.0024	0.0015	0.0010	0.0028	0.0179	0.0103	0.0016	0.0018	0.0013	0.2543	0.0159	0.0038	0.0063	0.0024
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	Fabricated Metal	0.0000	0.0000	0.0001	0.0000	0.0002	0.0010	0.0003	0.0032	0.0005	0.0011	0.0014	0.0061	0.0007	0.0002	0.0069	0.0106	0.2204	0.0056	0.0005
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0003	0.0001	0.0004	0.0029	0.0005	0.0001	0.0000	0.0009	0.0011	0.0105	0.3625	0.0108
19	Other Manufacturing (Miscella)	0.0000	0.0001	0.0003	0.0000	0.0000	0.0010	0.0003	0.0021	0.0013	0.0067	0.0514	0.0048	0.0012	0.0001	0.0104	0.0110	0.0047	0.0112	0.1931
20	Electricity Generation	0.0001	0.0001	0.0143	0.0000	0.0004	0.0105	0.0004	0.0010	0.0035	0.0063	0.0138	0.0033	0.0034	0.0009	0.0103	0.0168	0.0070	0.0058	0.0041
21	Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	Building and Construction	0.0002	0.0004	0.0220	0.0000	0.0002	0.0096	0.0007	0.0052	0.0072	0.0151	0.0080	0.0079	0.0105	0.0014	0.0154	0.0270	0.0092	0.0045	0.0019
23	Air Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	Other Land Transport	0.0007	0.0003	0.0020	0.0004	0.0006	0.0128	0.0009	0.0020	0.0026	0.0040	0.0044	0.0046	0.0037	0.0256	0.0064	0.0336	0.0078	0.0191	0.0034
25	Water Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	Railway Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	Communication	0.0000	0.0001	0.0004	0.0000	0.0000	0.0003	0.0002	0.0003	0.0003	0.0002	0.0004	0.0003	0.0003	0.0003	0.0004	0.0020	0.0005	0.0004	0.0001
28	Distribution	0.0089	0.0180	0.0254	0.0001	0.0021	0.0460	0.0101	0.0251	0.0223	0.0205	0.0853	0.0388	0.0143	0.0285	0.0437	0.1310	0.1572	0.0739	0.0222
29	Hotels and Restaurants	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0001	0.0002	0.0001	0.0001	0.0000
30	Banking and Finance	0.0001	0.0002	0.0055	0.0002	0.0002	0.0044	0.0010	0.0015	0.0023	0.0017	0.0026	0.0009	0.0008	0.0011	0.0064	0.0424	0.0027	0.0056	0.0017
31	Insurance	0.0001	0.0001	0.0060	0.0001	0.0001	0.0025	0.0004	0.0008	0.0009	0.0008	0.0017	0.0006	0.0004	0.0009	0.0020	0.0189	0.0013	0.0026	0.0010
32	Real Estate and Business Ser.	0.0000	0.0001	0.0037	0.0000	0.0001	0.0026	0.0002	0.0003	0.0005	0.0005	0.0008	0.0005	0.0003	0.0007	0.0009	0.0027	0.0011	0.0011	0.0004
33	Housing	0.0003	0.0005	0.0029	0.0000	0.0003	0.0028	0.0006	0.0013	0.0016	0.0029	0.0051	0.0048	0.0017	0.0015	0.0040	0.0161	0.0059	0.0039	0.0018
34	Commty Soc and Per services	0.0000	0.0000	0.0003	0.0004	0.0000	0.0045	0.0000	0.0001	0.0001	0.0003	0.0021	0.0004	0.0001	0.0000	0.0004	0.0010	0.0005	0.0004	0.0076
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.8471	0.9469	0.6052	0.9718	0.9326	0.8766	0.7672	0.5051	0.5194	0.6675	0.6175	0.5691	0.7153	0.6817	0.6038	0.9896	0.6318	0.6823	0.7428

Table 6.1A (Contd.): Income Multiplier (1981)

anu		20 Electricity	21 Water Su	22 Building	23 Air Tran	24 Other La	25 Water T	26 Railway	27 Commur	28 Distribu	29 Hotels +	30 Bankin Fi	31 Insuranc	32 Real Est	33 Housing	34 Commty :	35 Produc
1	Agriculture	0.0311	0.0048	0.0351	0.0124	0.0028	0.0058	0.0108	0.0105	0.0117	0.1255	0.0083	0.0033	0.0060	0.0006	0.0043	0.0000
2	Livestocks and Dairy Products	0.0016	0.0010	0.0077	0.0051	0.0007	0.0025	0.0043	0.0016	0.0033	0.0267	0.0006	0.0005	0.0005	0.0001	0.0008	0.0000
3	Fishing	0.0000	0.0000	0.0000	0.0002	0.0000	0.0002	0.0003	0.0002	0.0000	0.0190	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0009	0.0006	0.0040	0.0040	0.0006	0.0019	0.0033	0.0007	0.0023	0.0005	0.0002	0.0003	0.0004	0.0001	0.0004	0.0000
5	Oil (Petroleum)	0.0199	0.0976	0.0563	0.0769	0.2884	0.0339	0.1237	0.0589	0.0516	0.0264	0.0195	0.0186	0.0116	0.0009	0.0145	0.0000
6	Other Mining	0.0388	0.0034	0.0316	0.0065	0.0031	0.0038	0.0082	0.0041	0.0045	0.0017	0.0019	0.0013	0.0010	0.0005	0.0013	0.0000
7	Food	0.0002	0.0001	0.0005	0.0003	0.0002	0.0002	0.0004	0.0002	0.0002	0.0024	0.0003	0.0002	0.0005	0.0000	0.0001	0.0000
8	Drink, Beverage & Tobacco	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0001	0.0000	0.0000	0.0016	0.0001	0.0001	0.0003	0.0000	0.0002	0.0000
9	Textiles	0.0048	0.0018	0.0132	0.0052	0.0007	0.0022	0.0033	0.0019	0.0061	0.0012	0.0009	0.0006	0.0017	0.0002	0.0013	0.0000
10	Footwear and Leather	0.0000	0.0000	0.0001	0.0005	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000
11	Wood and Woods Products	0.0003	0.0005	0.0055	0.0009	0.0001	0.0005	0.0007	0.0005	0.0004	0.0002	0.0003	0.0002	0.0001	0.0001	0.0001	0.0000
12	Paper and Paper Products	0.0011	0.0012	0.0021	0.0053	0.0011	0.0026	0.0071	0.0139	0.0077	0.0026	0.0155	0.0030	0.0019	0.0000	0.0009	0.0000
13	Drugs and Chemical	0.0179	0.0057	0.0393	0.0104	0.0020	0.0048	0.0058	0.0070	0.0210	0.0037	0.0011	0.0016	0.0040	0.0007	0.0082	0.0000
14	Refineries	0.0005	0.0002	0.0012	0.0020	0.0015	0.0011	0.0055	0.0003	0.0005	0.0004	0.0002	0.0002	0.0001	0.0000	0.0006	0.0000
15	Rubber and Plastic Products	0.0013	0.0015	0.0024	0.0250	0.0037	0.0119	0.0216	0.0016	0.0109	0.0021	0.0004	0.0012	0.0016	0.0000	0.0007	0.0000
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	Fabricated Metal	0.0004	0.0002	0.0010	0.0010	0.0002	0.0004	0.0008	0.0004	0.0008	0.0003	0.0004	0.0001	0.0001	0.0000	0.0001	0.0000
18	Vehicle Assembly	0.0000	0.0000	0.0003	0.0001	0.0000	0.0001	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing (Miscella)	0.0005	0.0004	0.0035	0.0016	0.0002	0.0008	0.0013	0.0005	0.0010	0.0003	0.0003	0.0002	0.0002	0.0001	0.0002	0.0000
20	Electricity Generation	0.3001	0.0008	0.0050	0.0031	0.0006	0.0015	0.0025	0.0033	0.0017	0.0042	0.0010	0.0043	0.0024	0.0001	0.0025	0.0000
21	Water Supply	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	Building and Construction	0.0117	0.0285	0.3267	0.0348	0.0018	0.0079	0.0088	0.0186	0.0087	0.0037	0.0010	0.0017	0.0014	0.0055	0.0014	0.0000
23	Air Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	Other Land Transport	0.0036	0.0043	0.0090	0.0103	0.2720	0.0033	0.0219	0.0167	0.0072	0.0050	0.0083	0.0105	0.0068	0.0002	0.0044	0.0000
25	Water Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	Railway Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	Communication	0.0004	0.0004	0.0004	0.0010	0.0002	0.0012	0.0021	0.1058	0.0012	0.0013	0.0006	0.0020	0.0021	0.0000	0.0016	0.0000
28	Distribution	0.0321	0.0545	0.0331	0.1155	0.0297	0.0749	0.0621	0.0489	0.5209	0.0694	0.0082	0.0243	0.0131	0.0006	0.0155	0.0000
29	Hotels and Restaurants	0.0001	0.0001	0.0001	0.0019	0.0003	0.0020	0.0041	0.0033	0.0001	0.2902	0.0001	0.0002	0.0001	0.0000	0.0001	0.0000
30	Banking and Finance	0.0032	0.0036	0.0049	0.0103	0.0030	0.0080	0.0197	0.0037	0.0019	0.0028	0.3797	0.0022	0.0077	0.0001	0.0063	0.0000
31	Insurance	0.0014	0.0040	0.0027	0.0084	0.0033	0.0049	0.0217	0.0038	0.0010	0.0094	0.0018	0.5792	0.0128	0.0001	0.0083	0.0000
32	Real Estate and Business Ser.	0.0048	0.0060	0.0010	0.0110	0.0029	0.0043	0.0058	0.0074	0.0018	0.0041	0.0017	0.0010	0.1499	0.0000	0.0014	0.0000
33	Housing	0.0026	0.0039	0.0044	0.0117	0.0021	0.0049	0.0045	0.0058	0.0137	0.0135	0.0079	0.0097	0.0138	0.9834	0.0203	0.0000
34	Commty Soc and Per services	0.0003	0.0001	0.0004	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.7481	0.0000
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.4795	0.2252	0.5914	0.3655	0.6213	0.1859	0.3508	0.3199	0.6807	0.6181	0.4605	0.6665	0.2400	0.9932	0.8437	0.0000

Table 6.1B: Income Multiplier (1985)																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		Agricultu	Livestoc	Fishing	Forestry	Crude I	Other M	Food	Drink, B	Textiles	Footwea	Wood &	Paper &	Drugs &	Refineri	Rubber	Iron & S	Fabricat	Vehicle	Other M	Electric	Water Su	Building
1	Agriculture	0.8063	0.0121	0.0004	0.0000	0.0001	0.0049	0.1680	0.1015	0.1180	0.0010	0.0002	0.0001	0.0923	0.0011	0.0004	0.0736	0.0133	0.0131	0.1166	0.0004	0.0003	0.0018
2	Livestocks and Dairy Products	0.0002	0.9008	0.0001	0.0000	0.0000	0.0010	0.0581	0.0002	0.0001	0.0652	0.0000	0.0000	0.0226	0.0003	0.0021	0.0020	0.0009	0.0044	0.0195	0.0001	0.0001	0.0003
3	Fishing	0.0000	0.0000	0.3625	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000
4	Forestry	0.0004	0.0001	0.0005	0.9768	0.0001	0.0017	0.0006	0.0028	0.0003	0.0084	0.2201	0.1571	0.0127	0.0006	0.0979	0.0241	0.0142	0.0151	0.0179	0.0004	0.0004	0.0140
5	Oil (Petroleum)	0.0032	0.0027	0.1882	0.0005	0.9142	0.0716	0.0272	0.0296	0.0206	0.0195	0.0385	0.0276	0.0181	0.5288	0.0224	0.3623	0.0740	0.0627	0.0358	0.1899	0.1480	0.0188
6	Other Mining	0.0007	0.0000	0.0001	0.0000	0.0002	0.6119	0.0004	0.0003	0.0002	0.0002	0.0002	0.0002	0.0015	0.0004	0.0007	0.2249	0.0324	0.0113	0.0190	0.0005	0.0006	0.0510
7	Food	0.0000	0.0190	0.0004	0.0000	0.0000	0.0000	0.2655	0.0000	0.0000	0.0014	0.0000	0.0000	0.0005	0.0000	0.0001	0.0002	0.0001	0.0001	0.0028	0.0000	0.0000	0.0000
8	Drink, Beverage & Tobacco	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0948	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0001	0.0000	0.0001	0.0025	0.0000	0.0000	0.0000
9	Textiles	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.2919	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0003	0.0005	0.0001	0.0061	0.0001	0.0001	0.0001
10	Footwear and Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.4097	0.0000	0.0000	0.0000	0.0000	0.0051	0.0014	0.0002	0.0126	0.0000	0.0000	0.0000	0.0000
11	Wood and Woods Products	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0000	0.0001	0.1835	0.0000	0.0001	0.0000	0.0003	0.0014	0.0053	0.0039	0.0028	0.0000	0.0000	0.0009
12	Paper and Paper Products	0.0002	0.0000	0.0008	0.0000	0.0001	0.0009	0.0004	0.0042	0.0002	0.0004	0.0003	0.2869	0.0025	0.0003	0.0032	0.0265	0.0112	0.0112	0.0032	0.0003	0.0003	0.0007
13	Drugs and Chemical	0.0009	0.0001	0.0008	0.0000	0.0001	0.0208	0.0005	0.0026	0.0003	0.0002	0.0004	0.0003	0.4906	0.0053	0.0003	0.0283	0.0165	0.0513	0.0055	0.0002	0.0002	0.0052
14	Refineries	0.0002	0.0000	0.0003	0.0000	0.0000	0.0038	0.0006	0.0010	0.0007	0.0007	0.0017	0.0008	0.0006	0.0518	0.0008	0.0188	0.0037	0.0028	0.0016	0.0001	0.0001	0.0006
15	Rubber and Plastic Products	0.0001	0.0001	0.0001	0.0000	0.0001	0.0013	0.0009	0.0009	0.0004	0.0252	0.0010	0.0006	0.0005	0.0009	0.2990	0.0109	0.0024	0.0022	0.0004	0.0002	0.0002	0.0004
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	Fabricated Metal	0.0062	0.0001	0.0000	0.0001	0.0001	0.0059	0.0013	0.0008	0.0009	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0028	0.3629	0.0002	0.0025	0.0000	0.0000	0.0014
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3755	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing (Miscella)	0.0031	0.0000	0.0000	0.0000	0.0000	0.0001	0.0007	0.0009	0.0005	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0050	0.0012	0.0003	0.3095	0.0008	0.0005	0.0001
20	Electricity Generation	0.0000	0.0000	0.0009	0.0000	0.0000	0.0005	0.0004	0.0008	0.0021	0.0009	0.0008	0.0005	0.0004	0.0010	0.0006	0.0090	0.0016	0.0007	0.0003	0.0766	0.0002	0.0002
21	Water Supply	0.0000	0.0000	0.0005	0.0000	0.0000	0.0002	0.0003	0.0003	0.0012	0.0004	0.0004	0.0003	0.0003	0.0005	0.0004	0.0060	0.0012	0.0005	0.0002	0.0001	0.0586	0.0001
22	Building and Construction	0.0000	0.0000	0.0002	0.0000	0.0002	0.0030	0.0003	0.0003	0.0002	0.0002	0.0003	0.0002	0.0002	0.0004	0.0002	0.0027	0.0005	0.0004	0.0002	0.0028	0.0035	0.3457
23	Air Transport	0.0000	0.0001	0.0001	0.0000	0.0001	0.0011	0.0015	0.0018	0.0007	0.0012	0.0032	0.0010	0.0009	0.0019	0.0011	0.0035	0.0014	0.0018	0.0005	0.0003	0.0002	0.0004
24	Other Land Transport	0.0011	0.0021	0.0033	0.0003	0.0041	0.0381	0.0211	0.0191	0.0057	0.0105	0.0209	0.0201	0.0122	0.0331	0.0136	0.1755	0.0377	0.0383	0.0092	0.0041	0.0043	0.0123
25	Water Transport	0.0000	0.0001	0.0002	0.0000	0.0002	0.0015	0.0019	0.0022	0.0008	0.0015	0.0023	0.0012	0.0011	0.0018	0.0019	0.0055	0.0015	0.0027	0.0005	0.0005	0.0005	0.0007
26	Railway Transport	0.0000	0.0001	0.0001	0.0000	0.0001	0.0020	0.0010	0.0010	0.0004	0.0004	0.0002	0.0005	0.0001	0.0004	0.0010	0.0017	0.0004	0.0003	0.0002	0.0002	0.0001	0.0002
27	Communication	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0003	0.0019	0.0005	0.0004	0.0001	0.0001	0.0001	0.0001
28	Distribution	0.0032	0.0115	0.0067	0.0001	0.0014	0.0122	0.0733	0.0563	0.0281	0.0448	0.0826	0.0576	0.0407	0.0282	0.0411	0.1006	0.0292	0.0805	0.0198	0.0061	0.0057	0.0337
29	Hotels and Restaurants	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000
30	Banking and Finance	0.0002	0.0002	0.0146	0.0001	0.0004	0.0027	0.0026	0.0031	0.0022	0.0019	0.0017	0.0017	0.0023	0.0022	0.0062	0.0651	0.0122	0.0076	0.0021	0.0028	0.0027	0.0023
31	Insurance	0.0000	0.0000	0.0011	0.0000	0.0000	0.0004	0.0002	0.0003	0.0002	0.0001	0.0003	0.0001	0.0002	0.0003	0.0003	0.0054	0.0010	0.0006	0.0002	0.0003	0.0003	0.0002
32	Real Estate and Business Ser.	0.0003	0.0005	0.0465	0.0000	0.0025	0.0411	0.0056	0.0061	0.0059	0.0037	0.0051	0.0035	0.0038	0.0062	0.0052	0.0520	0.0108	0.0084	0.0035	0.0612	0.0682	0.0059
33	Housing	0.0002	0.0005	0.0059	0.0000	0.0003	0.0021	0.0042	0.0046	0.0029	0.0050	0.0061	0.0056	0.0046	0.0028	0.0041	0.0248	0.0066	0.0057	0.0026	0.0017	0.0041	0.0044
34	Commty Soc and Per services	0.0001	0.0000	0.0009	0.0003	0.0000	0.0170	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0000	0.0001	0.0064	0.0009	0.0003	0.0128	0.0000	0.0000	0.0014
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.8272	0.9504	0.6358	0.9785	0.9244	0.8464	0.6372	0.3362	0.4851	0.6029	0.5705	0.5664	0.7111	0.6686	0.5086	1.2431	0.6444	0.7153	0.5982	0.3497	0.2993	0.5030

		Table 6.1B (Contd.): Income Multiplier (1985)												
		23	24	25	26	27	28	29	30	31	32	33	34	35
		Air Trans	Other L	Water T	Railway T	Commur	Distribut	Hotel &	Banking	Insuranc	Real Es	Housing	Com. S	Pro. G
1	Agriculture	0.0012	0.0003	0.0013	0.0022	0.0043	0.0006	0.1338	0.0004	0.0006	0.0007	0.0000	0.0016	0.0000
2	Livestocks and Dairy Products	0.0005	0.0001	0.0005	0.0009	0.0015	0.0001	0.0510	0.0001	0.0002	0.0001	0.0000	0.0004	0.0000
3	Fishing	0.0001	0.0000	0.0001	0.0003	0.0006	0.0000	0.0219	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0080	0.0014	0.0088	0.0138	0.0037	0.0013	0.0010	0.0065	0.0146	0.0010	0.0002	0.0008	0.0000
5	Oil (Petroleum)	0.0455	0.2414	0.0590	0.0982	0.0279	0.0600	0.0261	0.0133	0.0398	0.0039	0.0003	0.0134	0.0000
6	Other Mining	0.0021	0.0017	0.0028	0.0049	0.0003	0.0003	0.0002	0.0001	0.0004	0.0000	0.0008	0.0008	0.0000
7	Food	0.0001	0.0000	0.0002	0.0004	0.0004	0.0000	0.0095	0.0004	0.0003	0.0003	0.0000	0.0000	0.0000
8	Drink, Beverage & Tobacco	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0018	0.0001	0.0001	0.0001	0.0000	0.0003	0.0000
9	Textiles	0.0003	0.0001	0.0003	0.0004	0.0006	0.0007	0.0001	0.0001	0.0002	0.0004	0.0000	0.0000	0.0000
10	Footwear and Leather	0.0004	0.0001	0.0004	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000
11	Wood and Woods Products	0.0002	0.0000	0.0005	0.0005	0.0000	0.0003	0.0001	0.0001	0.0002	0.0000	0.0000	0.0000	0.0000
12	Paper and Paper Products	0.0021	0.0005	0.0026	0.0056	0.0063	0.0008	0.0013	0.0117	0.0254	0.0015	0.0000	0.0010	0.0000
13	Drugs and Chemical	0.0008	0.0003	0.0009	0.0011	0.0005	0.0015	0.0005	0.0001	0.0003	0.0014	0.0001	0.0051	0.0000
14	Refineries	0.0016	0.0012	0.0018	0.0043	0.0002	0.0002	0.0001	0.0001	0.0005	0.0000	0.0000	0.0005	0.0000
15	Rubber and Plastic Products	0.0201	0.0031	0.0203	0.0310	0.0006	0.0014	0.0004	0.0002	0.0012	0.0004	0.0000	0.0004	0.0000
16	Iron and Steel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	Fabricated Metal	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing (Miscella)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Electricity Generation	0.0004	0.0001	0.0003	0.0004	0.0009	0.0004	0.0008	0.0001	0.0010	0.0002	0.0000	0.0005	0.0000
21	Water Supply	0.0002	0.0001	0.0003	0.0002	0.0004	0.0004	0.0005	0.0002	0.0003	0.0001	0.0000	0.0003	0.0000
22	Building and Construction	0.0058	0.0009	0.0056	0.0045	0.0012	0.0003	0.0002	0.0001	0.0008	0.0001	0.0058	0.0002	0.0000
23	Air Transport	0.1739	0.0002	0.0014	0.0039	0.0007	0.0009	0.0009	0.0003	0.0022	0.0004	0.0000	0.0004	0.0000
24	Other Land Transport	0.0228	0.2875	0.0334	0.0305	0.0220	0.0519	0.0110	0.0097	0.0318	0.0033	0.0002	0.0080	0.0000
25	Water Transport	0.0040	0.0003	0.1953	0.0057	0.0012	0.0002	0.0006	0.0002	0.0040	0.0006	0.0000	0.0011	0.0000
26	Railway Transport	0.0011	0.0001	0.0008	0.1246	0.0003	0.0000	0.0001	0.0001	0.0005	0.0000	0.0000	0.0003	0.0000
27	Communication	0.0005	0.0001	0.0008	0.0014	0.0862	0.0003	0.0007	0.0004	0.0028	0.0005	0.0000	0.0015	0.0000
28	Distribution	0.1410	0.0268	0.1522	0.1083	0.0123	0.5184	0.0700	0.0125	0.0531	0.0083	0.0006	0.0119	0.0000
29	Hotels and Restaurants	0.0017	0.0003	0.0018	0.0031	0.0078	0.0001	0.2672	0.0001	0.0004	0.0001	0.0000	0.0002	0.0000
30	Banking and Finance	0.0090	0.0027	0.0094	0.0174	0.0070	0.0006	0.0028	0.4051	0.0185	0.0035	0.0000	0.0088	0.0000
31	Insurance	0.0009	0.0005	0.0012	0.0033	0.0009	0.0001	0.0003	0.0005	0.1122	0.0007	0.0000	0.0020	0.0000
32	Real Estate and Business Ser.	0.0584	0.0147	0.0557	0.0768	0.1670	0.0043	0.0184	0.0141	0.0545	0.8670	0.0001	0.0159	0.0000
33	Housing	0.0085	0.0021	0.0084	0.0079	0.0159	0.0158	0.0115	0.0114	0.0725	0.0073	0.9834	0.0196	0.0000
34	Commty Soc and Per services	0.0001	0.0000	0.0001	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.7468	0.0000
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.5115	0.5868	0.5665	0.5526	0.3709	0.6610	0.6342	0.4882	0.4384	0.9017	0.9917	0.8423	0.0000

