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Monetary Policy As A Tool F'or Macroecon01\11c Stabll,Tzation In Ghana

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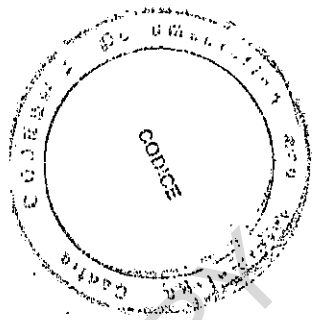
MONETARY POLICY AS A TOOL FOR MACROECONOMIC STABILIZATION IN GHANA



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A THESIS SUBMITTED TO THE DEPARTMENT OF ECONOMICS, UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PHILOSOPHY IN ECONOMICS.

MARCH 1994.

DECLARATION

I, IVY ACQUAYE, hereby declare that, this thesis consists entirely of my own work and that no part of it has been presented for another degree elsewhere.

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DEDICATION

To Mum and Dad

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I wish to acknowledge my indebtedness to the Almighty God, by whose grace I have come this far.

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I. ACQUAYE

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ABSTRACT

The efficacy of monetary policy in macroeconomic stabilization has been a matter of interest to researchers in most developing countries. This study addresses the issue in the light of the Ghanaian economy over the period 1965-1990.

Using an appropriate econometric technique, a model with real output, inflation and balance of payments equations was estimated. The results of the regressions, indicated monetary variables as influential in all the equations which suggests that monetary behaviour does indeed matter in Ghana. Therefore, effective monetary policies could make significant contributions to macroeconomic stabilization in Ghana.

Notable amongst the policy recommendations offered is strengthening of the financial institutions to ensure sound monetary policy implementation in Ghana.

CHAPTER 1

INTRODUCTION

Ghana, like most developing countries, has at one point in time or the other been faced with the problems of high domestic inflation, deficit in the balance of payments and low output growth rates. A major cause underlining most of these problems is excessive demand pressure generated by fiscal instability and associated monetary instability.

Stabilization policies, are generally implemented to reduce such economic pressures. Formal analysis of the effects of stabilization programmes have been limited in most developing countries. Lack of information along these lines, creates considerable problems when one desires to evaluate the effect of a policy initiative on important macroeconomic variables to determine which policies best achieve specific stabilization objectives.

Khan and Knight (1981) defined a stabilization programme as a package of policies designed to eliminate disequilibrium between aggregate demand and supply in the economy–typically manifesting itself in balance of payments deficits, high inflation rates and low output growth rates. Economic stabilization is also referred to by Crockett (1981) as an improvement in the balance between supply and demand in an economy, aimed at moderating inflationary pressures, strengthening the balance of payments and encouraging economic growth.

The effect of stabilization policies on economic development has been a controversial issue based on monetarist and structuralist differences. In brief, the

monetarists believe that balance of payments difficulties and inflationary problems are generated by allowing aggregate demand to move ahead of supply. Thus, stabilization in their view, can be conducted by restraining demand within the economy's supply capacity.

On the other hand, the structuralists argue that, there exists rigidities in production patterns and demand which prevent monetary contractions generating into moderate inflationary pressures and shifting resources back to the export sector. They therefore propose that, economic policy should concentrate on removing supply bottlenecks and other structural rigidities so that overall output capacity is increased.

Differences in viewpoints on this issue have been reflected in policies structured to achieve stabilization. However, stabilization policies are mostly directed towards the management of aggregate demand. As noted earlier, the main objective of stabilization is to attain the desired shift in demand and in the same vein moderate inflationary pressures.

According to Blackwell (1978), the achievement of the set of economic objectives embodied in most stabilization programmes typically involves the use of a variety of policies in a mutually reinforcing way. The policies normally used in stabilization programmes are demand management policies - Monetary and Fiscal Policies and Exchange rate adjustments.

Monetary policy, generally corresponds to a set of decisions about the level of money supply whilst fiscal policy deals with government decisions about taxes and spending. Exchange rate adjustment, generally implemented through devaluation has become part of a restrictive policy package for stabilization programmes which aims at

improving the balance of payments and the foreign reserves position.

This study focuses on the role of monetary policy in macroeconomic stabilization in Ghana. Monetary policy, is narrowly defined as, a deliberate effort by the central bank to control the level of money supply for the purpose of achieving broad macroeconomic objectives such as price stability and output growth. Monetary policy, can be regarded as expansionary when it increases the money supply or creates easy terms of credit and contractionary when it decreases the money supply.

The revival of monetary policy as a tool of stabilization after the post-war years provoked a great deal of discussion and aroused some unresolved issues. One of such, is the question of lags which presents itself in two main forms; Inside and Outside lags. The inside lag refers to the time period within which it takes to undertake a policy action in order to correct an economic disturbance. Whilst, the outside lag refers to the period between which a policy action is implemented and when its effect on the economy is recognised.

Friedman has noted that "monetary actions affect economic conditions only after a lag which is long and variable"[1] whilst Kareken, Brown and Solow have maintained that as "monetary policy works neither as slowly as Friedman thinks, nor as quickly as the Federal Reserve itself seem to believe.....".[2] More recently, the monetarists have taken the view that the lag in the effect of monetary policy is relatively short occurring within a year.

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1 Friedman (1961), p. 13.

2 Kareken, Brown, and Solow, (1963), p.2.

Another controversial issue is related to the set of targets which can be affected by policy instruments and