Table 6.1C: Income Multiplier (1995)																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Agricultu	Livestoc	Fishing	Forestry	Crude Pe	Other M	Food	Drink, B	Textiles	Footware	Wood &	Paper &	Drugs &	Refineries	Rubber &	Iron & St	Fabricat	Vehicle Ass	Other man	Electricity
1	Agriculture	0.8859	0.0551	0.0070	0.0011	0.0008	0.0171	0.4231	0.0650	0.1391	0.0092	0.0014	0.0201	0.0940	0.0107	0.1750	0.0510	0.0144	0.0039	0.0557	0.0273
2	Livestocks and Dairy Products	0.0015	0.9043	0.0004	0.0003	0.0002	0.0054	0.1003	0.0153	0.0004	0.1279	0.0002	0.0011	0.1035	0.0006	0.1714	0.0005	0.0008	0.0003	0.0153	0.0016
3	Fishing	0.0000	0.0001	0.5123	0.0000	0.0000	0.0002	0.0009	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000
4	Forestry	0.0029	0.0003	0.0005	0.9351	0.0002	0.0075	0.0047	0.0021	0.0010	0.0006	0.0034	0.0913	0.0128	0.0007	0.0951	0.0319	0.0538	0.0373	0.1179	0.0092
5	Oil (Petroleum)	0.0044	0.0044	0.1827	0.0036	0.9316	0.1231	0.1061	0.0247	0.0069	0.0104	0.0097	0.0552	0.0320	0.0973	0.0436	0.0447	0.0566	0.0327	0.0860	0.0490
6	Other Mining	0.0000	0.0000	0.0008	0.0000	0.0000	0.1005	0.0001	0.0001	0.0000	0.0001	0.0001	0.0003	0.0001	0.0005	0.0002	0.0003	0.0003	0.0002	0.0004	0.0003
7	Food	0.0000	0.0047	0.0001	0.0000	0.0000	0.0000	0.1246	0.0187	0.0000	0.0007	0.0000	0.0000	0.0005	0.0000	0.0009	0.0000	0.0000	0.0000	0.0001	0.0000
8	Drink, Beverage & Tobacco	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.0001	0.6950	0.0000	0.0001	0.0001	0.0006	0.0002	0.0003	0.0003	0.0002	0.0004	0.0001	0.0004	0.0001
9	Textiles	0.0001	0.0000	0.0022	0.0001	0.0001	0.0036	0.0001	0.0001	0.7044	0.0001	0.0001	0.0013	0.0009	0.0006	0.0023	0.0008	0.0009	0.0016	0.0011	0.1049
10	Footwear and Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.6423	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0003
11	Wood and Woods Products	0.0003	0.0001	0.0006	0.0003	0.0008	0.0081	0.0004	0.0003	0.0002	0.0003	0.6415	0.0014	0.0015	0.0019	0.0026	0.0019	0.0024	0.0008	0.0032	0.0021
12	Paper and Paper Products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000
13	Drugs and Chemical	0.0042	0.0003	0.0009	0.0001	0.0004	0.0141	0.0022	0.0005	0.0007	0.0002	0.0002	0.0021	0.3133	0.0012	0.0019	0.0010	0.0015	0.0004	0.0034	0.0007
14	Refineries	0.0110	0.0017	0.0050	0.0056	0.0008	0.0286	0.0307	0.0405	0.0253	0.0341	0.0372	0.1991	0.0802	0.4809	0.0973	0.1110	0.1729	0.1567	0.0084	0.0306
15	Rubber and Plastic Products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0482	0.0000	0.0000	0.0000	0.0000	0.0001
16	Iron and Steel	0.0000	0.0000	0.0006	0.0000	0.0006	0.0529	0.0001	0.0001	0.0000	0.0001	0.0001	0.0005	0.0002	0.0005	0.0003	0.3941	0.0003	0.0002	0.0005	0.0005
17	Fabricated Metal	0.0042	0.0003	0.0001	0.0021	0.0001	0.0014	0.0020	0.0003	0.0006	0.0000	0.0000	0.0003	0.0005	0.0001	0.0010	0.0003	0.2400	0.0001	0.0005	0.0001
18	Vehicle Assembly	0.0121	0.0008	0.0001	0.0000	0.0000	0.0002	0.0058	0.0009	0.0019	0.0001	0.0000	0.0003	0.0013	0.0002	0.0024	0.0007	0.0002	0.4010	0.0018	0.0004
19	Other Manufacturing (Miscella)	0.0014	0.0001	0.0004	0.0038	0.0000	0.0005	0.0007	0.0028	0.0003	0.0001	0.0000	0.0007	0.0023	0.0001	0.0011	0.0015	0.0020	0.0004	0.2541	0.0165
20	Electricity Generation	-0.0001	0.0000	-0.0035	-0.0001	-0.0001	-0.0012	-0.0002	-0.0001	-0.0001	-0.0001	-0.0001	-0.0017	-0.0009	-0.0007	-0.0029	-0.0012	-0.0013	-0.0026	-0.0012	-0.1859
21	Water Supply	0.0000	0.0000	-0.0001	0.0000	0.0000	-0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001	-0.0001	0.0000	-0.0002	0.0000	-0.0001	-0.0001	-0.0001	-0.0003
22	Building and Construction	0.0012	0.0002	0.0007	0.0011	0.0004	0.0160	0.0026	0.0022	0.0063	0.0055	0.0035	0.0103	0.0163	0.0059	0.0071	0.0048	0.0051	0.0033	0.0034	0.0160
23	Air Transport	0.0001	0.0000	0.0002	0.0001	0.0000	0.0009	0.0001	0.0000	0.0000	0.0001	0.0000	0.0002	0.0002	0.0002	0.0005	0.0003	0.0002	0.0002	0.0003	0.0011
24	Other Land Transport	0.0045	0.0006	0.0096	0.0035	0.0187	0.1912	0.0075	0.0060	0.0038	0.0069	0.0056	0.0297	0.0341	0.0459	0.0532	0.0428	0.0577	0.0153	0.0749	0.0180
25	Water Transport	0.0000	0.0000	0.0000	0.0001	0.0000	0.0002	0.0001	0.0000	0.0000	0.0002	0.0001	0.0003	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0001	0.0007
26	Railway Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
27	Communication	0.0000	0.0000	0.0003	0.0000	0.0000	0.0003	0.0001	0.0002	0.0001	0.0003	0.0003	0.0013	0.0005	0.0003	0.0011	0.0003	0.0003	0.0001	0.0013	0.0005
28	Distribution	0.0076	0.0032	0.0401	0.0031	0.0036	0.0388	0.0114	0.0092	0.0054	0.0091	0.0082	0.1300	0.0508	0.0694	0.0691	0.0462	0.0923	0.0230	0.0926	0.0232
29	Hotels and Restaurants	0.0001	0.0000	0.0002	0.0000	0.0003	0.0036	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.0003	0.0003	0.0004	0.0003	0.0004	0.0001	0.0005	0.0002
30	Banking and Finance	0.0020	0.0003	0.0231	0.0018	0.0034	0.0315	0.0050	0.0066	0.0062	0.0086	0.0146	0.0796	0.0219	0.0277	0.0441	0.0354	0.0471	0.0097	0.0715	0.0501
31	Insurance	0.0000	0.0000	0.0003	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0004	0.0018
32	Real Estate and Business Ser.	0.0001	0.0000	0.0017	0.0000	0.0002	0.0011	0.0005	0.0004	0.0002	0.0009	0.0006	0.0040	0.0010	0.0010	0.0025	0.0009	0.0009	0.0005	0.0022	0.0115
33	Housing	0.0008	0.0002	0.0070	0.0006	0.0006	0.0044	0.0012	0.0013	0.0008	0.0010	0.0011	0.0156	0.0070	0.0060	0.0139	0.0066	0.0125	0.0021	0.0268	0.0084
34	Commty Soc and Per services	0.0000	0.0000	0.0011	0.0002	0.0001	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001	0.0000	0.0002	0.0001
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.9441	0.9766	0.7946	0.9627	0.9629	0.6514	0.8303	0.8922	0.9038	0.8589	0.7279	0.6481	0.7750	0.7519	0.8328	0.7767	0.7621	0.6875	0.8222	0.1892

	Table 6.1C (Contd.): Income Multiplier (1995)																
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		Water Su	Building	Air Trans	Other La	Water Tr	Railway T	Commun	Distributi	Hotels &	Banking	Insurance	Real Est	Housing	Com. Se	Pro. G
1	Agriculture	0.0297	0.0115	0.0144	0.0077	0.0214	0.0185	0.0070	0.0995	0.1069	0.0020	0.0155	0.0091	0.0006	0.0057	0.0000
2	Livestocks and Dairy Products	0.0018	0.0114	0.0012	0.0004	0.0013	0.0024	0.0014	0.0036	0.0367	0.0003	0.0015	0.0017	0.0004	0.0030	0.0000
3	Fishing	0.0001	0.0000	0.0002	0.0001	0.0001	0.0003	0.0006	0.0001	0.0208	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0119	0.0374	0.0019	0.0004	0.0018	0.0056	0.0022	0.0012	0.0009	0.0004	0.0025	0.0021	0.0016	0.0030	0.0000
5	Oil (Petroleum)	0.0269	0.0615	0.1878	0.2090	0.2174	0.0986	0.0256	0.0452	0.0163	0.0321	0.2118	0.0191	0.0029	0.0081	0.0000
6	Other Mining	0.0001	0.0002	0.0023	0.0002	0.0028	0.0048	0.0002	0.0001	0.0001	0.0002	0.0006	0.0001	0.0000	0.0000	0.0000
7	Food	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	Drink, Beverage & Tobacco	0.0001	0.0001	0.0004	0.0002	0.0006	0.0004	0.0001	0.0030	0.0003	0.0001	0.0004	0.0002	0.0000	0.0001	0.0000
9	Textiles	0.1113	0.0005	0.0006	0.0001	0.0031	0.0092	0.0020	0.0001	0.0012	0.0004	0.0046	0.0014	0.0000	0.0006	0.0000
10	Footwear and Leather	0.0001	0.0046	0.0001	0.0000	0.0001	0.0004	0.0002	0.0000	0.0000	0.0002	0.0003	0.0011	0.0002	0.0051	0.0000
11	Wood and Woods Products	0.0010	0.0009	0.1238	0.0212	0.0083	0.1450	0.0052	0.0012	0.0006	0.0008	0.0091	0.0064	0.0001	0.0028	0.0000
12	Paper and Paper Products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
13	Drugs and Chemical	0.0007	0.0002	0.0018	0.0009	0.0025	0.0023	0.0008	0.0102	0.0105	0.0005	0.0026	0.0017	0.0000	0.0056	0.0000
14	Refineries	0.0256	0.0089	0.0459	0.0067	0.0528	0.0435	0.0100	0.0065	0.0084	0.0014	0.0106	0.0086	0.0004	0.0093	0.0000
15	Rubber and Plastic Products	0.0001	0.0029	0.0001	0.0000	0.0001	0.0003	0.0001	0.0000	0.0000	0.0000	0.0001	0.0003	0.0001	0.0000	0.0000
16	Iron and Steel	0.0002	0.0002	0.0015	0.0003	0.0018	0.0029	0.0019	0.0011	0.0002	0.0002	0.0011	0.0099	0.0001	0.0157	0.0000
17	Fabricated Metal	0.0002	0.0001	0.0001	0.0000	0.0002	0.0002	0.0000	0.0005	0.0005	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
18	Vehicle Assembly	0.0005	0.0002	0.0002	0.0001	0.0003	0.0003	0.0001	0.0014	0.0015	0.0000	0.0002	0.0001	0.0000	0.0001	0.0000
19	Other Manufacturing (Miscella)	0.0242	0.0012	0.0002	0.0001	0.0006	0.0020	0.0004	0.0003	0.0005	0.0001	0.0009	0.0003	0.0001	0.0021	0.0000
20	Electricity Generation	-0.0210	-0.0006	-0.0008	-0.0002	-0.0051	-0.0048	-0.0028	-0.0001	-0.0013	-0.0005	-0.0047	-0.0017	0.0000	-0.0008	0.0000
21	Water Supply	-0.0305	0.0000	0.0000	0.0000	0.0000	-0.0019	-0.0002	0.0000	-0.0002	0.0000	-0.0006	-0.0001	0.0000	-0.0001	0.0000
22	Building and Construction	0.0067	0.4193	0.0098	0.0017	0.0120	0.0386	0.0024	0.0015	0.0011	0.0004	0.0027	0.0013	0.0173	0.0008	0.0000
23	Air Transport	0.0004	0.0005	0.1115	0.0002	0.0005	0.0103	0.0031	0.0001	0.0002	0.0003	0.0061	0.0014	0.0000	0.0005	0.0000
24	Other Land Transport	0.0134	0.0090	0.0383	0.5671	0.0386	0.0516	0.0274	0.0265	0.0094	0.0103	0.0605	0.0266	0.0006	0.0116	0.0000
25	Water Transport	0.0003	0.0004	0.0004	0.0001	0.1221	0.0107	0.0018	0.0000	0.0001	0.0001	0.0004	0.0005	0.0000	0.0001	0.0000
26	Railway Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.4738	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	Communication	0.0004	0.0002	0.0014	0.0002	0.0008	0.0045	0.1178	0.0001	0.0007	0.0005	0.0059	0.0027	0.0000	0.0007	0.0000
28	Distribution	0.0251	0.0084	0.0866	0.0497	0.1325	0.0910	0.0225	0.6677	0.0610	0.0114	0.0891	0.0438	0.0005	0.0128	0.0000
29	Hotels and Restaurants	0.0002	0.0001	0.0053	0.0009	0.0026	0.0078	0.0150	0.0016	0.5462	0.0002	0.0014	0.0005	0.0000	0.0002	0.0000
30	Banking and Finance	0.0439	0.0055	0.0350	0.0124	0.0140	0.0501	0.0181	0.0023	0.0046	0.4915	0.0861	0.0318	0.0042	0.0038	0.0000
31	Insurance	0.0027	0.0001	0.0002	0.0001	0.0002	0.0003	0.0003	0.0000	0.0001	0.0001	0.1076	0.0005	0.0000	0.0000	0.0000
32	Real Estate and Business Ser.	0.0030	0.0021	0.0013	0.0003	0.0011	0.0084	0.0785	0.0002	0.0047	0.0005	0.0049	0.4453	0.0001	0.0030	0.0000
33	Housing	0.0061	0.0032	0.0067	0.0040	0.0093	0.0080	0.0188	0.0359	0.0097	0.0113	0.0567	0.0313	0.9455	0.0014	0.0000
34	Commty Soc and Per services	0.0000	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0003	0.0002	0.0046	0.8331	0.0000
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.2852	0.5899	0.6783	0.8839	0.6439	1.0853	0.3609	0.9101	0.8420	0.5648	0.6784	0.6464	0.9792	0.9284	0.0000

Table 6.1D: Income Multiplier (2000)																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		Agricultur	Livestoc	Fishing	Forestry	Crude P	Other Mi	Food	Drink, Be	Textiles	Footwear	Wood &	Paper &	Drugs &	Refinerie	Rubber &	Iron & St	Fabricate	Vehicle	Other Ma	Electricity	Water
1	Agriculture	0.8346	0.0646	0.6235	0.0053	0.0021	0.0391	0.3449	0.2098	0.2250	0.0310	0.0284	0.0217	0.2974	0.0350	0.0218	0.0437	0.0139	0.0361	0.4063	0.1187	0.0831
2	Livestocks and Dairy Products	0.0008	0.8443	0.0026	0.0005	0.0001	0.0029	0.0559	0.0026	0.0017	0.0791	0.0020	0.0015	0.0360	0.0023	0.0031	0.0018	0.0011	0.0025	0.0482	0.0039	0.0042
3	Fishing	0.0003	0.0003	0.1325	0.0004	0.0001	0.0010	0.0014	0.0011	0.0006	0.0006	0.0007	0.0005	0.0013	0.0009	0.0005	0.0010	0.0007	0.0009	0.0441	0.0021	0.0020
4	Forestry	0.0001	0.0001	0.0002	0.9326	0.0000	0.0003	0.0004	0.0003	0.0002	0.0003	0.0129	0.0117	0.0015	0.0002	0.0093	0.0002	0.0001	0.0004	0.0022	0.0005	0.0005
5	Oil (Petroleum)	0.0127	0.0140	0.0418	0.0048	0.5276	0.0789	0.1041	0.0570	0.0374	0.0453	0.0603	0.0466	0.0601	0.3463	0.0482	0.0682	0.0343	0.0893	0.1333	0.0904	0.1381
6	Other Mining	0.0002	0.0001	0.0004	0.0002	0.0001	0.5136	0.0006	0.0006	0.0005	0.0008	0.0008	0.0002	0.0007	0.0005	0.0003	0.0056	0.0003	0.0004	0.0112	0.0015	0.0013
7	Food	0.0000	0.0037	0.0001	0.0000	0.0000	0.0001	0.0551	0.0001	0.0001	0.0004	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0000	0.0001	0.0003	0.0001	0.0001
8	Drink, Beverage & Tobacco	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0002	0.2682	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001	0.0001	0.0000	0.0002	0.0002	0.0001	0.0002
9	Textiles	0.0001	0.0001	0.0004	0.0003	0.0000	0.0005	0.0007	0.0007	0.3902	0.0009	0.0006	0.0005	0.0006	0.0008	0.0007	0.0012	0.0004	0.0004	0.0007	0.1356	0.0501
10	Footwear and Leather	0.0001	0.0000	0.0002	0.0001	0.0000	0.0005	0.0003	0.0003	0.0003	0.4257	0.0006	0.0001	0.0003	0.0002	0.0001	0.0001	0.0001	0.0002	0.0003	0.0009	0.0007
11	Wood and Woods Products	0.0001	0.0001	0.0003	0.0001	0.0001	0.0017	0.0012	0.0005	0.0003	0.0004	0.3656	0.0004	0.0005	0.0005	0.0004	0.0005	0.0003	0.0006	0.0006	0.0004	0.0010
12	Paper and Paper Products	0.0002	0.0002	0.0006	0.0002	0.0001	0.0007	0.0010	0.0008	0.0005	0.0006	0.0006	0.5176	0.0010	0.0006	0.0005	0.0006	0.0004	0.0008	0.0233	0.0012	0.0014
13	Drugs and Chemical	0.0013	0.0007	0.0022	0.0001	0.0001	0.0049	0.0037	0.0024	0.0016	0.0020	0.0023	0.0020	0.1702	0.0017	0.0018	0.0011	0.0006	0.0031	0.0055	0.0021	0.0032
14	Refineries	0.0007	0.0004	0.0011	0.0002	0.0001	0.0024	0.0031	0.0040	0.0031	0.0033	0.0059	0.0035	0.0032	0.0995	0.0039	0.0111	0.0049	0.0096	0.0026	0.0025	0.0039
15	Rubber and Plastic Products	0.0004	0.0002	0.0008	0.0003	0.0000	0.0014	0.0010	0.0013	0.0012	0.0025	0.0025	0.0004	0.0014	0.0010	0.4875	0.0005	0.0004	0.0007	0.0011	0.0041	0.0031
16	Iron and Steel	0.0004	0.0005	0.0015	0.0001	0.0007	0.0132	0.0028	0.0017	0.0012	0.0015	0.0018	0.0014	0.0021	0.0018	0.0014	0.1509	0.0006	0.0023	0.0027	0.0019	0.0042
17	Fabricated Metal	0.0042	0.0006	0.0039	0.0005	0.0001	0.0017	0.0029	0.0017	0.0016	0.0007	0.0007	0.0006	0.0023	0.0010	0.0006	0.0007	0.5362	0.0011	0.0033	0.0015	0.0016
18	Vehicle Assembly	0.0042	0.0006	0.0039	0.0001	0.0000	0.0009	0.0029	0.0017	0.0016	0.0007	0.0007	0.0006	0.0023	0.0010	0.0006	0.0007	0.0003	0.1518	0.0037	0.0015	0.0016
19	Other Manufacturing (Miscella)	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0002	0.0001	0.0000	0.0127	0.0003	0.0002
20	Electricity Generation	0.0001	0.0001	0.0003	0.0009	0.0000	0.0010	0.0009	0.0016	0.0045	0.0025	0.0014	0.0012	0.0007	0.0017	0.0020	0.0036	0.0009	0.0006	0.0009	0.4759	0.0142
21	Water Supply	0.0004	0.0006	0.0012	0.0012	0.0001	0.0036	0.0050	0.0029	0.0054	0.0026	0.0033	0.0022	0.0082	0.0023	0.0023	0.0040	0.0028	0.0023	0.0026	0.0412	2.6544
22	Building and Construction	0.0057	0.0015	0.0074	0.0053	0.0006	0.0188	0.0087	0.0178	0.0167	0.0408	0.0411	0.0030	0.0180	0.0107	0.0046	0.0042	0.0052	0.0057	0.0095	0.0658	0.0400
23	Air Transport	0.0005	0.0002	0.0008	0.0003	0.0002	0.0179	0.0018	0.0016	0.0008	0.0010	0.0012	0.0009	0.0009	0.0016	0.0016	0.0029	0.0018	0.0013	0.0016	0.0012	0.0036
24	Other Land Transport	0.0080	0.0122	0.0185	0.0041	0.0053	0.0542	0.1317	0.0388	0.0182	0.0264	0.0353	0.0351	0.0400	0.0423	0.0332	0.0338	0.0192	0.0626	0.0450	0.0283	0.0737
25	Water Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0005
26	Railway Transport	0.0000	0.0000	0.0001	0.0001	0.0000	0.0039	0.0003	0.0002	0.0003	0.0009	0.0008	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0010
27	Communication	0.0002	0.0003	0.0007	0.0001	0.0001	0.0013	0.0022	0.0020	0.0017	0.0014	0.0015	0.0015	0.0020	0.0010	0.0018	0.0015	0.0012	0.0025	0.0015	0.0017	0.0042
28	Distribution	0.0252	0.0265	0.0544	0.0030	0.0028	0.0441	0.1629	0.1110	0.0666	0.1023	0.1286	0.1122	0.1339	0.0602	0.0992	0.0394	0.0275	0.1698	0.0942	0.0685	0.1442
29	Hotels and Restaurants	0.0000	0.0000	0.0001	0.0000	0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002
30	Banking and Finance	0.0003	0.0003	0.0008	0.0001	0.0002	0.0020	0.0025	0.0024	0.0020	0.0014	0.0014	0.0011	0.0027	0.0015	0.0059	0.0085	0.0025	0.0043	0.0016	0.0047	0.0389
31	Insurance	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0003
32	Real Estate and Business Ser.	0.0000	0.0000	0.0001	0.0000	0.0000	0.0036	0.0004	0.0002	0.0002	0.0002	0.0002	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0011	0.0076
33	Housing	0.0011	0.0012	0.0033	0.0003	0.0002	0.0031	0.0074	0.0053	0.0035	0.0052	0.0057	0.0052	0.0070	0.0036	0.0046	0.0029	0.0022	0.0067	0.0209	0.0050	0.0110
34	Commty Soc and Per services	0.0003	0.0004	0.0014	0.0029	0.0001	0.1008	0.0019	0.0012	0.0009	0.0010	0.0011	0.0008	0.0015	0.0013	0.0008	0.0018	0.0004	0.0013	0.0044	0.0017	0.0021
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.9026	0.9739	0.9054	0.9643	0.5409	0.9185	0.9079	0.7403	0.7880	0.7820	0.7086	0.7732	0.7968	0.6201	0.7375	0.3911	0.6587	0.5583	0.8852	1.0648	3.2962

	Table 6.1D (Contd.): Income Multiplier (2000)															
		22	23	24	25	26	27	28	29	30	31	32	33	34	35
		Building	Air Tran	Other La	Water T	Railway	Commu	Distributi	Hotel &	Banking	Insuranc	Real Es	Housing	Com. S	Pro. G
1	Agriculture	0.0182	0.0494	0.0252	0.0283	0.0337	0.0841	0.0457	0.5386	0.0150	0.0284	0.0257	0.0038	0.0207	0.0000
2	Livestocks and Dairy Products	0.0030	0.0030	0.0016	0.0016	0.0020	0.0039	0.0036	0.0221	0.0010	0.0024	0.0016	0.0003	0.0018	0.0000
3	Fishing	0.0009	0.0029	0.0011	0.0025	0.0021	0.0116	0.0009	0.0933	0.0004	0.0013	0.0007	0.0001	0.0006	0.0000
4	Forestry	0.0019	0.0006	0.0003	0.0003	0.0007	0.0004	0.0003	0.0004	0.0001	0.0008	0.0003	0.0001	0.0002	0.0000
5	Oil (Petroleum)	0.0352	0.3184	0.2194	0.0576	0.0973	0.0560	0.0966	0.0658	0.1198	0.1185	0.0379	0.0043	0.0228	0.0000
6	Other Mining	0.0082	0.0011	0.0004	0.0070	0.0121	0.0004	0.0005	0.0007	0.0002	0.0005	0.0014	0.0004	0.0006	0.0000
7	Food	0.0000	0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0002	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000
8	Drink, Beverage & Tobacco	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0006	0.0002	0.0001	0.0001	0.0001	0.0000	0.0001	0.0000
9	Textiles	0.0003	0.0004	0.0002	0.0008	0.0008	0.0008	0.0004	0.0007	0.0002	0.0019	0.0005	0.0000	0.0004	0.0000
10	Footwear and Leather	0.0075	0.0003	0.0002	0.0002	0.0003	0.0002	0.0002	0.0003	0.0003	0.0039	0.0005	0.0004	0.0015	0.0000
11	Wood and Woods Products	0.0002	0.0103	0.0036	0.0056	0.0134	0.0006	0.0006	0.0006	0.0002	0.0008	0.0004	0.0000	0.0010	0.0000
12	Paper and Paper Products	0.0005	0.0007	0.0004	0.0005	0.0005	0.0090	0.0019	0.0009	0.0005	0.0045	0.0012	0.0001	0.0022	0.0000
13	Drugs and Chemical	0.0007	0.0022	0.0011	0.0010	0.0015	0.0016	0.0083	0.0053	0.0008	0.0011	0.0014	0.0002	0.0027	0.0000
14	Refineries	0.0008	0.0025	0.0008	0.0030	0.0034	0.0010	0.0012	0.0017	0.0004	0.0013	0.0023	0.0001	0.0012	0.0000
15	Rubber and Plastic Products	0.0326	0.0011	0.0006	0.0010	0.0012	0.0009	0.0006	0.0012	0.0019	0.0266	0.0021	0.0015	0.0003	0.0000
16	Iron and Steel	0.0008	0.0024	0.0013	0.0012	0.0016	0.0022	0.0053	0.0026	0.0010	0.0040	0.0241	0.0003	0.0107	0.0000
17	Fabricated Metal	0.0004	0.0011	0.0006	0.0005	0.0008	0.0010	0.0010	0.0041	0.0004	0.0007	0.0006	0.0001	0.0004	0.0000
18	Vehicle Assembly	0.0004	0.0011	0.0006	0.0005	0.0008	0.0011	0.0010	0.0042	0.0004	0.0007	0.0006	0.0001	0.0004	0.0000
19	Other Manufacturing (Miscella)	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000
20	Electricity Generation	0.0005	0.0005	0.0002	0.0019	0.0015	0.0019	0.0004	0.0008	0.0003	0.0054	0.0011	0.0001	0.0008	0.0000
21	Water Supply	0.0020	0.0025	0.0010	0.0103	0.0115	0.0064	0.0038	0.0036	0.0015	0.0111	0.0032	0.0002	0.0025	0.0000
22	Building and Construction	0.6001	0.0129	0.0076	0.0124	0.0155	0.0096	0.0051	0.0100	0.0019	0.0053	0.0294	0.0263	0.0024	0.0000
23	Air Transport	0.0008	0.1888	0.0005	0.0028	0.0089	0.0011	0.0013	0.0012	0.0007	0.0036	0.0016	0.0001	0.0006	0.0000
24	Other Land Transport	0.0165	0.0286	0.5395	0.0267	0.0403	0.0622	0.0509	0.0317	0.0181	0.0171	0.0271	0.0021	0.0192	0.0000
25	Water Transport	0.0001	0.0000	0.0000	0.0807	0.0002	0.0001	0.0000	0.0001	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000
26	Railway Transport	0.0001	0.0003	0.0000	0.0003	0.3754	0.0003	0.0001	0.0002	0.0001	0.0018	0.0001	0.0000	0.0000	0.0000
27	Communication	0.0007	0.0017	0.0008	0.0138	0.0064	0.7993	0.0025	0.0021	0.0017	0.0202	0.0048	0.0001	0.0027	0.0000
28	Distribution	0.0253	0.0866	0.0375	0.0376	0.0575	0.0465	0.5666	0.0928	0.0366	0.0400	0.0590	0.0044	0.0329	0.0000
29	Hotels and Restaurants	0.0000	0.0014	0.0004	0.0014	0.0010	0.0074	0.0001	0.0616	0.0001	0.0006	0.0001	0.0000	0.0001	0.0000
30	Banking and Finance	0.0010	0.0044	0.0016	0.0020	0.0069	0.0020	0.0010	0.0014	0.3339	0.0061	0.0037	0.0004	0.0009	0.0000
31	Insurance	0.0000	0.0001	0.0000	0.0002	0.0001	0.0001	0.0000	0.0000	0.0000	0.0373	0.0000	0.0000	0.0000	0.0000
32	Real Estate and Business Ser.	0.0005	0.0014	0.0006	0.0013	0.0007	0.0052	0.0002	0.0005	0.0001	0.0005	0.1075	0.0000	0.0005	0.0000
33	Housing	0.0023	0.0049	0.0022	0.0060	0.0164	0.0068	0.0173	0.0063	0.0036	0.0353	0.0063	0.9379	0.0018	0.0000
34	Commty Soc and Per services	0.0021	0.0016	0.0008	0.0020	0.0034	0.0011	0.0015	0.0024	0.0006	0.0013	0.0010	0.0132	0.7909	0.0000
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.7639	0.7338	0.8504	0.3113	0.7181	1.1249	0.8196	0.9579	0.5420	0.3836	0.3465	0.9966	0.9229	0.0000

Table 6.2A: Value Added Multiplier (1981)																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		Agriculture	Livestock	Fishing	Forestry	Crude P	Other M	Food	Drink, Be	Textiles	Footwea	Wood &	Paper & F	Drugs &	Refineries	Rubber	Iron & St	Fabricate	Vehicle
1	Agriculture	0.9184	0.0515	0.0472	0.0000	0.0040	0.0341	0.6781	0.3911	0.1167	0.2157	0.0371	0.1238	0.1104	0.0047	0.0428	0.1407	0.0177	0.0206
2	Livestock	0.0001	0.8917	0.0008	0.0000	0.0001	0.0026	0.0009	0.0039	0.0031	0.0875	0.0949	0.0090	0.0211	0.0006	0.0372	0.0259	0.0096	0.0221
3	Fishing	0.0000	0.0000	0.6619	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0008	0.0001	0.0000	0.0000	0.0002	0.0002	0.0001	0.0002
4	Forestry	0.0000	0.0001	0.0004	0.9966	0.0000	0.0010	0.0004	0.0007	0.0013	0.0068	0.0479	0.0025	0.0170	0.0004	0.0350	0.0089	0.0023	0.0039
5	Crude Petroleum	0.0544	0.0055	0.0849	0.0010	0.9514	0.0910	0.0486	0.0436	0.0456	0.0432	0.0586	0.0565	0.0401	0.5682	0.0775	0.3069	0.0871	0.0708
6	Other Mining	0.0003	0.0003	0.0047	0.0000	0.0026	0.6744	0.0015	0.0029	0.0163	0.0076	0.0150	0.0300	0.0132	0.0023	0.0099	0.0825	0.0466	0.0086
7	Food	0.0000	0.0152	0.0126	0.0000	0.0007	0.0003	0.2017	0.0018	0.0004	0.0131	0.0039	0.0005	0.0068	0.0005	0.0012	0.0027	0.0007	0.0014
8	Drink, Bev. + Tobacco	0.0000	0.0001	0.0002	0.0000	0.0011	0.0002	0.0012	0.4463	0.0000	0.0001	0.0001	0.0001	0.0001	0.0007	0.0001	0.0005	0.0001	0.0001
9	Textiles	0.0003	0.0007	0.0033	0.0000	0.0003	0.0317	0.0020	0.0055	0.6796	0.0319	0.0154	0.0266	0.0026	0.0012	0.0508	0.3751	0.0087	0.0178
10	Footware + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.2913	0.0001	0.0001	0.0000	0.0000	0.0001	0.0022	0.0001	0.0001
11	Wood & Wood Products	0.0000	0.0001	0.0010	0.0000	0.0001	0.0012	0.0001	0.0018	0.0008	0.0170	0.2719	0.0098	0.0011	0.0002	0.0063	0.0106	0.0027	0.0024
12	Paper & Paper products	0.0003	0.0007	0.0019	0.0000	0.0013	0.0039	0.0020	0.0051	0.0116	0.0450	0.0147	0.5675	0.0072	0.0020	0.0174	0.0302	0.0276	0.0071
13	Drugs and Chemical	0.0007	0.0013	0.0062	0.0000	0.0010	0.0170	0.0049	0.0055	0.0235	0.0555	0.0871	0.0144	0.6608	0.0096	0.0225	0.1646	0.0352	0.0621
14	Refineries	0.0056	0.0004	0.0012	0.0003	0.0002	0.0098	0.0049	0.0047	0.0043	0.0031	0.0037	0.0026	0.0026	0.2582	0.0045	0.0592	0.0039	0.0082
15	Rubber and Plastic	0.0003	0.0008	0.0014	0.0000	0.0002	0.0043	0.0026	0.0017	0.0050	0.0318	0.0183	0.0029	0.0032	0.0023	0.4513	0.0282	0.0068	0.0112
16	Iron and Steel	-0.0007	-0.0016	-0.0098	0.0000	-0.0006	-0.1001	-0.0037	-0.0166	-0.0394	-0.0130	-0.0428	-0.0120	-0.0065	-0.0029	-0.0432	-1.1942	-0.0225	-0.0531
17	Fabricated Metal	0.0000	0.0001	0.0003	0.0000	0.0004	0.0017	0.0006	0.0057	0.0009	0.0020	0.0024	0.0108	0.0012	0.0003	0.0123	0.0188	0.3907	0.0099
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0003	0.0001	0.0006	0.0038	0.0007	0.0001	0.0000	0.0012	0.0015	0.0137	0.4721
19	Other Manufacturing	0.0000	0.0001	0.0006	0.0000	0.0001	0.0020	0.0007	0.0041	0.0025	0.0131	0.1014	0.0094	0.0023	0.0002	0.0206	0.0216	0.0093	0.0220
20	Electricity	0.0001	0.0002	0.0356	0.0000	0.0009	0.0261	0.0009	0.0025	0.0087	0.0156	0.0344	0.0081	0.0086	0.0023	0.0257	0.0419	0.0175	0.0145
21	Water Supply	0.0001	0.0001	0.0005	0.0000	0.0001	0.0016	0.0011	0.0018	0.0105	0.0158	0.0089	0.0039	0.0071	0.0032	0.0117	0.0167	0.0040	0.0149
22	Building and Construction	0.0003	0.0006	0.0352	0.0000	0.0003	0.0154	0.0012	0.0083	0.0116	0.0242	0.0129	0.0126	0.0169	0.0022	0.0248	0.0433	0.0147	0.0072
23	Air Transport	0.0002	0.0002	0.0006	0.0000	0.0002	0.0015	0.0007	0.0011	0.0009	0.0015	0.0013	0.0020	0.0018	0.0040	0.0013	0.0058	0.0019	0.0021
24	Other Land Transport	0.0014	0.0007	0.0042	0.0008	0.0013	0.0263	0.0019	0.0041	0.0054	0.0081	0.0089	0.0095	0.0076	0.0523	0.0131	0.0687	0.0161	0.0391
25	Water Transport	0.0002	0.0001	0.0010	0.0001	0.0007	0.0060	0.0014	0.0025	0.0021	0.0028	0.0029	0.0009	0.0006	0.0064	0.0032	0.0131	0.0023	0.0054
26	Railway Transport	0.0000	0.0000	0.0006	0.0000	0.0002	0.0035	0.0004	0.0022	0.0008	0.0008	0.0005	0.0016	0.0002	0.0012	0.0020	0.0030	0.0007	0.0007
27	Communication	0.0001	0.0003	0.0023	0.0000	0.0001	0.0020	0.0009	0.0021	0.0015	0.0013	0.0023	0.0020	0.0015	0.0015	0.0026	0.0119	0.0032	0.0025
28	Distributive Trade	0.0133	0.0269	0.0379	0.0002	0.0031	0.0685	0.0150	0.0374	0.0333	0.0306	0.1272	0.0578	0.0213	0.0424	0.0652	0.1952	0.2343	0.1101
29	Hotels and Restaurants	0.0000	0.0000	0.0001	0.0000	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0004	0.0001	0.0002
30	Banking and Finance	0.0002	0.0003	0.0124	0.0003	0.0003	0.0099	0.0022	0.0035	0.0051	0.0038	0.0060	0.0020	0.0017	0.0025	0.0145	0.0959	0.0061	0.0127
31	Insurance	0.0001	0.0001	0.0087	0.0001	0.0002	0.0037	0.0006	0.0012	0.0013	0.0012	0.0025	0.0009	0.0006	0.0012	0.0028	0.0272	0.0019	0.0037
32	Real Estate and Business Ser.	0.0002	0.0004	0.0206	0.0000	0.0008	0.0146	0.0010	0.0017	0.0028	0.0030	0.0047	0.0027	0.0019	0.0038	0.0049	0.0148	0.0059	0.0061
33	Housing	0.0003	0.0005	0.0029	0.0000	0.0003	0.0028	0.0006	0.0013	0.0016	0.0029	0.0051	0.0048	0.0017	0.0015	0.0040	0.0161	0.0059	0.0039
34	Commty Soc and Per Services	0.0000	0.0000	0.0003	0.0004	0.0000	0.0051	0.0000	0.0001	0.0002	0.0003	0.0024	0.0004	0.0002	0.0000	0.0005	0.0011	0.0006	0.0005
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	SUM	0.9964	0.9973	0.9818	0.9997	0.9714	0.9626	0.9747	0.9782	0.9582	0.9644	0.9545	0.9645	0.9551	0.9733	0.9239	0.6414	0.9556	0.9112

		Table 6.2A (Contd.): Value Added Multiplier (1981)																
		19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		Other Ma	Electricity	Water S	Building &	Air Trans	Other Lai	Water Tra	Railway	Commun	Distributi	Hotel & F	Banking	Insurance	Real Es	Housing	Com. Se	Pro. G
1	Agriculture	0.0553	0.0365	0.0057	0.0413	0.0146	0.0033	0.0068	0.0127	0.0124	0.0137	0.1475	0.0097	0.0038	0.0071	0.0007	0.0051	0.0000
2	Livestock	0.3447	0.0017	0.0011	0.0079	0.0053	0.0007	0.0026	0.0045	0.0016	0.0034	0.0275	0.0006	0.0005	0.0005	0.0001	0.0008	0.0000
3	Fishing	0.0030	0.0000	0.0000	0.0001	0.0003	0.0001	0.0003	0.0005	0.0004	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0212	0.0009	0.0006	0.0041	0.0041	0.0006	0.0020	0.0034	0.0007	0.0024	0.0005	0.0002	0.0003	0.0004	0.0001	0.0004	0.0000
5	Crude Petroleum	0.0353	0.0205	0.1009	0.0583	0.0795	0.2982	0.0351	0.1279	0.0609	0.0534	0.0273	0.0202	0.0192	0.0120	0.0009	0.0150	0.0000
6	Other Mining	0.0315	0.0419	0.0037	0.0341	0.0070	0.0033	0.0041	0.0089	0.0044	0.0049	0.0018	0.0021	0.0014	0.0010	0.0006	0.0014	0.0000
7	Food	0.0111	0.0003	0.0002	0.0008	0.0005	0.0003	0.0003	0.0006	0.0003	0.0004	0.0041	0.0005	0.0003	0.0008	0.0000	0.0002	0.0000
8	Drink, Bev. + Tobacco	0.0001	0.0001	0.0002	0.0001	0.0004	0.0004	0.0003	0.0005	0.0003	0.0001	0.0109	0.0006	0.0004	0.0018	0.0000	0.0012	0.0000
9	Textiles	0.0109	0.0113	0.0043	0.0312	0.0123	0.0018	0.0052	0.0078	0.0046	0.0145	0.0028	0.0022	0.0014	0.0040	0.0005	0.0031	0.0000
10	Footware + Leather	0.0001	0.0001	0.0000	0.0002	0.0008	0.0000	0.0001	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000
11	Wood & Wood Products	0.0036	0.0008	0.0014	0.0142	0.0024	0.0002	0.0014	0.0019	0.0014	0.0011	0.0004	0.0007	0.0005	0.0002	0.0002	0.0002	0.0000
12	Paper & Paper products	0.0019	0.0023	0.0026	0.0043	0.0113	0.0024	0.0056	0.0151	0.0293	0.0162	0.0054	0.0329	0.0063	0.0041	0.0001	0.0019	0.0000
13	Drugs and Chemical	0.0135	0.0244	0.0077	0.0536	0.0142	0.0027	0.0066	0.0079	0.0096	0.0287	0.0050	0.0015	0.0022	0.0054	0.0009	0.0111	0.0000
14	Refineries	0.0039	0.0025	0.0010	0.0057	0.0097	0.0072	0.0052	0.0267	0.0013	0.0024	0.0017	0.0007	0.0009	0.0005	0.0001	0.0030	0.0000
15	Rubber and Plastic	0.0043	0.0022	0.0027	0.0043	0.0443	0.0066	0.0212	0.0384	0.0028	0.0194	0.0038	0.0007	0.0021	0.0028	0.0001	0.0013	0.0000
16	Iron and Steel	-0.0334	-0.0350	-0.0123	-0.0986	-0.0220	-0.0035	-0.0095	-0.0111	-0.0096	-0.0392	-0.0069	-0.0015	-0.0029	-0.0021	-0.0016	-0.0091	0.0000
17	Fabricated Metal	0.0009	0.0006	0.0003	0.0017	0.0017	0.0004	0.0008	0.0015	0.0008	0.0014	0.0004	0.0007	0.0002	0.0002	0.0000	0.0002	0.0000
18	Vehicle Assembly	0.0140	0.0000	0.0000	0.0003	0.0002	0.0000	0.0001	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing	0.3808	0.0009	0.0008	0.0069	0.0031	0.0004	0.0015	0.0025	0.0010	0.0019	0.0005	0.0006	0.0004	0.0003	0.0001	0.0003	0.0000
20	Electricity	0.0101	0.7473	0.0019	0.0124	0.0078	0.0016	0.0036	0.0062	0.0082	0.0043	0.0104	0.0025	0.0107	0.0059	0.0002	0.0062	0.0000
21	Water Supply	0.0013	0.0009	0.6597	0.0022	0.0040	0.0008	0.0025	0.0030	0.0008	0.0014	0.0060	0.0042	0.0038	0.0027	0.0001	0.0039	0.0000
22	Building and Construction	0.0030	0.0189	0.0457	0.5244	0.0558	0.0028	0.0126	0.0141	0.0299	0.0140	0.0060	0.0017	0.0028	0.0022	0.0088	0.0022	0.0000
23	Air Transport	0.0006	0.0011	0.0018	0.0017	0.3502	0.0007	0.0025	0.0097	0.0019	0.0038	0.0069	0.0011	0.0051	0.0029	0.0000	0.0012	0.0000
24	Other Land Transport	0.0069	0.0073	0.0088	0.0185	0.0212	0.5567	0.0068	0.0448	0.0342	0.0147	0.0102	0.0171	0.0215	0.0140	0.0003	0.0090	0.0000
25	Water Transport	0.0013	0.0015	0.0027	0.0025	0.0165	0.0014	0.6580	0.0238	0.0034	0.0012	0.0096	0.0012	0.0077	0.0097	0.0001	0.0045	0.0000
26	Railway Transport	0.0003	0.0016	0.0017	0.0013	0.0042	0.0002	0.0025	0.3888	0.0013	0.0004	0.0008	0.0003	0.0018	0.0003	0.0000	0.0013	0.0000
27	Communication	0.0009	0.0023	0.0022	0.0027	0.0062	0.0013	0.0071	0.0127	0.6352	0.0071	0.0078	0.0036	0.0123	0.0126	0.0001	0.0097	0.0000
28	Distributive Trade	0.0331	0.0478	0.0812	0.0493	0.1721	0.0442	0.1116	0.0925	0.0729	0.7763	0.1035	0.0122	0.0362	0.0195	0.0008	0.0231	0.0000
29	Hotels and Restaurants	0.0001	0.0001	0.0001	0.0001	0.0034	0.0006	0.0036	0.0072	0.0058	0.0002	0.5086	0.0002	0.0004	0.0002	0.0000	0.0002	0.0000
30	Banking and Finance	0.0038	0.0073	0.0080	0.0112	0.0233	0.0067	0.0182	0.0446	0.0083	0.0044	0.0064	0.8587	0.0049	0.0175	0.0002	0.0142	0.0000
31	Insurance	0.0015	0.0021	0.0058	0.0038	0.0120	0.0047	0.0071	0.0312	0.0055	0.0015	0.0136	0.0026	0.8348	0.0184	0.0001	0.0120	0.0000
32	Real Estate and Business Ser.	0.0022	0.0268	0.0334	0.0053	0.0615	0.0161	0.0242	0.0325	0.0416	0.0103	0.0228	0.0098	0.0058	0.8371	0.0001	0.0077	0.0000
33	Housing	0.0018	0.0026	0.0039	0.0044	0.0117	0.0021	0.0049	0.0045	0.0058	0.0137	0.0135	0.0079	0.0097	0.0138	0.9834	0.0203	0.0000
34	Commty Soc and Per Services	0.0085	0.0003	0.0001	0.0004	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.8425	0.0000
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
	SUM	0.9781	0.9799	0.9779	0.8108	0.9396	0.9653	0.9549	0.9656	0.9770	0.9783	0.9921	0.9956	0.9946	0.9959	0.9970	0.9943	1.0000

Table 6.2B: Value Added Multiplier (1985)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Agricultu	Livestoc	Fishing	Forestry	Crude P	Other M	Food	Drink, B	Textiles	Footwea	Wood &	Paper &	Drugs &	Refinerie	Rubber	Iron & S	Fabricat	Vehicle	Other M	Electri
1	Agriculture	0.9613	0.0144	0.0005	0.0000	0.0001	0.0059	0.2004	0.1211	0.1407	0.0012	0.0002	0.0001	0.1101	0.0013	0.0005	0.0878	0.0158	0.0157	0.1390	0.0005
2	Livestock	0.0002	0.9133	0.0001	0.0000	0.0000	0.0010	0.0589	0.0002	0.0001	0.0661	0.0000	0.0000	0.0230	0.0003	0.0021	0.0020	0.0009	0.0045	0.0197	0.0001
3	Fishing	0.0000	0.0000	0.6623	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0003	0.0000
4	Forestry	0.0004	0.0001	0.0005	0.9613	0.0001	0.0017	0.0006	0.0027	0.0003	0.0083	0.2166	0.1546	0.0125	0.0006	0.0964	0.0237	0.0140	0.0148	0.0176	0.0004
5	Crude Petroleum	0.0033	0.0027	0.1916	0.0005	0.9304	0.0729	0.0277	0.0301	0.0210	0.0198	0.0392	0.0281	0.0184	0.5382	0.0228	0.3687	0.0753	0.0638	0.0364	0.1933
6	Other Mining	0.0004	0.0000	0.0000	0.0000	0.0001	0.3086	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0008	0.0002	0.0003	0.1135	0.0164	0.0057	0.0096	0.0003
7	Food	0.0000	0.0171	0.0003	0.0000	0.0000	0.0000	0.2388	0.0000	0.0000	0.0012	0.0000	0.0000	0.0004	0.0000	0.0001	0.0002	0.0000	0.0001	0.0025	0.0000
8	Drink, Bev. + Tobacco	0.0002	0.0000	0.0001	0.0000	0.0000	0.0003	0.0001	0.7323	0.0000	0.0000	0.0000	0.0000	0.0037	0.0001	0.0000	0.0007	0.0002	0.0004	0.0197	0.0001
9	Textiles	0.0002	0.0000	0.0001	0.0000	0.0001	0.0001	0.0003	0.0003	0.8371	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0009	0.0014	0.0004	0.0174	0.0002
10	Footware + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.7644	0.0000	0.0000	0.0000	0.0000	0.0096	0.0025	0.0004	0.0234	0.0001	0.0000
11	Wood & Wood Products	0.0006	0.0000	0.0000	0.0000	0.0000	0.0006	0.0004	0.0003	0.0002	0.0003	0.8885	0.0002	0.0003	0.0001	0.0014	0.0069	0.0257	0.0187	0.0135	0.0001
12	Paper & Paper products	0.0001	0.0000	0.0002	0.0000	0.0000	0.0002	0.0001	0.0009	0.0001	0.0001	0.0001	0.0644	0.0006	0.0001	0.0007	0.0060	0.0025	0.0025	0.0007	0.0001
13	Drugs and Chemical	0.0008	0.0000	0.0007	0.0000	0.0001	0.0187	0.0004	0.0023	0.0003	0.0002	0.0004	0.0002	0.4417	0.0048	0.0003	0.0254	0.0149	0.0462	0.0050	0.0002
14	Refineries	0.0019	0.0005	0.0030	0.0002	0.0004	0.0347	0.0059	0.0092	0.0068	0.0061	0.0157	0.0076	0.0051	0.4763	0.0072	0.1732	0.0344	0.0256	0.0144	0.0005
15	Rubber and Plastic	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0002	0.0002	0.0001	0.0067	0.0003	0.0002	0.0001	0.0002	0.0793	0.0029	0.0006	0.0006	0.0001	0.0001
16	Iron and Steel	0.0021	0.0000	0.0001	0.0000	0.0005	0.0111	0.0005	0.0003	0.0003	0.0002	0.0001	0.0000	0.0050	0.0004	0.0019	0.8151	0.1170	0.0403	0.0145	0.0002
17	Fabricated Metal	0.0057	0.0001	0.0000	0.0001	0.0001	0.0055	0.0012	0.0007	0.0008	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0026	0.3336	0.0002	0.0023	0.0000
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5131	0.0000	0.0000
19	Other Manufacturing	0.0029	0.0000	0.0000	0.0000	0.0000	0.0001	0.0006	0.0009	0.0005	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0047	0.0011	0.0003	0.2896	0.0007
20	Electricity	0.0002	0.0002	0.0055	0.0000	0.0001	0.0031	0.0027	0.0047	0.0127	0.0055	0.0047	0.0031	0.0027	0.0059	0.0039	0.0543	0.0098	0.0042	0.0020	0.4642
21	Water Supply	0.0002	0.0002	0.0046	0.0000	0.0001	0.0019	0.0025	0.0031	0.0103	0.0039	0.0033	0.0022	0.0024	0.0045	0.0032	0.0527	0.0101	0.0042	0.0019	0.0009
22	Building and Construction	0.0000	0.0000	0.0002	0.0000	0.0002	0.0045	0.0004	0.0004	0.0004	0.0003	0.0005	0.0003	0.0003	0.0006	0.0004	0.0040	0.0008	0.0006	0.0003	0.0043
23	Air Transport	0.0001	0.0002	0.0002	0.0000	0.0002	0.0018	0.0025	0.0030	0.0011	0.0019	0.0053	0.0016	0.0015	0.0031	0.0019	0.0057	0.0024	0.0030	0.0008	0.0005
24	Other Land Transport	0.0023	0.0046	0.0070	0.0007	0.0088	0.0818	0.0453	0.0411	0.0122	0.0225	0.0449	0.0431	0.0262	0.0711	0.0292	0.3770	0.0810	0.0823	0.0198	0.0088
25	Water Transport	0.0001	0.0003	0.0005	0.0000	0.0003	0.0028	0.0036	0.0043	0.0015	0.0029	0.0044	0.0023	0.0020	0.0034	0.0036	0.0104	0.0029	0.0052	0.0010	0.0009
26	Railway Transport	0.0000	0.0001	0.0001	0.0000	0.0000	0.0014	0.0007	0.0007	0.0003	0.0003	0.0001	0.0003	0.0001	0.0003	0.0007	0.0012	0.0003	0.0002	0.0001	0.0001
27	Communication	0.0001	0.0002	0.0018	0.0000	0.0001	0.0011	0.0021	0.0026	0.0023	0.0013	0.0018	0.0017	0.0015	0.0012	0.0019	0.0141	0.0035	0.0032	0.0009	0.0008
28	Distributive Trade	0.0046	0.0165	0.0096	0.0001	0.0019	0.0174	0.1048	0.0804	0.0402	0.0640	0.1180	0.0823	0.0582	0.0403	0.0588	0.1438	0.0417	0.1151	0.0283	0.0087
29	Hotels and Restaurants	0.0000	0.0000	0.0001	0.0000	0.0002	0.0003	0.0002	0.0003	0.0001	0.0001	0.0002	0.0002	0.0001	0.0003	0.0002	0.0012	0.0003	0.0003	0.0001	0.0001
30	Banking and Finance	0.0005	0.0004	0.0324	0.0003	0.0008	0.0060	0.0057	0.0068	0.0049	0.0043	0.0038	0.0037	0.0051	0.0049	0.0137	0.1446	0.0270	0.0168	0.0047	0.0061
31	Insurance	0.0000	0.0000	0.0025	0.0000	0.0001	0.0009	0.0005	0.0007	0.0005	0.0003	0.0007	0.0003	0.0004	0.0006	0.0006	0.0120	0.0022	0.0014	0.0005	0.0007
32	Real Estate and Business Ser.	0.0002	0.0004	0.0379	0.0000	0.0021	0.0336	0.0046	0.0049	0.0048	0.0030	0.0042	0.0029	0.0031	0.0051	0.0043	0.0425	0.0088	0.0068	0.0029	0.0499
33	Housing	0.0002	0.0005	0.0056	0.0000	0.0002	0.0020	0.0040	0.0044	0.0028	0.0048	0.0059	0.0054	0.0044	0.0027	0.0039	0.0238	0.0064	0.0054	0.0025	0.0016
34	Commty Soc and Per Services	0.0002	0.0000	0.0011	0.0003	0.0000	0.0195	0.0000	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001	0.0000	0.0001	0.0074	0.0011	0.0004	0.0148	0.0001
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	SUM	0.9889	0.9720	0.9690	0.9638	0.9472	0.6401	0.7159	1.0593	1.1026	0.9900	1.3595	0.4053	0.7314	1.1667	0.3492	2.5315	0.8525	1.0254	0.6829	0.7444

Table 6.2B (Contd.): Value Added Multiplier (1985)

		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		Water S	Building	Air Trans	Other La	Water T	Railway	Commu	Distributi	Hotel &	Banking	Insuranc	Real Es	Housing	Com. Se	Pro. G
1	Agriculture	0.0004	0.0021	0.0015	0.0003	0.0016	0.0026	0.0052	0.0007	0.1595	0.0005	0.0007	0.0009	0.0000	0.0019	0.0000
2	Livestock	0.0001	0.0003	0.0005	0.0001	0.0006	0.0009	0.0016	0.0001	0.0517	0.0001	0.0002	0.0001	0.0000	0.0004	0.0000
3	Fishing	0.0000	0.0000	0.0003	0.0000	0.0003	0.0005	0.0012	0.0000	0.0400	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0004	0.0138	0.0079	0.0014	0.0087	0.0136	0.0036	0.0013	0.0010	0.0064	0.0143	0.0010	0.0002	0.0008	0.0000
5	Crude Petroleum	0.1506	0.0191	0.0463	0.2457	0.0601	0.0999	0.0284	0.0611	0.0266	0.0136	0.0405	0.0039	0.0003	0.0136	0.0000
6	Other Mining	0.0003	0.0257	0.0011	0.0009	0.0014	0.0025	0.0002	0.0002	0.0001	0.0000	0.0002	0.0000	0.0004	0.0004	0.0000
7	Food	0.0000	0.0000	0.0001	0.0000	0.0001	0.0004	0.0004	0.0000	0.0085	0.0003	0.0003	0.0002	0.0000	0.0000	0.0000
8	Drink, Bev. + Tobacco	0.0001	0.0001	0.0002	0.0000	0.0003	0.0004	0.0006	0.0000	0.0141	0.0005	0.0005	0.0008	0.0000	0.0021	0.0000
9	Textiles	0.0001	0.0002	0.0008	0.0002	0.0009	0.0010	0.0018	0.0020	0.0003	0.0003	0.0006	0.0010	0.0000	0.0001	0.0000
10	Footware + Leather	0.0000	0.0000	0.0007	0.0001	0.0007	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	0.0000
11	Wood & Wood Products	0.0001	0.0045	0.0009	0.0002	0.0026	0.0026	0.0001	0.0016	0.0003	0.0003	0.0010	0.0000	0.0001	0.0001	0.0000
12	Paper & Paper products	0.0001	0.0002	0.0005	0.0001	0.0006	0.0012	0.0014	0.0002	0.0003	0.0026	0.0057	0.0003	0.0000	0.0002	0.0000
13	Drugs and Chemical	0.0002	0.0047	0.0007	0.0003	0.0008	0.0010	0.0004	0.0014	0.0004	0.0001	0.0003	0.0013	0.0001	0.0046	0.0000
14	Refineries	0.0005	0.0052	0.0144	0.0112	0.0164	0.0395	0.0018	0.0022	0.0014	0.0010	0.0042	0.0003	0.0001	0.0043	0.0000
15	Rubber and Plastic	0.0000	0.0001	0.0053	0.0008	0.0054	0.0082	0.0002	0.0004	0.0001	0.0001	0.0003	0.0001	0.0000	0.0001	0.0000
16	Iron and Steel	0.0002	0.0092	0.0003	0.0002	0.0004	0.0005	0.0001	0.0001	0.0004	0.0000	0.0001	0.0000	0.0002	0.0027	0.0000
17	Fabricated Metal	0.0000	0.0013	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing	0.0005	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Electricity	0.0011	0.0010	0.0026	0.0006	0.0021	0.0027	0.0053	0.0024	0.0046	0.0009	0.0060	0.0010	0.0000	0.0030	0.0000
21	Water Supply	0.5162	0.0009	0.0018	0.0006	0.0025	0.0022	0.0039	0.0031	0.0043	0.0020	0.0030	0.0006	0.0000	0.0025	0.0000
22	Building and Construction	0.0053	0.5216	0.0087	0.0014	0.0084	0.0068	0.0018	0.0005	0.0003	0.0002	0.0012	0.0001	0.0087	0.0004	0.0000
23	Air Transport	0.0003	0.0007	0.2871	0.0004	0.0024	0.0064	0.0011	0.0016	0.0014	0.0005	0.0036	0.0006	0.0000	0.0007	0.0000
24	Other Land Transport	0.0092	0.0264	0.0489	0.6175	0.0717	0.0655	0.0472	0.1114	0.0235	0.0209	0.0683	0.0071	0.0004	0.0171	0.0000
25	Water Transport	0.0010	0.0014	0.0075	0.0006	0.3713	0.0109	0.0024	0.0003	0.0012	0.0005	0.0075	0.0012	0.0000	0.0020	0.0000
26	Railway Transport	0.0001	0.0002	0.0008	0.0000	0.0005	0.0872	0.0002	0.0000	0.0001	0.0000	0.0004	0.0000	0.0000	0.0002	0.0000
27	Communication	0.0009	0.0010	0.0039	0.0007	0.0063	0.0100	0.6407	0.0019	0.0054	0.0030	0.0206	0.0034	0.0000	0.0110	0.0000
28	Distributive Trade	0.0082	0.0481	0.2014	0.0383	0.2175	0.1548	0.0176	0.7408	0.1000	0.0179	0.0759	0.0118	0.0008	0.0170	0.0000
29	Hotels and Restaurants	0.0001	0.0001	0.0043	0.0007	0.0044	0.0076	0.0190	0.0002	0.6563	0.0002	0.0010	0.0001	0.0000	0.0004	0.0000
30	Banking and Finance	0.0059	0.0051	0.0201	0.0060	0.0210	0.0387	0.0155	0.0014	0.0062	0.9006	0.0410	0.0077	0.0001	0.0195	0.0000
31	Insurance	0.0008	0.0005	0.0021	0.0011	0.0027	0.0074	0.0019	0.0002	0.0006	0.0012	0.2516	0.0015	0.0000	0.0045	0.0000
32	Real Estate and Business Ser.	0.0556	0.0048	0.0477	0.0120	0.0454	0.0627	0.1363	0.0035	0.0150	0.0115	0.0445	0.7073	0.0001	0.0130	0.0000
33	Housing	0.0039	0.0043	0.0081	0.0020	0.0081	0.0076	0.0153	0.0152	0.0111	0.0110	0.0697	0.0070	0.9453	0.0188	0.0000
34	Commty Soc and Per Services	0.0000	0.0016	0.0001	0.0001	0.0001	0.0002	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.8591	0.0000
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
	SUM	0.7624	0.7043	0.7267	0.9435	0.8652	0.6468	0.9551	0.9539	1.1361	0.9964	0.6635	0.7596	0.9569	1.0018	1.0000

Table 6.2C: Value Added Multiplier (1995)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		Agricultur	Livestock	Fishing	Forestry	Crude Pe	Other Mir	Food	Drink, Be	Textiles	Footwe	Wood &	Paper &	Drugs &	Refineries	Rubber	Iron & St	Fabricate	Vehicle	Other M
1	Agriculture	0.9177	0.0571	0.0072	0.0012	0.0008	0.0177	0.4383	0.0673	0.1441	0.0095	0.0014	0.0208	0.0974	0.0111	0.1813	0.0528	0.0149	0.0041	0.0577
2	Livestock	0.0015	0.9185	0.0005	0.0003	0.0002	0.0055	0.1018	0.0155	0.0005	0.1299	0.0002	0.0011	0.1051	0.0006	0.1741	0.0005	0.0008	0.0003	0.0155
3	Fishing	0.0000	0.0001	0.6633	0.0000	0.0000	0.0002	0.0012	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003
4	Forestry	0.0030	0.0003	0.0005	0.9639	0.0002	0.0077	0.0048	0.0022	0.0011	0.0006	0.0035	0.0941	0.0132	0.0008	0.0980	0.0329	0.0555	0.0385	0.1215
5	Crude Petroleum	0.0044	0.0044	0.1841	0.0036	0.9389	0.1240	0.1069	0.0249	0.0069	0.0105	0.0098	0.0556	0.0323	0.0980	0.0439	0.0450	0.0571	0.0329	0.0867
6	Other Mining	0.0001	0.0000	0.0023	0.0001	0.0001	0.3069	0.0002	0.0002	0.0001	0.0002	0.0002	0.0009	0.0004	0.0017	0.0005	0.0009	0.0008	0.0006	0.0013
7	Food	0.0000	0.0091	0.0002	0.0000	0.0000	0.0001	0.2387	0.0357	0.0000	0.0013	0.0000	0.0000	0.0010	0.0000	0.0017	0.0000	0.0000	0.0000	0.0002
8	Drink, Bev. + Tobacco	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.0001	0.7323	0.0000	0.0001	0.0001	0.0006	0.0002	0.0003	0.0003	0.0002	0.0004	0.0001	0.0004
9	Textiles	0.0001	0.0000	0.0024	0.0001	0.0002	0.0039	0.0002	0.0001	0.7676	0.0001	0.0001	0.0015	0.0010	0.0006	0.0025	0.0009	0.0010	0.0018	0.0012
10	Footware + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.7473	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
11	Wood & Wood Products	0.0004	0.0001	0.0008	0.0004	0.0011	0.0111	0.0005	0.0004	0.0003	0.0004	0.8758	0.0019	0.0021	0.0026	0.0035	0.0026	0.0032	0.0011	0.0044
12	Paper & Paper products	0.0000	0.0001	0.0001	0.0000	0.0000	0.0007	0.0014	0.0002	0.0000	0.0000	0.0000	0.0631	0.0001	0.0000	0.0001	0.0000	0.0001	0.0000	0.0013
13	Drugs and Chemical	0.0053	0.0004	0.0011	0.0001	0.0005	0.0180	0.0027	0.0006	0.0009	0.0002	0.0002	0.0027	0.3988	0.0015	0.0024	0.0013	0.0019	0.0005	0.0043
14	Refineries	0.0141	0.0022	0.0064	0.0072	0.0010	0.0369	0.0396	0.0522	0.0326	0.0440	0.0480	0.2568	0.1035	0.6205	0.1255	0.1432	0.2231	0.2022	0.0108
15	Rubber and Plastic	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.0001	0.0000	0.0001	0.0002	0.0001	0.0741	0.0001	0.0001	0.0000	0.0000
16	Iron and Steel	0.0000	0.0000	0.0008	0.0000	0.0007	0.0639	0.0001	0.0001	0.0000	0.0001	0.0001	0.0006	0.0002	0.0006	0.0003	0.4760	0.0004	0.0002	0.0006
17	Fabricated Metal	0.0055	0.0004	0.0002	0.0028	0.0001	0.0019	0.0027	0.0004	0.0009	0.0001	0.0000	0.0004	0.0006	0.0001	0.0014	0.0004	0.3185	0.0001	0.0007
18	Vehicle Assembly	0.0156	0.0010	0.0001	0.0001	0.0000	0.0003	0.0074	0.0012	0.0025	0.0002	0.0000	0.0004	0.0017	0.0002	0.0031	0.0009	0.0003	0.5150	0.0023
19	Other Manufacturing	0.0016	0.0001	0.0004	0.0044	0.0000	0.0005	0.0008	0.0032	0.0003	0.0001	0.0000	0.0008	0.0027	0.0001	0.0012	0.0017	0.0023	0.0005	0.2914
20	Electricity	0.0003	0.0000	0.0095	0.0002	0.0002	0.0032	0.0004	0.0003	0.0002	0.0002	0.0002	0.0046	0.0024	0.0020	0.0081	0.0032	0.0034	0.0070	0.0034
21	Water Supply	0.0001	0.0000	0.0011	0.0001	0.0001	0.0009	0.0002	0.0001	0.0001	0.0001	0.0001	0.0019	0.0021	0.0007	0.0032	0.0008	0.0009	0.0009	0.0023
22	Building and Construction	0.0015	0.0002	0.0009	0.0014	0.0005	0.0201	0.0033	0.0027	0.0079	0.0069	0.0043	0.0129	0.0204	0.0074	0.0089	0.0060	0.0064	0.0042	0.0043
23	Air Transport	0.0001	0.0000	0.0005	0.0003	0.0001	0.0023	0.0001	0.0001	0.0001	0.0002	0.0001	0.0006	0.0006	0.0005	0.0013	0.0008	0.0005	0.0004	0.0008
24	Other Land Transport	0.0049	0.0007	0.0104	0.0039	0.0205	0.2087	0.0081	0.0065	0.0041	0.0075	0.0062	0.0325	0.0372	0.0501	0.0581	0.0468	0.0629	0.0167	0.0818
25	Water Transport	0.0000	0.0000	0.0001	0.0003	0.0001	0.0005	0.0002	0.0001	0.0001	0.0005	0.0002	0.0010	0.0002	0.0002	0.0004	0.0003	0.0004	0.0001	0.0003
26	Railway Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	Communication	0.0001	0.0001	0.0016	0.0002	0.0002	0.0016	0.0006	0.0009	0.0003	0.0016	0.0016	0.0070	0.0025	0.0019	0.0058	0.0018	0.0019	0.0007	0.0072
28	Distributive Trade	0.0083	0.0035	0.0441	0.0034	0.0040	0.0426	0.0125	0.0101	0.0059	0.0100	0.0090	0.1428	0.0558	0.0762	0.0760	0.0507	0.1014	0.0253	0.1018
29	Hotels and Restaurants	0.0001	0.0000	0.0003	0.0000	0.0004	0.0043	0.0001	0.0001	0.0001	0.0001	0.0001	0.0007	0.0003	0.0004	0.0005	0.0003	0.0005	0.0001	0.0007
30	Banking and Finance	0.0037	0.0005	0.0431	0.0034	0.0063	0.0587	0.0094	0.0122	0.0116	0.0161	0.0272	0.1482	0.0409	0.0516	0.0821	0.0660	0.0877	0.0181	0.1331
31	Insurance	0.0000	0.0000	0.0007	0.0000	0.0000	0.0003	0.0001	0.0001	0.0001	0.0001	0.0001	0.0003	0.0001	0.0001	0.0004	0.0002	0.0003	0.0001	0.0008
32	Real Estate and Business Ser.	0.0001	0.0001	0.0027	0.0001	0.0004	0.0018	0.0008	0.0006	0.0004	0.0014	0.0010	0.0066	0.0016	0.0017	0.0040	0.0014	0.0015	0.0008	0.0036
33	Housing	0.0008	0.0002	0.0070	0.0006	0.0006	0.0044	0.0012	0.0013	0.0008	0.0010	0.0011	0.0156	0.0070	0.0060	0.0139	0.0066	0.0125	0.0021	0.0268
34	Commty Soc and Per Services	0.0000	0.0000	0.0011	0.0002	0.0001	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001	0.0000	0.0002
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	SUM	0.9896	0.9989	0.9936	0.9980	0.9771	0.9504	0.9845	0.9719	0.9893	0.9904	0.9907	0.8762	0.9318	0.9378	0.9770	0.9447	0.9608	0.8744	0.9678

		Table 6.2C: Value Added Multiplier (1995)															
		20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		Electricit	Water Su	Building	Air Trans	Other La	Water Tr	Railway T	Commun	Distribut	Hotel & F	Banking	Insuranc	Real Est	Housing	Com. Se	Pro. G
1	Agriculture	0.0282	0.0308	0.0120	0.0149	0.0080	0.0222	0.0192	0.0072	0.1031	0.1108	0.0021	0.0160	0.0095	0.0006	0.0059	0.0000
2	Livestock	0.0016	0.0018	0.0115	0.0012	0.0005	0.0014	0.0025	0.0015	0.0036	0.0373	0.0003	0.0015	0.0017	0.0005	0.0031	0.0000
3	Fishing	0.0000	0.0001	0.0000	0.0003	0.0001	0.0001	0.0004	0.0007	0.0001	0.0270	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0095	0.0123	0.0385	0.0019	0.0004	0.0018	0.0058	0.0023	0.0012	0.0010	0.0004	0.0026	0.0021	0.0016	0.0031	0.0000
5	Crude Petroleum	0.0493	0.0271	0.0620	0.1893	0.2106	0.2191	0.0994	0.0258	0.0456	0.0164	0.0324	0.2135	0.0193	0.0030	0.0082	0.0000
6	Other Mining	0.0009	0.0004	0.0006	0.0072	0.0007	0.0084	0.0146	0.0006	0.0004	0.0002	0.0006	0.0018	0.0003	0.0000	0.0001	0.0000
7	Food	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	Drink, Bev. + Tobacco	0.0001	0.0001	0.0001	0.0004	0.0002	0.0007	0.0004	0.0001	0.0031	0.0003	0.0001	0.0004	0.0002	0.0000	0.0001	0.0000
9	Textiles	0.1144	0.1213	0.0005	0.0007	0.0002	0.0034	0.0100	0.0022	0.0001	0.0013	0.0005	0.0050	0.0015	0.0000	0.0007	0.0000
10	Footware + Leather	0.0003	0.0001	0.0053	0.0001	0.0000	0.0001	0.0005	0.0002	0.0000	0.0000	0.0002	0.0004	0.0013	0.0002	0.0059	0.0000
11	Wood & Wood Products	0.0029	0.0013	0.0012	0.1690	0.0290	0.0114	0.1980	0.0071	0.0016	0.0009	0.0011	0.0124	0.0088	0.0001	0.0039	0.0000
12	Paper & Paper products	0.0001	0.0002	0.0000	0.0001	0.0000	0.0001	0.0001	0.0011	0.0003	0.0000	0.0002	0.0010	0.0003	0.0000	0.0004	0.0000
13	Drugs and Chemical	0.0009	0.0010	0.0003	0.0023	0.0011	0.0032	0.0029	0.0011	0.0130	0.0133	0.0006	0.0033	0.0022	0.0000	0.0072	0.0000
14	Refineries	0.0395	0.0331	0.0115	0.0592	0.0086	0.0681	0.0562	0.0129	0.0083	0.0108	0.0018	0.0137	0.0111	0.0006	0.0120	0.0000
15	Rubber and Plastic	0.0002	0.0001	0.0045	0.0001	0.0000	0.0001	0.0004	0.0001	0.0000	0.0000	0.0000	0.0002	0.0004	0.0002	0.0000	0.0000
16	Iron and Steel	0.0006	0.0002	0.0002	0.0018	0.0004	0.0022	0.0035	0.0023	0.0014	0.0003	0.0002	0.0013	0.0120	0.0001	0.0190	0.0000
17	Fabricated Metal	0.0002	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	0.0001	0.0006	0.0007	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000
18	Vehicle Assembly	0.0006	0.0007	0.0002	0.0003	0.0002	0.0004	0.0004	0.0001	0.0017	0.0019	0.0001	0.0003	0.0002	0.0000	0.0001	0.0000
19	Other Manufacturing	0.0189	0.0277	0.0014	0.0002	0.0001	0.0007	0.0023	0.0005	0.0003	0.0005	0.0001	0.0010	0.0004	0.0001	0.0024	0.0000
20	Electricity	0.5079	0.0573	0.0016	0.0022	0.0005	0.0139	0.0132	0.0076	0.0003	0.0034	0.0013	0.0130	0.0047	0.0001	0.0023	0.0000
21	Water Supply	0.0052	0.5174	0.0006	0.0004	0.0003	0.0008	0.0330	0.0026	0.0002	0.0026	0.0007	0.0099	0.0023	0.0001	0.0010	0.0000
22	Building and Construction	0.0200	0.0083	0.5256	0.0123	0.0021	0.0150	0.0484	0.0030	0.0019	0.0014	0.0005	0.0034	0.0017	0.0216	0.0010	0.0000
23	Air Transport	0.0029	0.0010	0.0012	0.2851	0.0004	0.0014	0.0264	0.0078	0.0003	0.0006	0.0007	0.0155	0.0037	0.0001	0.0012	0.0000
24	Other Land Transport	0.0196	0.0147	0.0098	0.0418	0.6190	0.0421	0.0563	0.0299	0.0290	0.0103	0.0113	0.0661	0.0291	0.0006	0.0126	0.0000
25	Water Transport	0.0021	0.0008	0.0011	0.0011	0.0003	0.3675	0.0323	0.0054	0.0001	0.0003	0.0002	0.0011	0.0015	0.0000	0.0002	0.0000
26	Railway Transport	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0853	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	Communication	0.0027	0.0022	0.0010	0.0079	0.0008	0.0044	0.0247	0.6423	0.0003	0.0037	0.0025	0.0319	0.0146	0.0001	0.0038	0.0000
28	Distributive Trade	0.0255	0.0275	0.0092	0.0951	0.0546	0.1456	0.1000	0.0247	0.7337	0.0670	0.0125	0.0979	0.0481	0.0006	0.0140	0.0000
29	Hotels and Restaurants	0.0003	0.0002	0.0001	0.0064	0.0011	0.0031	0.0094	0.0180	0.0020	0.6564	0.0003	0.0016	0.0007	0.0000	0.0002	0.0000
30	Banking and Finance	0.0932	0.0818	0.0103	0.0652	0.0232	0.0261	0.0932	0.0337	0.0043	0.0086	0.9150	0.1602	0.0593	0.0078	0.0071	0.0000
31	Insurance	0.0042	0.0061	0.0003	0.0005	0.0001	0.0005	0.0006	0.0006	0.0000	0.0002	0.0001	0.2462	0.0011	0.0001	0.0000	0.0000
32	Real Estate and Business Ser.	0.0186	0.0048	0.0034	0.0021	0.0004	0.0018	0.0137	0.1278	0.0004	0.0077	0.0008	0.0079	0.7249	0.0001	0.0048	0.0000
33	Housing	0.0084	0.0061	0.0032	0.0067	0.0040	0.0093	0.0080	0.0188	0.0359	0.0097	0.0113	0.0567	0.0313	0.9455	0.0014	0.0000
34	Commty Soc and Per Services	0.0001	0.0000	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0003	0.0002	0.0048	0.8728	0.0000
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
	SUM	0.9790	0.9867	0.7174	0.9759	0.9670	0.9754	0.9615	0.9885	0.9932	0.9948	0.9977	0.9865	0.9943	0.9883	0.9946	1.0000

Table 6.2D: Value Added Multiplier (2000)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Agricultu	Livestoc	Fishing	Forestry	Crude Pe	Other M	Food	Drink, Be	Textiles	Footwea	Wood &	Paper &	Drugs &	Refineri	Rubber	Iron & S	Fabrica	Vehicle	Other M	Electric
1	Agriculture	0.9302	0.0721	0.6949	0.0059	0.0023	0.0435	0.3844	0.2338	0.2507	0.0346	0.0317	0.0242	0.3314	0.0390	0.0243	0.0487	0.0155	0.0402	0.4528	Electricit
2	Livestock	0.0009	0.8806	0.0028	0.0005	0.0001	0.0029	0.0583	0.0027	0.0018	0.0825	0.0022	0.0016	0.0375	0.0023	0.0032	0.0019	0.0011	0.0026	0.0503	Electricit
3	Fishing	0.0007	0.0005	0.2758	0.0008	0.0002	0.0022	0.0028	0.0024	0.0013	0.0013	0.0015	0.0011	0.0027	0.0018	0.0011	0.0022	0.0014	0.0018	0.0918	Electricit
4	Forestry	0.0001	0.0001	0.0003	0.9693	0.0000	0.0003	0.0004	0.0003	0.0002	0.0003	0.0134	0.0122	0.0016	0.0003	0.0097	0.0002	0.0001	0.0005	0.0022	Electricit
5	Crude Petroleum	0.0130	0.0144	0.0430	0.0049	0.5414	0.0810	0.1068	0.0585	0.0384	0.0465	0.0619	0.0478	0.0617	0.3554	0.0495	0.0700	0.0352	0.0916	0.1368	Electricit
6	Other Mining	0.0002	0.0001	0.0005	0.0002	0.0001	0.5436	0.0007	0.0007	0.0005	0.0009	0.0009	0.0003	0.0007	0.0005	0.0003	0.0060	0.0003	0.0004	0.0119	Electricit
7	Food	0.0001	0.0121	0.0003	0.0000	0.0000	0.0003	0.1802	0.0003	0.0002	0.0013	0.0002	0.0002	0.0008	0.0003	0.0002	0.0002	0.0001	0.0003	0.0011	Electricit
8	Drink, Bev. + Tobacco	0.0001	0.0001	0.0002	0.0000	0.0000	0.0002	0.0004	0.5335	0.0002	0.0003	0.0003	0.0003	0.0004	0.0002	0.0002	0.0001	0.0001	0.0004	0.0003	Electricit
9	Textiles	0.0001	0.0002	0.0005	0.0004	0.0001	0.0009	0.0010	0.0011	0.6102	0.0015	0.0010	0.0008	0.0009	0.0012	0.0012	0.0019	0.0006	0.0007	0.0011	Electricit
10	Footware + Leather	0.0001	0.0001	0.0003	0.0001	0.0000	0.0008	0.0004	0.0004	0.0004	0.6415	0.0009	0.0001	0.0005	0.0003	0.0002	0.0002	0.0001	0.0003	0.0004	Electricit
11	Wood & Wood Products	0.0002	0.0002	0.0005	0.0001	0.0001	0.0026	0.0018	0.0007	0.0004	0.0006	0.5584	0.0006	0.0007	0.0008	0.0006	0.0007	0.0004	0.0009	0.0009	Electricit
12	Paper & Paper products	0.0003	0.0002	0.0008	0.0003	0.0001	0.0010	0.0014	0.0012	0.0007	0.0008	0.0009	0.7249	0.0014	0.0008	0.0007	0.0009	0.0006	0.0012	0.0326	Electricit
13	Drugs and Chemical	0.0029	0.0014	0.0049	0.0003	0.0002	0.0109	0.0082	0.0053	0.0036	0.0043	0.0052	0.0044	0.3776	0.0037	0.0040	0.0024	0.0014	0.0068	0.0122	Electricit
14	Refineries	0.0015	0.0009	0.0026	0.0004	0.0002	0.0054	0.0071	0.0091	0.0072	0.0075	0.0135	0.0081	0.0073	0.2274	0.0089	0.0254	0.0112	0.0218	0.0060	Electricit
15	Rubber and Plastic	0.0006	0.0003	0.0011	0.0004	0.0001	0.0020	0.0015	0.0019	0.0017	0.0036	0.0037	0.0006	0.0021	0.0014	0.7144	0.0007	0.0006	0.0011	0.0016	Electricit
16	Iron and Steel	0.0009	0.0011	0.0033	0.0003	0.0017	0.0299	0.0062	0.0039	0.0027	0.0034	0.0040	0.0032	0.0048	0.0041	0.0031	0.3405	0.0013	0.0052	0.0060	Electricit
17	Fabricated Metal	0.0060	0.0008	0.0056	0.0008	0.0001	0.0024	0.0040	0.0024	0.0023	0.0010	0.0011	0.0008	0.0033	0.0014	0.0008	0.0009	0.7615	0.0015	0.0047	Electricit
18	Vehicle Assembly	0.0083	0.0011	0.0077	0.0002	0.0001	0.0018	0.0057	0.0034	0.0032	0.0014	0.0015	0.0011	0.0046	0.0019	0.0011	0.0013	0.0006	0.2980	0.0073	Electricit
19	Other Manufacturing	0.0004	0.0001	0.0005	0.0010	0.0000	0.0004	0.0004	0.0013	0.0003	0.0003	0.0003	0.0002	0.0014	0.0002	0.0002	0.0016	0.0012	0.0002	0.1233	Electricit
20	Electricity	0.0001	0.0001	0.0003	0.0007	0.0000	0.0009	0.0007	0.0013	0.0038	0.0021	0.0012	0.0010	0.0006	0.0014	0.0017	0.0030	0.0008	0.0005	0.0008	Electricit
21	Water Supply	0.0000	0.0000	0.0001	0.0001	0.0000	0.0003	0.0004	0.0003	0.0005	0.0002	0.0003	0.0002	0.0007	0.0002	0.0002	0.0004	0.0003	0.0002	0.0002	Electricit
22	Building and Construction	0.0079	0.0021	0.0102	0.0073	0.0007	0.0259	0.0120	0.0244	0.0230	0.0561	0.0565	0.0042	0.0247	0.0148	0.0063	0.0057	0.0072	0.0078	0.0131	Electricit
23	Air Transport	0.0008	0.0004	0.0012	0.0004	0.0004	0.0269	0.0026	0.0023	0.0012	0.0014	0.0018	0.0013	0.0013	0.0024	0.0024	0.0043	0.0028	0.0020	0.0024	Electricit
24	Other Land Transport	0.0085	0.0130	0.0196	0.0043	0.0057	0.0578	0.1403	0.0413	0.0194	0.0281	0.0376	0.0375	0.0426	0.0451	0.0353	0.0361	0.0204	0.0667	0.0479	Electricit
25	Water Transport	0.0001	0.0001	0.0001	0.0002	0.0000	0.0007	0.0004	0.0006	0.0003	0.0012	0.0009	0.0007	0.0006	0.0005	0.0010	0.0004	0.0008	0.0005	0.0007	Electricit
26	Railway Transport	0.0001	0.0001	0.0001	0.0002	0.0000	0.0062	0.0004	0.0003	0.0004	0.0015	0.0012	0.0002	0.0003	0.0002	0.0002	0.0002	0.0001	0.0001	0.0003	Electricit
27	Communication	0.0002	0.0003	0.0006	0.0001	0.0001	0.0011	0.0018	0.0017	0.0014	0.0012	0.0012	0.0013	0.0017	0.0009	0.0015	0.0013	0.0009	0.0021	0.0012	Electricit
28	Distributive Trade	0.0356	0.0372	0.0767	0.0043	0.0039	0.0621	0.2296	0.1564	0.0939	0.1441	0.1812	0.1580	0.1886	0.0849	0.1398	0.0554	0.0388	0.2392	0.1327	Electricit
29	Hotels and Restaurants	0.0001	0.0001	0.0002	0.0000	0.0001	0.0006	0.0005	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0002	0.0002	0.0001	0.0003	0.0004	Electricit
30	Banking and Finance	0.0007	0.0007	0.0017	0.0002	0.0004	0.0043	0.0056	0.0054	0.0045	0.0030	0.0030	0.0025	0.0059	0.0033	0.0131	0.0187	0.0054	0.0095	0.0035	Electricit
31	Insurance	0.0001	0.0001	0.0001	0.0000	0.0000	0.0004	0.0007	0.0007	0.0002	0.0008	0.0008	0.0008	0.0005	0.0005	0.0004	0.0004	0.0006	0.0010	0.0005	Electricit
32	Real Estate and Business Ser.	0.0002	0.0002	0.0004	0.0001	0.0001	0.0128	0.0014	0.0009	0.0007	0.0006	0.0006	0.0005	0.0011	0.0006	0.0008	0.0007	0.0005	0.0011	0.0012	Electricit
33	Housing	0.0011	0.0012	0.0033	0.0004	0.0002	0.0031	0.0074	0.0053	0.0035	0.0053	0.0056	0.0052	0.0070	0.0037	0.0046	0.0029	0.0022	0.0068	0.0209	Electricit
34	Commty Soc and Per Services	0.0003	0.0004	0.0015	0.0031	0.0001	0.1087	0.0020	0.0013	0.0009	0.0011	0.0013	0.0009	0.0016	0.0014	0.0009	0.0019	0.0005	0.0014	0.0047	Electricit
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Electricit
	SUM	1.0221	1.0421	1.1616	1.0076	0.5584	1.0436	1.1776	1.1054	1.0797	1.0805	0.9958	1.0466	1.1188	0.8033	1.0320	0.6372	0.9146	0.8149	1.1740	Electricit

		Table 6.2D (Contd.): Value Added Multiplier (2000)														
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		Water S	Building	Air Trans	Other La	Water Tr	Railway	Commu	Distributi	Hotel &	Banking	Insurance	Real Est	Housing	Com. Se	Pro. Gov. Ser
1	Agriculture	0.0926	0.0202	0.0551	0.0281	0.0316	0.0376	0.0937	0.0509	0.6003	0.0167	0.0316	0.0287	0.0042	0.0231	0.0000
2	Livestock	0.0044	0.0031	0.0031	0.0016	0.0016	0.0022	0.0041	0.0037	0.0230	0.0010	0.0025	0.0017	0.0003	0.0019	0.0000
3	Fishing	0.0041	0.0019	0.0061	0.0023	0.0051	0.0043	0.0241	0.0019	0.1942	0.0009	0.0027	0.0014	0.0002	0.0013	0.0000
4	Forestry	0.0005	0.0019	0.0006	0.0003	0.0004	0.0007	0.0004	0.0003	0.0004	0.0001	0.0008	0.0003	0.0001	0.0002	0.0000
5	Crude Petroleum	0.1417	0.0361	0.3268	0.2251	0.0591	0.0998	0.0574	0.0991	0.0676	0.1230	0.1216	0.0388	0.0044	0.0234	0.0000
6	Other Mining	0.0014	0.0087	0.0011	0.0004	0.0074	0.0128	0.0004	0.0005	0.0008	0.0002	0.0005	0.0015	0.0004	0.0006	0.0000
7	Food	0.0004	0.0001	0.0003	0.0002	0.0002	0.0002	0.0003	0.0003	0.0008	0.0001	0.0002	0.0002	0.0000	0.0001	0.0000
8	Drink, Bev. + Tobacco	0.0004	0.0001	0.0003	0.0001	0.0001	0.0002	0.0002	0.0012	0.0004	0.0001	0.0002	0.0002	0.0000	0.0001	0.0000
9	Textiles	0.0784	0.0004	0.0007	0.0004	0.0013	0.0012	0.0013	0.0006	0.0011	0.0003	0.0029	0.0008	0.0001	0.0005	0.0000
10	Footware + Leather	0.0010	0.0113	0.0004	0.0003	0.0003	0.0004	0.0003	0.0003	0.0004	0.0005	0.0058	0.0007	0.0006	0.0022	0.0000
11	Wood & Wood Products	0.0015	0.0003	0.0158	0.0055	0.0085	0.0205	0.0009	0.0008	0.0008	0.0004	0.0013	0.0006	0.0001	0.0016	0.0000
12	Paper & Paper products	0.0020	0.0007	0.0009	0.0005	0.0007	0.0007	0.0126	0.0027	0.0013	0.0007	0.0064	0.0017	0.0001	0.0031	0.0000
13	Drugs and Chemical	0.0072	0.0017	0.0048	0.0024	0.0023	0.0034	0.0036	0.0184	0.0118	0.0019	0.0025	0.0032	0.0004	0.0059	0.0000
14	Refineries	0.0088	0.0017	0.0058	0.0019	0.0069	0.0077	0.0023	0.0027	0.0039	0.0009	0.0029	0.0052	0.0002	0.0027	0.0000
15	Rubber and Plastic	0.0045	0.0478	0.0017	0.0009	0.0015	0.0018	0.0013	0.0009	0.0018	0.0027	0.0390	0.0030	0.0021	0.0004	0.0000
16	Iron and Steel	0.0096	0.0019	0.0053	0.0028	0.0028	0.0037	0.0050	0.0120	0.0058	0.0023	0.0090	0.0545	0.0007	0.0241	0.0000
17	Fabricated Metal	0.0022	0.0005	0.0016	0.0009	0.0008	0.0011	0.0014	0.0014	0.0059	0.0005	0.0010	0.0008	0.0002	0.0006	0.0000
18	Vehicle Assembly	0.0031	0.0008	0.0022	0.0013	0.0010	0.0015	0.0021	0.0020	0.0082	0.0008	0.0013	0.0012	0.0002	0.0008	0.0000
19	Other Manufacturing	0.0022	0.0019	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0006	0.0001	0.0002	0.0004	0.0001	0.0008	0.0000
20	Electricity	0.0119	0.0004	0.0004	0.0002	0.0016	0.0012	0.0015	0.0003	0.0007	0.0002	0.0045	0.0009	0.0000	0.0007	0.0000
21	Water Supply	0.2374	0.0002	0.0002	0.0001	0.0009	0.0010	0.0006	0.0003	0.0003	0.0001	0.0010	0.0003	0.0000	0.0002	0.0000
22	Building and Construction	0.0549	0.8245	0.0178	0.0105	0.0170	0.0213	0.0133	0.0071	0.0138	0.0026	0.0072	0.0404	0.0362	0.0032	0.0000
23	Air Transport	0.0053	0.0012	0.2827	0.0007	0.0042	0.0133	0.0017	0.0020	0.0019	0.0011	0.0054	0.0024	0.0001	0.0009	0.0000
24	Other Land Transport	0.0785	0.0176	0.0305	0.5749	0.0285	0.0429	0.0663	0.0542	0.0338	0.0193	0.0183	0.0289	0.0022	0.0205	0.0000
25	Water Transport	0.0047	0.0005	0.0003	0.0002	0.7285	0.0019	0.0007	0.0001	0.0007	0.0001	0.0036	0.0002	0.0000	0.0002	0.0000
26	Railway Transport	0.0016	0.0002	0.0004	0.0001	0.0004	0.6072	0.0005	0.0001	0.0003	0.0001	0.0030	0.0002	0.0000	0.0001	0.0000
27	Communication	0.0034	0.0006	0.0015	0.0007	0.0115	0.0053	0.6648	0.0020	0.0017	0.0014	0.0168	0.0040	0.0001	0.0022	0.0000
28	Distributive Trade	0.2032	0.0357	0.1220	0.0529	0.0530	0.0810	0.0655	0.7983	0.1308	0.0516	0.0563	0.0831	0.0062	0.0463	0.0000
29	Hotels and Restaurants	0.0005	0.0001	0.0038	0.0012	0.0037	0.0027	0.0193	0.0003	0.1615	0.0002	0.0015	0.0003	0.0000	0.0002	0.0000
30	Banking and Finance	0.0860	0.0022	0.0098	0.0035	0.0045	0.0153	0.0045	0.0023	0.0030	0.7377	0.0135	0.0081	0.0009	0.0020	0.0000
31	Insurance	0.0046	0.0003	0.0008	0.0002	0.0036	0.0024	0.0011	0.0001	0.0003	0.0004	0.6084	0.0004	0.0001	0.0001	0.0000
32	Real Estate and Business Ser.	0.0272	0.0017	0.0051	0.0020	0.0046	0.0026	0.0185	0.0006	0.0017	0.0003	0.0017	0.3843	0.0001	0.0017	0.0000
33	Housing	0.0110	0.0023	0.0049	0.0022	0.0060	0.0164	0.0068	0.0173	0.0064	0.0037	0.0353	0.0063	0.9379	0.0018	0.0000
34	Commty Soc and Per Services	0.0022	0.0022	0.0017	0.0009	0.0022	0.0037	0.0012	0.0016	0.0026	0.0006	0.0015	0.0011	0.0142	0.8523	0.0000
35	Producer of Government Ser.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6803
	SUM	1.0985	1.0310	0.9148	0.9254	1.0018	1.0183	1.0778	1.0868	1.2883	0.9727	1.0105	0.7058	1.0127	1.0259	0.6803

Table 6.3A: Import Multiplier (1981)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Agricultu	Livestoc	Fishing	Forestry	Oil (Petr	Other Mi	Food	Drink, Bev	Textiles	Footwe	Wood +	Paper +	Drugs + C	Refineries	Rubber	Iron + St	Fabricate	Vehicle A	Other Ma	Electric
1	Agriculture	0.1858	0.0104	0.0096	0.0000	0.0008	0.0069	0.1372	0.0792	0.0236	0.0437	0.0075	0.0250	0.0223	0.0009	0.0087	0.0285	0.0036	0.0042	0.0112	0.0074
2	Livestocks and Dairy Products	0.0000	0.1085	0.0001	0.0000	0.0000	0.0003	0.0001	0.0005	0.0004	0.0107	0.0115	0.0011	0.0026	0.0001	0.0045	0.0032	0.0012	0.0027	0.0419	0.0002
3	Fishing	0.0000	0.0000	0.3381	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0004	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0001	0.0015	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0034	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000
5	Oil (Petroleum)	0.0033	0.0003	0.0052	0.0001	0.0578	0.0055	0.0030	0.0027	0.0028	0.0026	0.0036	0.0034	0.0024	0.0345	0.0047	0.0187	0.0053	0.0043	0.0021	0.0012
6	Other Mining	0.0001	0.0001	0.0025	0.0000	0.0014	0.3587	0.0008	0.0015	0.0086	0.0040	0.0080	0.0160	0.0070	0.0012	0.0053	0.0439	0.0248	0.0045	0.0168	0.0223
7	Food	0.0002	0.0603	0.0499	0.0000	0.0029	0.0014	0.7995	0.0071	0.0014	0.0517	0.0153	0.0018	0.0270	0.0022	0.0048	0.0107	0.0028	0.0053	0.0440	0.0013
8	Drink, Beverage & Tobacco	0.0001	0.0001	0.0003	0.0000	0.0014	0.0002	0.0014	0.5539	0.0001	0.0002	0.0001	0.0001	0.0001	0.0008	0.0002	0.0006	0.0002	0.0002	0.0002	0.0001
9	Textiles	0.0001	0.0003	0.0018	0.0000	0.0001	0.0166	0.0011	0.0029	0.3563	0.0167	0.0081	0.0140	0.0014	0.0006	0.0266	0.1667	0.0045	0.0093	0.0057	0.0059
10	Footwear and Leather	0.0000	0.0000	0.0001	0.0000	0.0000	0.0005	0.0000	0.0001	0.0002	0.5533	0.0002	0.0002	0.0001	0.0001	0.0002	0.0056	0.0001	0.0003	0.0001	0.0001
11	Wood and Woods Products	0.0001	0.0001	0.0029	0.0000	0.0001	0.0035	0.0004	0.0051	0.0024	0.0472	0.5334	0.0270	0.0030	0.0004	0.0175	0.0295	0.0073	0.0068	0.0099	0.0023
12	Paper and Paper Products	0.0003	0.0006	0.0015	0.0000	0.0011	0.0033	0.0017	0.0042	0.0095	0.0371	0.0121	0.4673	0.0060	0.0017	0.0143	0.0249	0.0228	0.0059	0.0016	0.0019
13	Drugs and Chemical	0.0004	0.0007	0.0034	0.0000	0.0006	0.0093	0.0027	0.0030	0.0128	0.0301	0.0474	0.0079	0.3592	0.0052	0.0122	0.0895	0.0192	0.0337	0.0073	0.0133
14	Refineries	0.0163	0.0013	0.0035	0.0008	0.0004	0.0282	0.0141	0.0135	0.0123	0.0090	0.0108	0.0075	0.0077	0.7466	0.0130	0.0712	0.0113	0.0236	0.0111	0.0071
15	Rubber and Plastic Products	0.0005	0.0011	0.0019	0.0000	0.0002	0.0056	0.0033	0.0022	0.0064	0.0411	0.0237	0.0037	0.0042	0.0030	0.5828	0.0364	0.0088	0.0145	0.0056	0.0029
16	Iron and Steel	0.0013	0.0030	0.0184	0.0000	0.0011	0.1876	0.0069	0.0311	0.0740	0.0244	0.0802	0.0225	0.0122	0.0054	0.0810	0.1387	0.0422	0.0995	0.0626	0.0656
17	Fabricated Metal	0.0001	0.0001	0.0004	0.0000	0.0006	0.0028	0.0009	0.0094	0.0016	0.0033	0.0040	0.0179	0.0020	0.0006	0.0204	0.0313	0.6513	0.0166	0.0016	0.0011
18	Vehicle Assembly	0.0000	0.0000	0.0001	0.0000	0.0000	0.0002	0.0001	0.0004	0.0002	0.0006	0.0043	0.0008	0.0002	0.0000	0.0013	0.0016	0.0154	0.5304	0.0158	0.0001
19	Other Manufacturing (Miscella)	0.0001	0.0002	0.0011	0.0000	0.0001	0.0035	0.0011	0.0069	0.0043	0.0223	0.0721	0.0159	0.0039	0.0004	0.0349	0.0368	0.0157	0.0374	0.6467	0.0016
20	Electricity Generation	0.0001	0.0001	0.0123	0.0000	0.0003	0.0090	0.0003	0.0009	0.0030	0.0054	0.0119	0.0028	0.0029	0.0008	0.0088	0.0144	0.0060	0.0050	0.0035	0.2572
21	Water Supply	0.0000	0.0001	0.0002	0.0000	0.0000	0.0009	0.0006	0.0010	0.0055	0.0082	0.0046	0.0020	0.0036	0.0016	0.0060	0.0086	0.0021	0.0077	0.0006	0.0004
22	Building and Construction	0.0002	0.0005	0.0328	0.0000	0.0002	0.0143	0.0011	0.0078	0.0107	0.0225	0.0120	0.0118	0.0157	0.0020	0.0230	0.0403	0.0137	0.0067	0.0028	0.0175
23	Air Transport	0.0003	0.0003	0.0011	0.0000	0.0004	0.0029	0.0014	0.0022	0.0017	0.0029	0.0026	0.0039	0.0035	0.0078	0.0025	0.0112	0.0038	0.0041	0.0012	0.0020
24	Other Land Transport	0.0012	0.0005	0.0034	0.0006	0.0011	0.0215	0.0016	0.0034	0.0044	0.0067	0.0073	0.0077	0.0062	0.0428	0.0108	0.0562	0.0131	0.0320	0.0057	0.0060
25	Water Transport	0.0001	0.0001	0.0006	0.0000	0.0004	0.0032	0.0008	0.0013	0.0012	0.0015	0.0015	0.0005	0.0004	0.0034	0.0018	0.0071	0.0012	0.0029	0.0007	0.0008
26	Railway Transport	0.0001	0.0001	0.0009	0.0000	0.0003	0.0057	0.0007	0.0035	0.0012	0.0014	0.0009	0.0025	0.0004	0.0019	0.0032	0.0050	0.0011	0.0011	0.0006	0.0025
27	Communication	0.0001	0.0002	0.0013	0.0000	0.0001	0.0011	0.0006	0.0012	0.0009	0.0008	0.0014	0.0012	0.0009	0.0009	0.0015	0.0069	0.0019	0.0015	0.0005	0.0014
28	Distribution	0.0043	0.0088	0.0124	0.0000	0.0010	0.0224	0.0049	0.0123	0.0109	0.0100	0.0416	0.0189	0.0070	0.0139	0.0213	0.0639	0.0767	0.0360	0.0108	0.0156
29	Hotels and Restaurants	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000	0.0002	0.0001	0.0004	0.0001	0.0001	0.0000	0.0001
30	Banking and Finance	0.0000	0.0001	0.0021	0.0001	0.0001	0.0017	0.0004	0.0006	0.0009	0.0006	0.0010	0.0004	0.0003	0.0004	0.0025	0.0164	0.0010	0.0022	0.0006	0.0012
31	Insurance	0.0000	0.0000	0.0018	0.0000	0.0000	0.0007	0.0001	0.0002	0.0003	0.0002	0.0005	0.0002	0.0001	0.0003	0.0006	0.0056	0.0004	0.0008	0.0003	0.0004
32	Real Estate and Business Ser.	0.0001	0.0001	0.0045	0.0000	0.0002	0.0032	0.0002	0.0004	0.0006	0.0006	0.0010	0.0006	0.0004	0.0008	0.0011	0.0033	0.0013	0.0014	0.0005	0.0059
33	Housing	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0000	0.0000	0.0001	0.0003	0.0001	0.0001	0.0000	0.0000
34	Commty Soc and Per services	0.0000	0.0000	0.0001	0.0001	0.0000	0.0009	0.0000	0.0000	0.0000	0.0001	0.0004	0.0001	0.0000	0.0000	0.0001	0.0002	0.0001	0.0001	0.0016	0.0001
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.2150	0.1981	0.5142	0.0051	0.0729	0.7218	0.9868	0.7585	0.5582	0.9591	0.9297	0.6850	0.5028	0.8806	0.9161	0.9775	0.9592	0.9008	0.9153	0.4456

Table 6.3A (Contd.): Import Multiplier (1981)

		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		Water Su	Building	Air Trans	Other La	Water Tr	Railway T	Commun	Distributio	Hotels +	Bankin	Insuranc	Real Est	Housing	Commty	Produ
1	Agriculture	0.0011	0.0083	0.0029	0.0007	0.0014	0.0026	0.0025	0.0028	0.0298	0.0020	0.0008	0.0014	0.0001	0.0010	0.0000
2	Livestocks and Dairy Products	0.0001	0.0010	0.0006	0.0001	0.0003	0.0005	0.0002	0.0004	0.0033	0.0001	0.0001	0.0001	0.0000	0.0001	0.0000
3	Fishing	0.0000	0.0000	0.0001	0.0000	0.0001	0.0002	0.0002	0.0000	0.0170	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	Oil (Petroleum)	0.0061	0.0035	0.0048	0.0181	0.0021	0.0078	0.0037	0.0032	0.0017	0.0012	0.0012	0.0007	0.0001	0.0009	0.0000
6	Other Mining	0.0020	0.0182	0.0037	0.0018	0.0022	0.0047	0.0024	0.0026	0.0010	0.0011	0.0008	0.0006	0.0003	0.0007	0.0000
7	Food	0.0009	0.0032	0.0019	0.0012	0.0010	0.0024	0.0010	0.0017	0.0160	0.0022	0.0010	0.0034	0.0001	0.0007	0.0000
8	Drink, Beverage & Tobacco	0.0002	0.0001	0.0004	0.0005	0.0003	0.0007	0.0004	0.0001	0.0135	0.0007	0.0004	0.0022	0.0000	0.0016	0.0000
9	Textiles	0.0022	0.0164	0.0065	0.0009	0.0027	0.0041	0.0024	0.0076	0.0015	0.0012	0.0008	0.0021	0.0003	0.0016	0.0000
10	Footwear and Leather	0.0001	0.0005	0.0019	0.0000	0.0001	0.0002	0.0001	0.0002	0.0001	0.0000	0.0001	0.0000	0.0000	0.0017	0.0000
11	Wood and Woods Products	0.0037	0.0395	0.0068	0.0007	0.0039	0.0054	0.0037	0.0032	0.0011	0.0021	0.0014	0.0005	0.0007	0.0006	0.0000
12	Paper and Paper Products	0.0021	0.0036	0.0093	0.0020	0.0046	0.0124	0.0242	0.0134	0.0045	0.0271	0.0051	0.0033	0.0000	0.0016	0.0000
13	Drugs and Chemical	0.0042	0.0292	0.0077	0.0015	0.0036	0.0043	0.0052	0.0156	0.0027	0.0008	0.0012	0.0030	0.0005	0.0061	0.0000
14	Refineries	0.0028	0.0165	0.0279	0.0209	0.0151	0.0771	0.0038	0.0070	0.0049	0.0022	0.0025	0.0015	0.0003	0.0086	0.0000
15	Rubber and Plastic Products	0.0036	0.0056	0.0572	0.0085	0.0273	0.0495	0.0036	0.0251	0.0049	0.0010	0.0026	0.0036	0.0001	0.0016	0.0000
16	Iron and Steel	0.0231	0.1848	0.0412	0.0066	0.0178	0.0208	0.0180	0.0735	0.0129	0.0028	0.0054	0.0039	0.0030	0.0171	0.0000
17	Fabricated Metal	0.0006	0.0029	0.0028	0.0006	0.0013	0.0024	0.0013	0.0024	0.0008	0.0011	0.0004	0.0004	0.0001	0.0004	0.0000
18	Vehicle Assembly	0.0001	0.0004	0.0002	0.0001	0.0001	0.0002	0.0001	0.0002	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing (Miscella)	0.0014	0.0117	0.0052	0.0007	0.0026	0.0043	0.0018	0.0033	0.0009	0.0011	0.0006	0.0005	0.0002	0.0006	0.0000
20	Electricity Generation	0.0007	0.0042	0.0027	0.0005	0.0013	0.0021	0.0028	0.0015	0.0036	0.0009	0.0037	0.0020	0.0001	0.0021	0.0000
21	Water Supply	0.3411	0.0012	0.0021	0.0004	0.0013	0.0015	0.0004	0.0007	0.0031	0.0022	0.0019	0.0014	0.0000	0.0020	0.0000
22	Building and Construction	0.0425	0.4877	0.0519	0.0027	0.0118	0.0131	0.0278	0.0130	0.0055	0.0015	0.0026	0.0021	0.0081	0.0020	0.0000
23	Air Transport	0.0036	0.0033	0.5829	0.0014	0.0050	0.0188	0.0038	0.0073	0.0136	0.0022	0.0099	0.0058	0.0001	0.0023	0.0000
24	Other Land Transport	0.0072	0.0151	0.0173	0.4555	0.0055	0.0367	0.0279	0.0121	0.0083	0.0140	0.0176	0.0114	0.0003	0.0073	0.0000
25	Water Transport	0.0015	0.0014	0.0089	0.0008	0.3556	0.0128	0.0018	0.0007	0.0052	0.0006	0.0041	0.0052	0.0000	0.0024	0.0000
26	Railway Transport	0.0027	0.0021	0.0069	0.0004	0.0041	0.6390	0.0021	0.0007	0.0012	0.0006	0.0029	0.0004	0.0001	0.0021	0.0000
27	Communication	0.0013	0.0015	0.0037	0.0008	0.0042	0.0075	0.3714	0.0041	0.0046	0.0021	0.0072	0.0073	0.0000	0.0056	0.0000
28	Distribution	0.0266	0.0161	0.0563	0.0145	0.0365	0.0303	0.0239	0.2539	0.0338	0.0040	0.0119	0.0064	0.0003	0.0075	0.0000
29	Hotels and Restaurants	0.0001	0.0001	0.0033	0.0006	0.0034	0.0070	0.0057	0.0001	0.4918	0.0002	0.0004	0.0002	0.0000	0.0001	0.0000
30	Banking and Finance	0.0014	0.0019	0.0040	0.0012	0.0031	0.0076	0.0014	0.0007	0.0011	0.1467	0.0008	0.0030	0.0000	0.0024	0.0000
31	Insurance	0.0012	0.0008	0.0025	0.0010	0.0014	0.0064	0.0011	0.0003	0.0028	0.0005	0.1705	0.0038	0.0000	0.0024	0.0000
32	Real Estate and Business Ser.	0.0073	0.0012	0.0135	0.0036	0.0053	0.0072	0.0091	0.0023	0.0050	0.0021	0.0013	0.1841	0.0000	0.0017	0.0000
33	Housing	0.0001	0.0001	0.0002	0.0000	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0002	0.0002	0.0167	0.0003	0.0000
34	Commty Soc and Per services	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1575	0.0000
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.4915	0.8821	0.9376	0.5480	0.5253	0.9898	0.5539	0.4599	0.6964	0.2242	0.2594	0.2605	0.0315	0.2430	0.0000

Table 6.3B: Import Multiplier (1985)																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		Agricultu	Livestoc	Fishing	Forestry	Crude P	Other M	Food	Drink, E	Textiles	Footwear	Wood &	Paper &	Drugs &	Refineries	Rubber	Iron & S	Fabricat	Vehicle	Other Ma	Electricit	Water St	Building
1	Agriculture	0.1954	0.0029	0.0001	0.0000	0.0000	0.0012	0.0407	0.0246	0.0286	0.0002	0.0000	0.0000	0.0224	0.0003	0.0001	0.0178	0.0032	0.0032	0.0283	0.0001	0.0001	0.0004
2	Livestocks and Dairy Products	0.0000	0.0842	0.0000	0.0000	0.0000	0.0001	0.0054	0.0000	0.0000	0.0061	0.0000	0.0000	0.0021	0.0000	0.0002	0.0002	0.0001	0.0004	0.0018	0.0000	0.0000	0.0000
3	Fishing	0.0000	0.0000	0.3382	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0004	0.0000	0.0000	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	Oil (Petroleum)	0.0002	0.0001	0.0104	0.0000	0.0505	0.0040	0.0015	0.0016	0.0011	0.0011	0.0021	0.0015	0.0010	0.0292	0.0012	0.0200	0.0041	0.0035	0.0020	0.0105	0.0082	0.0010
6	Other Mining	0.0004	0.0000	0.0000	0.0000	0.0001	0.3511	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0009	0.0002	0.0004	0.1291	0.0186	0.0065	0.0109	0.0003	0.0003	0.0292
7	Food	0.0001	0.0393	0.0008	0.0000	0.0000	0.0001	0.5476	0.0000	0.0000	0.0029	0.0000	0.0000	0.0010	0.0000	0.0001	0.0004	0.0001	0.0002	0.0057	0.0001	0.0001	0.0000
8	Drink, Beverage & Tobacco	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.3691	0.0000	0.0000	0.0000	0.0000	0.0019	0.0000	0.0000	0.0004	0.0001	0.0002	0.0099	0.0001	0.0001	0.0000
9	Textiles	0.0001	0.0000	0.0001	0.0000	0.0000	0.0001	0.0002	0.0001	0.3978	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0004	0.0007	0.0002	0.0083	0.0001	0.0001	0.0001
10	Footwear and Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3397	0.0000	0.0000	0.0000	0.0000	0.0043	0.0011	0.0002	0.0104	0.0000	0.0000	0.0000	0.0000
11	Wood and Woods Products	0.0004	0.0000	0.0000	0.0000	0.0000	0.0004	0.0002	0.0002	0.0001	0.0002	0.5403	0.0001	0.0002	0.0001	0.0009	0.0042	0.0156	0.0113	0.0082	0.0001	0.0001	0.0028
12	Paper and Paper Products	0.0003	0.0001	0.0012	0.0000	0.0002	0.0013	0.0005	0.0060	0.0003	0.0006	0.0005	0.4151	0.0036	0.0005	0.0046	0.0384	0.0162	0.0163	0.0046	0.0004	0.0004	0.0010
13	Drugs and Chemical	0.0008	0.0000	0.0007	0.0000	0.0001	0.0188	0.0004	0.0023	0.0003	0.0002	0.0004	0.0002	0.4427	0.0048	0.0003	0.0255	0.0149	0.0463	0.0050	0.0002	0.0002	0.0047
14	Refineries	0.0031	0.0007	0.0047	0.0003	0.0006	0.0550	0.0093	0.0146	0.0108	0.0097	0.0249	0.0121	0.0081	0.7551	0.0114	0.2745	0.0545	0.0405	0.0228	0.0009	0.0008	0.0083
15	Rubber and Plastic Products	0.0001	0.0002	0.0003	0.0000	0.0002	0.0023	0.0017	0.0017	0.0006	0.0455	0.0017	0.0011	0.0008	0.0016	0.5402	0.0196	0.0044	0.0039	0.0007	0.0004	0.0003	0.0008
16	Iron and Steel	0.0088	0.0001	0.0005	0.0002	0.0021	0.0460	0.0020	0.0014	0.0014	0.0007	0.0002	0.0002	0.0207	0.0015	0.0078	3.3681	0.4835	0.1664	0.0599	0.0009	0.0008	0.0381
17	Fabricated Metal	0.0069	0.0001	0.0000	0.0001	0.0001	0.0066	0.0014	0.0009	0.0010	0.0000	0.0000	0.0000	0.0008	0.0000	0.0000	0.0031	0.4046	0.0002	0.0028	0.0000	0.0000	0.0016
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5515	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing (Miscella)	0.0040	0.0001	0.0000	0.0000	0.0000	0.0001	0.0009	0.0012	0.0006	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0064	0.0015	0.0004	0.3968	0.0010	0.0007	0.0001
20	Electricity Generation	0.0001	0.0002	0.0037	0.0000	0.0001	0.0022	0.0018	0.0032	0.0087	0.0038	0.0032	0.0021	0.0018	0.0040	0.0027	0.0372	0.0067	0.0029	0.0014	0.3178	0.0008	0.0007
21	Water Supply	0.0001	0.0001	0.0025	0.0000	0.0001	0.0010	0.0014	0.0017	0.0056	0.0021	0.0018	0.0012	0.0013	0.0024	0.0018	0.0287	0.0055	0.0023	0.0010	0.0005	0.2808	0.0005
22	Building and Construction	0.0000	0.0000	0.0002	0.0000	0.0002	0.0042	0.0004	0.0004	0.0003	0.0003	0.0005	0.0003	0.0002	0.0005	0.0003	0.0037	0.0007	0.0006	0.0003	0.0039	0.0049	0.4819
23	Air Transport	0.0001	0.0004	0.0005	0.0000	0.0004	0.0036	0.0049	0.0059	0.0021	0.0037	0.0103	0.0031	0.0029	0.0061	0.0037	0.0111	0.0047	0.0059	0.0015	0.0009	0.0005	0.0013
24	Other Land Transport	0.0015	0.0029	0.0045	0.0004	0.0056	0.0521	0.0289	0.0262	0.0078	0.0144	0.0287	0.0275	0.0167	0.0453	0.0186	0.2403	0.0516	0.0525	0.0126	0.0056	0.0059	0.0168
25	Water Transport	0.0001	0.0004	0.0008	0.0000	0.0006	0.0047	0.0060	0.0071	0.0025	0.0049	0.0074	0.0039	0.0033	0.0057	0.0060	0.0174	0.0048	0.0087	0.0016	0.0016	0.0017	0.0023
26	Railway Transport	0.0001	0.0004	0.0008	0.0000	0.0004	0.0112	0.0058	0.0054	0.0024	0.0021	0.0011	0.0026	0.0008	0.0020	0.0054	0.0097	0.0021	0.0015	0.0009	0.0011	0.0005	0.0013
27	Communication	0.0001	0.0001	0.0011	0.0000	0.0001	0.0007	0.0013	0.0016	0.0014	0.0008	0.0011	0.0010	0.0009	0.0008	0.0012	0.0088	0.0022	0.0020	0.0005	0.0005	0.0006	0.0006
28	Distribution	0.0016	0.0057	0.0033	0.0000	0.0007	0.0060	0.0362	0.0278	0.0139	0.0222	0.0408	0.0285	0.0201	0.0139	0.0203	0.0497	0.0144	0.0398	0.0098	0.0030	0.0028	0.0166
29	Hotels and Restaurants	0.0000	0.0000	0.0001	0.0000	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0001	0.0001	0.0002	0.0002	0.0009	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001
30	Banking and Finance	0.0001	0.0001	0.0049	0.0000	0.0001	0.0009	0.0009	0.0010	0.0007	0.0007	0.0006	0.0006	0.0008	0.0008	0.0021	0.0220	0.0041	0.0026	0.0007	0.0009	0.0009	0.0008
31	Insurance	0.0001	0.0001	0.0053	0.0000	0.0001	0.0019	0.0010	0.0015	0.0010	0.0006	0.0014	0.0006	0.0008	0.0012	0.0013	0.0249	0.0046	0.0029	0.0011	0.0014	0.0016	0.0011
32	Real Estate and Business Ser.	0.0000	0.0000	0.0037	0.0000	0.0002	0.0033	0.0005	0.0005	0.0005	0.0003	0.0004	0.0003	0.0003	0.0005	0.0004	0.0042	0.0009	0.0007	0.0003	0.0049	0.0055	0.0005
33	Housing	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0000	0.0001	0.0004	0.0001	0.0001	0.0000	0.0000	0.0001	0.0001
34	Commty Soc and Per services	0.0000	0.0000	0.0002	0.0001	0.0000	0.0035	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0002	0.0001	0.0027	0.0000	0.0000	0.0003
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.2246	0.1384	0.3888	0.0041	0.0626	0.5828	0.7014	0.5067	0.4901	0.4631	0.6687	0.5029	0.5575	0.8770	0.6359	4.3697	1.1252	0.9842	0.6024	0.3571	0.3187	0.6130

		Table 6.3B Contd.): Import Multiplier (1985)												
		23	24	25	26	27	28	29	30	31	32	33	34	35
		Air Trans	Other L	Water Tr	Railway	Commur	Distributi	Hotel &	Banking	Insuranc	Real Est	Housing	Com. S	Pro. Gov. Ser
1	Agriculture	0.0003	0.0001	0.0003	0.0005	0.0010	0.0002	0.0324	0.0001	0.0002	0.0002	0.0000	0.0004	0.0000
2	Livestocks and Dairy Products	0.0000	0.0000	0.0001	0.0001	0.0001	0.0000	0.0048	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	Fishing	0.0001	0.0000	0.0001	0.0002	0.0006	0.0000	0.0204	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	Oil (Petroleum)	0.0025	0.0133	0.0033	0.0054	0.0015	0.0033	0.0014	0.0007	0.0022	0.0002	0.0000	0.0007	0.0000
6	Other Mining	0.0012	0.0010	0.0016	0.0028	0.0002	0.0002	0.0001	0.0000	0.0002	0.0000	0.0005	0.0005	0.0000
7	Food	0.0003	0.0000	0.0003	0.0008	0.0008	0.0000	0.0195	0.0008	0.0007	0.0006	0.0000	0.0001	0.0000
8	Drink, Beverage & Tobacco	0.0001	0.0000	0.0001	0.0002	0.0003	0.0000	0.0071	0.0003	0.0003	0.0004	0.0000	0.0011	0.0000
9	Textiles	0.0004	0.0001	0.0004	0.0005	0.0009	0.0010	0.0002	0.0002	0.0003	0.0005	0.0000	0.0001	0.0000
10	Footwear and Leather	0.0003	0.0000	0.0003	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000
11	Wood and Woods Products	0.0006	0.0001	0.0016	0.0016	0.0001	0.0010	0.0002	0.0002	0.0006	0.0000	0.0000	0.0001	0.0000
12	Paper and Paper Products	0.0030	0.0008	0.0038	0.0081	0.0091	0.0011	0.0019	0.0169	0.0368	0.0022	0.0000	0.0014	0.0000
13	Drugs and Chemical	0.0007	0.0003	0.0008	0.0010	0.0004	0.0014	0.0004	0.0001	0.0003	0.0013	0.0001	0.0046	0.0000
14	Refineries	0.0228	0.0177	0.0260	0.0626	0.0028	0.0035	0.0022	0.0016	0.0067	0.0005	0.0001	0.0068	0.0000
15	Rubber and Plastic Products	0.0364	0.0057	0.0367	0.0561	0.0010	0.0025	0.0007	0.0004	0.0021	0.0008	0.0000	0.0007	0.0000
16	Iron and Steel	0.0014	0.0009	0.0015	0.0019	0.0003	0.0003	0.0016	0.0001	0.0003	0.0001	0.0006	0.0113	0.0000
17	Fabricated Metal	0.0001	0.0000	0.0001	0.0001	0.0000	0.0000	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	Vehicle Assembly	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	Other Manufacturing (Miscella)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	Electricity Generation	0.0018	0.0004	0.0014	0.0019	0.0036	0.0017	0.0031	0.0006	0.0041	0.0007	0.0000	0.0021	0.0000
21	Water Supply	0.0010	0.0003	0.0014	0.0012	0.0021	0.0017	0.0023	0.0011	0.0017	0.0003	0.0000	0.0014	0.0000
22	Building and Construction	0.0080	0.0013	0.0078	0.0063	0.0016	0.0005	0.0003	0.0002	0.0011	0.0001	0.0080	0.0003	0.0000
23	Air Transport	0.5592	0.0008	0.0047	0.0124	0.0021	0.0030	0.0027	0.0011	0.0071	0.0012	0.0000	0.0014	0.0000
24	Other Land Transport	0.0312	0.3936	0.0457	0.0418	0.0301	0.0710	0.0150	0.0133	0.0436	0.0045	0.0003	0.0109	0.0000
25	Water Transport	0.0126	0.0010	0.6202	0.0181	0.0040	0.0005	0.0020	0.0008	0.0126	0.0021	0.0000	0.0033	0.0000
26	Railway Transport	0.0064	0.0004	0.0044	0.7051	0.0018	0.0003	0.0005	0.0004	0.0029	0.0001	0.0000	0.0016	0.0000
27	Communication	0.0024	0.0005	0.0039	0.0062	0.3977	0.0012	0.0034	0.0019	0.0128	0.0021	0.0000	0.0068	0.0000
28	Distribution	0.0697	0.0133	0.0753	0.0536	0.0061	0.2563	0.0346	0.0062	0.0263	0.0041	0.0003	0.0059	0.0000
29	Hotels and Restaurants	0.0033	0.0005	0.0034	0.0059	0.0148	0.0002	0.5104	0.0002	0.0008	0.0001	0.0000	0.0003	0.0000
30	Banking and Finance	0.0031	0.0009	0.0032	0.0059	0.0024	0.0002	0.0009	0.1370	0.0062	0.0012	0.0000	0.0030	0.0000
31	Insurance	0.0044	0.0024	0.0056	0.0154	0.0040	0.0005	0.0012	0.0025	0.5226	0.0030	0.0000	0.0093	0.0000
32	Real Estate and Business Ser.	0.0047	0.0012	0.0045	0.0062	0.0134	0.0003	0.0015	0.0011	0.0044	0.0695	0.0000	0.0013	0.0000
33	Housing	0.0001	0.0000	0.0001	0.0001	0.0003	0.0003	0.0002	0.0002	0.0012	0.0001	0.0167	0.0003	0.0000
34	Commty Soc and Per services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1550	0.0000
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.7781	0.4566	0.8585	1.0225	0.5033	0.3520	0.6730	0.1878	0.6980	0.0959	0.0269	0.2311	0.0000

Table 6.3C: Import Multiplier (1995)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	Activity Sectors	Agricultı	Livestoc	Fishing	Forestry	Crude F	Other Mi	Food	Drink, B	Textiles	Footware	Wood &	Paper &	Drugs &	Refineri	Rubber &	Iron & S	Fabricate	Vehicle	Other m	Electricit	Water S	Building
1	Agriculture	0.1876	0.0117	0.0015	0.0002	0.0002	0.0036	0.0896	0.0138	0.0294	0.0020	0.0003	0.0043	0.0199	0.0023	0.0371	0.0108	0.0031	0.0008	0.0118	0.0058	0.0063	0.0024
2	Livestock	0.0002	0.0918	0.0000	0.0000	0.0000	0.0005	0.0102	0.0016	0.0000	0.0130	0.0000	0.0001	0.0105	0.0001	0.0174	0.0001	0.0001	0.0000	0.0016	0.0002	0.0002	0.0012
3	Fishing	0.0000	0.0000	0.3382	0.0000	0.0000	0.0001	0.0006	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000
4	Forestry	0.0001	0.0000	0.0000	0.0388	0.0000	0.0003	0.0002	0.0001	0.0000	0.0000	0.0001	0.0038	0.0005	0.0000	0.0039	0.0013	0.0022	0.0015	0.0049	0.0004	0.0005	0.0016
5	Crude Petroleum	0.0004	0.0004	0.0155	0.0003	0.0791	0.0105	0.0090	0.0021	0.0006	0.0009	0.0008	0.0047	0.0027	0.0083	0.0037	0.0038	0.0048	0.0028	0.0073	0.0042	0.0023	0.0052
6	Other Mining	0.0001	0.0000	0.0053	0.0001	0.0002	0.5957	0.0003	0.0003	0.0003	0.0003	0.0003	0.0020	0.0009	0.0037	0.0012	0.0021	0.0017	0.0012	0.0028	0.0019	0.0008	0.0014
7	Food	0.0001	0.0291	0.0006	0.0000	0.0000	0.0002	0.7656	0.1146	0.0000	0.0041	0.0000	0.0002	0.0034	0.0001	0.0056	0.0001	0.0001	0.0000	0.0005	0.0001	0.0001	0.0004
8	Drink, Bev + Tobacco	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.2678	0.0000	0.0000	0.0000	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0000	0.0002	0.0000	0.0001	0.0000
9	Textiles	0.0000	0.0000	0.0007	0.0000	0.0000	0.0012	0.0000	0.0000	0.2325	0.0000	0.0000	0.0004	0.0003	0.0002	0.0007	0.0003	0.0003	0.0005	0.0004	0.0346	0.0368	0.0002
10	Footwear + Leather	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.2527	0.0000	0.0001	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0018
11	Wood & Wood	0.0000	0.0000	0.0001	0.0001	0.0001	0.0016	0.0001	0.0000	0.0000	0.0001	0.1245	0.0003	0.0003	0.0004	0.0005	0.0004	0.0005	0.0001	0.0006	0.0004	0.0002	0.0002
12	Paper & Paper	0.0002	0.0008	0.0008	0.0003	0.0003	0.0098	0.0206	0.0034	0.0001	0.0003	0.0002	0.5384	0.0007	0.0007	0.0010	0.0007	0.0010	0.0003	0.0199	0.0021	0.0025	0.0003
13	Drugs and Chem.	0.0081	0.0006	0.0017	0.0002	0.0008	0.0273	0.0042	0.0009	0.0014	0.0004	0.0003	0.0040	0.6052	0.0023	0.0037	0.0019	0.0029	0.0008	0.0065	0.0013	0.0014	0.0005
14	Refineries	0.0157	0.0024	0.0071	0.0080	0.0012	0.0410	0.0438	0.0579	0.0362	0.0488	0.0532	0.2847	0.1147	0.6877	0.1392	0.1588	0.1472	0.2242	0.0120	0.0438	0.0366	0.0127
15	Rubber Plastic	0.0002	0.0000	0.0002	0.0002	0.0001	0.0022	0.0004	0.0003	0.0008	0.0007	0.0005	0.0015	0.0022	0.0008	0.6269	0.0006	0.0007	0.0005	0.0006	0.0023	0.0010	0.0560
16	Iron and Steel	0.0001	0.0000	0.0008	0.0001	0.0007	0.0705	0.0002	0.0001	0.0001	0.0001	0.0001	0.0006	0.0003	0.0006	0.0004	0.5247	0.0004	0.0002	0.0006	0.0006	0.0003	0.0003
17	Fabricated Metal	0.0119	0.0007	0.0004	0.0060	0.0002	0.0041	0.0057	0.0009	0.0018	0.0001	0.0001	0.0009	0.0014	0.0002	0.0029	0.0009	0.6822	0.0003	0.0015	0.0004	0.0005	0.0004
18	Vehicle Assem.	0.0148	0.0009	0.0001	0.0000	0.0000	0.0003	0.0071	0.0011	0.0023	0.0001	0.0000	0.0003	0.0016	0.0002	0.0029	0.0009	0.0002	0.4887	0.0022	0.0005	0.0006	0.0002
19	Other Manufac.	0.0041	0.0003	0.0011	0.0108	0.0001	0.0014	0.0020	0.0078	0.0007	0.0001	0.0001	0.0019	0.0066	0.0004	0.0031	0.0042	0.0056	0.0012	0.7219	0.0469	0.0687	0.0034
20	Electricity	0.0004	0.0001	0.0110	0.0002	0.0003	0.0038	0.0005	0.0003	0.0002	0.0003	0.0003	0.0054	0.0027	0.0024	0.0093	0.0038	0.0040	0.0081	0.0039	0.5891	0.0664	0.0019
21	Water Supply	0.0001	0.0000	0.0010	0.0000	0.0000	0.0009	0.0001	0.0001	0.0000	0.0001	0.0001	0.0017	0.0020	0.0006	0.0031	0.0008	0.0009	0.0009	0.0022	0.0049	0.4859	0.0006
22	Building & Constructions	0.0014	0.0002	0.0009	0.0012	0.0005	0.0185	0.0030	0.0025	0.0072	0.0063	0.0040	0.0118	0.0187	0.0068	0.0082	0.0056	0.0058	0.0038	0.0039	0.0184	0.0077	0.4830
23	Air Transport	0.0004	0.0001	0.0012	0.0009	0.0003	0.0060	0.0004	0.0003	0.0002	0.0004	0.0003	0.0015	0.0014	0.0013	0.0032	0.0019	0.0014	0.0011	0.0022	0.0074	0.0024	0.0029
24	Other Land Transport	0.0032	0.0004	0.0069	0.0025	0.0134	0.1372	0.0054	0.0043	0.0027	0.0050	0.0040	0.0213	0.0245	0.0330	0.0382	0.0307	0.0414	0.0110	0.0537	0.0129	0.0096	0.0064
25	Water Transport	0.0001	0.0001	0.0003	0.0005	0.0001	0.0010	0.0003	0.0002	0.0003	0.0010	0.0003	0.0016	0.0003	0.0003	0.0008	0.0005	0.0006	0.0002	0.0006	0.0035	0.0014	0.0018
26	Railway Transport	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0001
27	Communications	0.0001	0.0000	0.0009	0.0001	0.0001	0.0010	0.0004	0.0005	0.0002	0.0009	0.0010	0.0040	0.0015	0.0011	0.0033	0.0010	0.0011	0.0004	0.0042	0.0016	0.0012	0.0005
28	Distribution	0.0032	0.0013	0.0169	0.0013	0.0015	0.0164	0.0048	0.0039	0.0023	0.0039	0.0035	0.0548	0.0214	0.0293	0.0291	0.0195	0.0389	0.0097	0.0390	0.0098	0.0106	0.0035
29	Hotels & Restaurants	0.0000	0.0000	0.0001	0.0000	0.0002	0.0023	0.0001	0.0000	0.0000	0.0000	0.0000	0.0003	0.0002	0.0002	0.0003	0.0002	0.0002	0.0001	0.0003	0.0001	0.0001	0.0001
30	Banking + Finance	0.0004	0.0001	0.0051	0.0004	0.0008	0.0070	0.0011	0.0015	0.0014	0.0019	0.0032	0.0176	0.0048	0.0061	0.0098	0.0078	0.0104	0.0022	0.0158	0.0111	0.0097	0.0012
31	Insurance	0.0001	0.0000	0.0021	0.0001	0.0001	0.0009	0.0003	0.0002	0.0002	0.0005	0.0003	0.0010	0.0005	0.0005	0.0013	0.0005	0.0010	0.0004	0.0026	0.0128	0.0186	0.0008
32	Real Estate & Business Ser.	0.0001	0.0000	0.0012	0.0000	0.0001	0.0008	0.0004	0.0003	0.0001	0.0006	0.0004	0.0028	0.0007	0.0007	0.0017	0.0006	0.0007	0.0003	0.0015	0.0080	0.0021	0.0014
33	Housing	0.0000	0.0000	0.0004	0.0000	0.0000	0.0003	0.0001	0.0001	0.0000	0.0001	0.0001	0.0009	0.0004	0.0003	0.0008	0.0004	0.0007	0.0001	0.0016	0.0005	0.0004	0.0002
34	Comty Soc & Per Services	0.0000	0.0000	0.0002	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	Producer of Gov. Services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.2528	0.1412	0.4224	0.0727	0.1005	0.9662	0.9763	0.4870	0.3214	0.3447	0.1981	0.9733	0.8505	0.7906	0.9594	0.7848	0.9605	0.7615	0.9269	0.8259	0.7751	0.5926

		Table 6.3C (Contd.): Import Multiplier (1995)												
		23	24	25	26	27	28	29	30	31	32	33	34	35
	Activity Sectors	Air Trans	Other La	Water T	Railway T	Commun	Distribut	Hotels &	Banking	Insuran	Real Est	Housing	Com. Se	Pro. G
1	Agriculture	0.0031	0.0016	0.0045	0.0039	0.0015	0.0211	0.0226	0.0004	0.0033	0.0019	0.0001	0.0012	0.0000
2	Livestock	0.0001	0.0000	0.0001	0.0002	0.0001	0.0004	0.0037	0.0000	0.0002	0.0002	0.0000	0.0003	0.0000
3	Fishing	0.0001	0.0000	0.0001	0.0002	0.0004	0.0000	0.0137	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Forestry	0.0001	0.0000	0.0001	0.0002	0.0001	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0000
5	Crude Petroleum	0.0159	0.0177	0.0185	0.0084	0.0022	0.0038	0.0014	0.0027	0.0180	0.0016	0.0002	0.0007	0.0000
6	Other Mining	0.0162	0.0017	0.0192	0.0332	0.0015	0.0010	0.0004	0.0013	0.0040	0.0006	0.0001	0.0003	0.0000
7	Food	0.0001	0.0001	0.0002	0.0002	0.0001	0.0006	0.0012	0.0000	0.0002	0.0001	0.0000	0.0001	0.0000
8	Drink, Bev + Tobacco	0.0002	0.0001	0.0002	0.0002	0.0000	0.0012	0.0001	0.0000	0.0002	0.0001	0.0000	0.0000	0.0000
9	Textiles	0.0002	0.0000	0.0010	0.0030	0.0007	0.0000	0.0004	0.0001	0.0015	0.0005	0.0000	0.0002	0.0000
10	Footwear + Leather	0.0001	0.0000	0.0001	0.0002	0.0001	0.0000	0.0000	0.0001	0.0001	0.0004	0.0001	0.0020	0.0000
11	Wood & Wood	0.0240	0.0041	0.0016	0.0282	0.0010	0.0002	0.0001	0.0001	0.0018	0.0012	0.0000	0.0005	0.0000
12	Paper & Paper	0.0011	0.0005	0.0013	0.0021	0.0162	0.0037	0.0006	0.0028	0.0143	0.0048	0.0001	0.0056	0.0000
13	Drugs and Chem.	0.0035	0.0017	0.0049	0.0044	0.0016	0.0197	0.0202	0.0009	0.0051	0.0033	0.0001	0.0109	0.0000
14	Refineries	0.0657	0.0096	0.0754	0.0622	0.0143	0.0093	0.0120	0.0021	0.0151	0.0124	0.0006	0.0133	0.0000
15	Rubber Plastic	0.0014	0.0003	0.0017	0.0053	0.0012	0.0002	0.0002	0.0004	0.0027	0.0049	0.0023	0.0002	0.0000
16	Iron and Steel	0.0020	0.0004	0.0024	0.0039	0.0025	0.0015	0.0003	0.0003	0.0015	0.0132	0.0001	0.0209	0.0000
17	Fabricated Metal	0.0003	0.0001	0.0005	0.0005	0.0001	0.0014	0.0014	0.0001	0.0003	0.0001	0.0000	0.0001	0.0000
18	Vehicle Assem.	0.0002	0.0001	0.0003	0.0003	0.0001	0.0017	0.0018	0.0000	0.0002	0.0001	0.0000	0.0001	0.0000
19	Other Manufac.	0.0004	0.0001	0.0016	0.0057	0.0011	0.0007	0.0013	0.0002	0.0026	0.0009	0.0001	0.0061	0.0000
20	Electricity	0.0025	0.0005	0.0162	0.0153	0.0089	0.0003	0.0040	0.0014	0.0150	0.0055	0.0001	0.0027	0.0000
21	Water Supply	0.0004	0.0002	0.0008	0.0309	0.0025	0.0001	0.0024	0.0006	0.0093	0.0022	0.0000	0.0009	0.0000
22	Building & Constructions	0.0113	0.0020	0.0138	0.0445	0.0028	0.0017	0.0012	0.0005	0.0032	0.0015	0.0199	0.0009	0.0000
23	Air Transport	0.7240	0.0010	0.0035	0.0669	0.0199	0.0008	0.0016	0.0019	0.0395	0.0094	0.0001	0.0029	0.0000
24	Other Land Transport	0.0274	0.4069	0.0277	0.0370	0.0197	0.0190	0.0067	0.0074	0.0434	0.0191	0.0004	0.0083	0.0000
25	Water Transport	0.0019	0.0006	0.6355	0.0559	0.0093	0.0003	0.0006	0.0003	0.0018	0.0026	0.0001	0.0004	0.0000
26	Railway Transport	0.0000	0.0000	0.0000	0.4147	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	Communications	0.0045	0.0005	0.0026	0.0143	0.3718	0.0002	0.0021	0.0014	0.0185	0.0084	0.0000	0.0022	0.0000
28	Distribution	0.0365	0.0210	0.0559	0.0384	0.0095	0.2815	0.0257	0.0048	0.0376	0.0185	0.0002	0.0054	0.0000
29	Hotels & Restaurants	0.0033	0.0006	0.0017	0.0049	0.0095	0.0010	0.3442	0.0001	0.0009	0.0003	0.0000	0.0001	0.0000
30	Banking + Finance	0.0077	0.0027	0.0031	0.0111	0.0040	0.0005	0.0010	0.1086	0.0190	0.0070	0.0009	0.0008	0.0000
31	Insurance	0.0015	0.0005	0.0017	0.0020	0.0020	0.0001	0.0005	0.0004	0.6565	0.0033	0.0002	0.0002	0.0000
32	Real Estate & Business Ser.	0.0009	0.0002	0.0007	0.0058	0.0545	0.0001	0.0033	0.0003	0.0034	0.3090	0.0001	0.0021	0.0000
33	Housing	0.0004	0.0002	0.0005	0.0005	0.0011	0.0021	0.0006	0.0007	0.0033	0.0018	0.0548	0.0001	0.0000
34	Comty Soc & Per Services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0008	0.1432	0.0000
35	Producer of Gov. Services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.9572	0.4751	0.8973	0.9044	0.5602	0.3743	0.4755	0.1401	0.9225	0.4353	0.0817	0.2327	0.0000

Table 6.3D: Import Multiplier (2000)																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		Agricultu	Livestock	Fishing	Forestry	Crude F	Other Mi	Food	Drink, Be	Textiles	Footwear	Wood &	Paper &	Drugs &	Refineri	Rubber &	Iron & Ste	Fabricate	Vehicle A	Other Ma	Electricit	Water
1	Agriculture	0.1271	0.0098	0.0950	0.0008	0.0003	0.0059	0.0525	0.0320	0.0343	0.0047	0.0043	0.0033	0.0453	0.0053	0.0033	0.0066	0.0021	0.0055	0.0619	0.0181	0.0127
2	Livestocks and Dairy Products	0.0001	0.1372	0.0004	0.0001	0.0000	0.0005	0.0091	0.0004	0.0003	0.0129	0.0003	0.0002	0.0059	0.0004	0.0005	0.0003	0.0002	0.0004	0.0078	0.0006	0.0007
3	Fishing	0.0018	0.0014	0.7315	0.0023	0.0006	0.0057	0.0076	0.0062	0.0034	0.0035	0.0039	0.0028	0.0073	0.0049	0.0029	0.0057	0.0037	0.0048	0.2435	0.0113	0.0108
4	Forestry	0.0000	0.0000	0.0000	0.0310	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0004	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000
5	Oil (Petroleum)	0.0114	0.0126	0.0375	0.0043	0.4731	0.0707	0.0934	0.0511	0.0335	0.0406	0.0541	0.0418	0.0539	0.3105	0.0432	0.0612	0.0307	0.0801	0.1195	0.0810	0.1239
6	Other Mining	0.0002	0.0001	0.0004	0.0002	0.0000	0.4592	0.0005	0.0006	0.0004	0.0007	0.0007	0.0002	0.0006	0.0004	0.0002	0.0051	0.0002	0.0004	0.0100	0.0013	0.0011
7	Food	0.0003	0.0556	0.0015	0.0001	0.0001	0.0012	0.8265	0.0012	0.0009	0.0060	0.0010	0.0008	0.0037	0.0014	0.0009	0.0008	0.0004	0.0013	0.0052	0.0017	0.0020
8	Drink, Beverage & Tobacco	0.0001	0.0001	0.0002	0.0000	0.0000	0.0001	0.0004	0.4670	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0002	0.0001	0.0001	0.0004	0.0003	0.0002	0.0004
9	Textiles	0.0001	0.0001	0.0004	0.0003	0.0000	0.0006	0.0007	0.0007	0.3937	0.0009	0.0006	0.0005	0.0006	0.0008	0.0007	0.0012	0.0004	0.0004	0.0007	0.1368	0.0506
10	Footwear and Leather	0.0001	0.0000	0.0002	0.0001	0.0000	0.0004	0.0002	0.0003	0.0002	0.3599	0.0005	0.0001	0.0003	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0008	0.0006
11	Wood and Woods Products	0.0001	0.0002	0.0004	0.0001	0.0001	0.0020	0.0014	0.0006	0.0003	0.0004	0.4428	0.0004	0.0006	0.0006	0.0005	0.0006	0.0003	0.0008	0.0008	0.0005	0.0012
12	Paper and Paper Products	0.0001	0.0001	0.0003	0.0001	0.0001	0.0004	0.0005	0.0004	0.0002	0.0003	0.0003	0.2761	0.0005	0.0003	0.0003	0.0003	0.0002	0.0004	0.0124	0.0006	0.0007
13	Drugs and Chemical	0.0048	0.0025	0.0083	0.0005	0.0003	0.0185	0.0139	0.0090	0.0062	0.0074	0.0088	0.0074	0.6401	0.0063	0.0067	0.0041	0.0024	0.0115	0.0207	0.0077	0.0122
14	Refineries	0.0052	0.0030	0.0089	0.0014	0.0007	0.0185	0.0244	0.0313	0.0247	0.0259	0.0463	0.0278	0.0250	0.7815	0.0308	0.0871	0.0385	0.0751	0.0206	0.0195	0.0303
15	Rubber and Plastic Products	0.0002	0.0001	0.0005	0.0002	0.0000	0.0008	0.0006	0.0008	0.0007	0.0015	0.0015	0.0002	0.0008	0.0006	0.2866	0.0003	0.0002	0.0004	0.0007	0.0024	0.0018
16	Iron and Steel	0.0019	0.0022	0.0064	0.0006	0.0033	0.0585	0.0122	0.0077	0.0053	0.0066	0.0078	0.0064	0.0094	0.0080	0.0060	0.6665	0.0024	0.0103	0.0118	0.0085	0.0187
17	Fabricated Metal	0.0019	0.0002	0.0017	0.0002	0.0000	0.0008	0.0013	0.0008	0.0007	0.0003	0.0003	0.0003	0.0010	0.0004	0.0002	0.0003	0.2391	0.0005	0.0015	0.0007	0.0007
18	Vehicle Assembly	0.0203	0.0027	0.0188	0.0004	0.0002	0.0043	0.0138	0.0083	0.0078	0.0034	0.0036	0.0027	0.0112	0.0047	0.0027	0.0032	0.0015	0.7276	0.0179	0.0074	0.0076
19	Other Manufacturing (Miscella)	0.0030	0.0006	0.0034	0.0074	0.0001	0.0033	0.0033	0.0093	0.0022	0.0021	0.0022	0.0011	0.0102	0.0017	0.0011	0.0117	0.0085	0.0016	0.8975	0.0247	0.0160
20	Electricity Generation	0.0001	0.0002	0.0004	0.0012	0.0000	0.0013	0.0012	0.0021	0.0060	0.0033	0.0018	0.0016	0.0009	0.0023	0.0027	0.0047	0.0012	0.0008	0.0012	0.6281	0.0187
21	Water Supply	0.0001	0.0002	0.0003	0.0004	0.0000	0.0011	0.0015	0.0009	0.0016	0.0008	0.0010	0.0007	0.0024	0.0007	0.0007	0.0012	0.0008	0.0007	0.0008	0.0121	0.7797
22	Building and Construction	0.0019	0.0005	0.0025	0.0018	0.0002	0.0063	0.0029	0.0060	0.0056	0.0137	0.0138	0.0010	0.0060	0.0036	0.0015	0.0014	0.0018	0.0019	0.0032	0.0220	0.0134
23	Air Transport	0.0020	0.0009	0.0032	0.0011	0.0009	0.0687	0.0067	0.0060	0.0030	0.0037	0.0046	0.0033	0.0034	0.0060	0.0063	0.0109	0.0071	0.0051	0.0060	0.0047	0.0137
24	Other Land Transport	0.0069	0.0104	0.0158	0.0035	0.0046	0.0464	0.1125	0.0332	0.0155	0.0225	0.0301	0.0300	0.0342	0.0362	0.0284	0.0289	0.0164	0.0535	0.0384	0.0242	0.0630
25	Water Transport	0.0000	0.0000	0.0001	0.0001	0.0000	0.0003	0.0001	0.0002	0.0001	0.0004	0.0004	0.0003	0.0002	0.0002	0.0004	0.0001	0.0003	0.0002	0.0002	0.0002	0.0018
26	Railway Transport	0.0000	0.0000	0.0001	0.0001	0.0000	0.0041	0.0003	0.0002	0.0003	0.0010	0.0008	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0003	0.0010
27	Communication	0.0001	0.0001	0.0003	0.0000	0.0000	0.0005	0.0009	0.0008	0.0007	0.0006	0.0006	0.0006	0.0009	0.0004	0.0008	0.0006	0.0005	0.0011	0.0006	0.0007	0.0018
28	Distribution	0.0330	0.0346	0.0711	0.0040	0.0036	0.0576	0.2130	0.1451	0.0871	0.1337	0.1681	0.1466	0.1750	0.0787	0.1297	0.0514	0.0360	0.2220	0.1232	0.0895	0.1886
29	Hotels and Restaurants	0.0003	0.0004	0.0010	0.0001	0.0008	0.0031	0.0027	0.0014	0.0009	0.0010	0.0012	0.0010	0.0014	0.0017	0.0011	0.0012	0.0007	0.0017	0.0019	0.0014	0.0028
30	Banking and Finance	0.0002	0.0002	0.0006	0.0001	0.0001	0.0016	0.0020	0.0020	0.0016	0.0011	0.0011	0.0009	0.0021	0.0012	0.0048	0.0068	0.0020	0.0035	0.0013	0.0037	0.0312
31	Insurance	0.0000	0.0000	0.0001	0.0000	0.0000	0.0002	0.0005	0.0005	0.0002	0.0005	0.0005	0.0005	0.0003	0.0004	0.0003	0.0002	0.0004	0.0006	0.0003	0.0014	0.0030
32	Real Estate and Business Ser.	0.0002	0.0003	0.0007	0.0001	0.0002	0.0208	0.0022	0.0014	0.0011	0.0010	0.0011	0.0008	0.0017	0.0010	0.0014	0.0012	0.0009	0.0018	0.0019	0.0062	0.0443
33	Housing	0.0001	0.0001	0.0002	0.0000	0.0000	0.0002	0.0005	0.0004	0.0002	0.0003	0.0004	0.0003	0.0005	0.0002	0.0003	0.0002	0.0001	0.0004	0.0014	0.0003	0.0007
34	Commty Soc and Per services	0.0001	0.0001	0.0004	0.0009	0.0000	0.0296	0.0006	0.0004	0.0003	0.0003	0.0003	0.0002	0.0004	0.0004	0.0002	0.0005	0.0001	0.0004	0.0013	0.0005	0.0006
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SUM		0.2237	0.2765	1.0126	0.0632	0.4897	0.8935	1.4100	0.8280	0.6393	0.6614	0.8056	0.5610	1.0465	1.2613	0.5660	0.9649	0.3995	1.2153	1.6150	1.1193	1.4562

	Table 6.3D (Contd.): Import Multiplier (2000)															
		22	23	24	25	26	27	28	29	30	31	32	33	34	35
		Building	Air Trans	Other La	Water Tr	Railway	Commui	Distribut	Hotel & F	Banking	Insurand	Real Esta	Housing	Com. Se	Pro. G
1	Agriculture	0.0028	0.0075	0.0038	0.0043	0.0051	0.0128	0.0070	0.0820	0.0023	0.0043	0.0039	0.0006	0.0032	0.0000
2	Livestocks and Dairy Products	0.0005	0.0005	0.0003	0.0003	0.0003	0.0006	0.0006	0.0036	0.0002	0.0004	0.0003	0.0001	0.0003	0.0000
3	Fishing	0.0052	0.0162	0.0061	0.0136	0.0115	0.0638	0.0049	0.5151	0.0024	0.0073	0.0037	0.0006	0.0034	0.0000
4	Forestry	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	Oil (Petroleum)	0.0316	0.2855	0.1967	0.0516	0.0872	0.0502	0.0866	0.0590	0.1075	0.1063	0.0339	0.0039	0.0204	0.0000
6	Other Mining	0.0073	0.0010	0.0004	0.0063	0.0108	0.0004	0.0005	0.0006	0.0002	0.0004	0.0013	0.0003	0.0005	0.0000
7	Food	0.0006	0.0015	0.0009	0.0007	0.0010	0.0012	0.0014	0.0038	0.0006	0.0010	0.0008	0.0001	0.0006	0.0000
8	Drink, Beverage & Tobacco	0.0001	0.0002	0.0001	0.0001	0.0002	0.0001	0.0010	0.0003	0.0001	0.0001	0.0001	0.0000	0.0001	0.0000
9	Textiles	0.0003	0.0005	0.0002	0.0008	0.0008	0.0008	0.0004	0.0007	0.0002	0.0019	0.0005	0.0000	0.0004	0.0000
10	Footwear and Leather	0.0064	0.0002	0.0001	0.0002	0.0002	0.0002	0.0001	0.0003	0.0003	0.0033	0.0004	0.0003	0.0013	0.0000
11	Wood and Woods Products	0.0003	0.0125	0.0044	0.0067	0.0162	0.0007	0.0007	0.0007	0.0003	0.0010	0.0005	0.0001	0.0013	0.0000
12	Paper and Paper Products	0.0003	0.0004	0.0002	0.0002	0.0003	0.0048	0.0010	0.0005	0.0003	0.0024	0.0006	0.0000	0.0012	0.0000
13	Drugs and Chemical	0.0028	0.0082	0.0040	0.0039	0.0057	0.0060	0.0312	0.0200	0.0032	0.0043	0.0054	0.0007	0.0100	0.0000
14	Refineries	0.0060	0.0198	0.0066	0.0237	0.0265	0.0079	0.0093	0.0134	0.0030	0.0099	0.0177	0.0008	0.0091	0.0000
15	Rubber and Plastic Products	0.0192	0.0007	0.0004	0.0006	0.0007	0.0005	0.0004	0.0007	0.0011	0.0157	0.0012	0.0009	0.0002	0.0000
16	Iron and Steel	0.0037	0.0105	0.0055	0.0055	0.0072	0.0099	0.0236	0.0113	0.0046	0.0176	0.1066	0.0014	0.0472	0.0000
17	Fabricated Metal	0.0002	0.0005	0.0003	0.0002	0.0003	0.0005	0.0005	0.0018	0.0002	0.0003	0.0003	0.0000	0.0002	0.0000
18	Vehicle Assembly	0.0019	0.0055	0.0031	0.0026	0.0036	0.0051	0.0049	0.0199	0.0020	0.0033	0.0030	0.0005	0.0021	0.0000
19	Other Manufacturing (Miscella)	0.0136	0.0020	0.0011	0.0012	0.0016	0.0017	0.0021	0.0044	0.0007	0.0016	0.0032	0.0008	0.0058	0.0000
20	Electricity Generation	0.0006	0.0007	0.0003	0.0025	0.0020	0.0025	0.0005	0.0010	0.0004	0.0072	0.0015	0.0001	0.0011	0.0000
21	Water Supply	0.0006	0.0007	0.0003	0.0030	0.0034	0.0019	0.0011	0.0011	0.0004	0.0033	0.0009	0.0001	0.0007	0.0000
22	Building and Construction	0.2011	0.0043	0.0025	0.0042	0.0052	0.0032	0.0017	0.0034	0.0006	0.0018	0.0099	0.0088	0.0008	0.0000
23	Air Transport	0.0030	0.7233	0.0019	0.0107	0.0340	0.0043	0.0052	0.0047	0.0027	0.0139	0.0063	0.0003	0.0023	0.0000
24	Other Land Transport	0.0141	0.0245	0.4612	0.0228	0.0345	0.0532	0.0435	0.0271	0.0154	0.0146	0.0232	0.0018	0.0165	0.0000
25	Water Transport	0.0002	0.0001	0.0001	0.2723	0.0007	0.0003	0.0001	0.0002	0.0001	0.0013	0.0001	0.0000	0.0001	0.0000
26	Railway Transport	0.0001	0.0003	0.0001	0.0003	0.3986	0.0003	0.0001	0.0002	0.0001	0.0020	0.0001	0.0000	0.0000	0.0000
27	Communication	0.0003	0.0007	0.0003	0.0059	0.0028	0.3419	0.0011	0.0009	0.0007	0.0086	0.0020	0.0001	0.0012	0.0000
28	Distribution	0.0331	0.1133	0.0491	0.0491	0.0751	0.0608	0.7407	0.1213	0.0479	0.0522	0.0772	0.0057	0.0430	0.0000
29	Hotels and Restaurants	0.0006	0.0198	0.0060	0.0193	0.0142	0.1005	0.0016	0.8407	0.0013	0.0076	0.0014	0.0001	0.0008	0.0000
30	Banking and Finance	0.0008	0.0035	0.0013	0.0016	0.0056	0.0016	0.0008	0.0011	0.2676	0.0049	0.0030	0.0003	0.0007	0.0000
31	Insurance	0.0002	0.0006	0.0001	0.0024	0.0016	0.0008	0.0001	0.0002	0.0002	0.3993	0.0002	0.0001	0.0001	0.0000
32	Real Estate and Business Ser.	0.0028	0.0083	0.0033	0.0074	0.0043	0.0301	0.0011	0.0028	0.0005	0.0028	0.6258	0.0002	0.0028	0.0000
33	Housing	0.0002	0.0003	0.0001	0.0004	0.0011	0.0005	0.0011	0.0004	0.0002	0.0024	0.0004	0.0625	0.0001	0.0000
34	Commty Soc and Per services	0.0006	0.0005	0.0002	0.0006	0.0010	0.0003	0.0004	0.0007	0.0002	0.0004	0.0003	0.0039	0.2324	0.0000
35	Producer of Government Serv.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3197
SUM		0.3610	1.2741	0.7611	0.5251	0.7634	0.7693	0.9754	1.7440	0.4671	0.7032	0.9358	0.0951	0.4097	0.3197

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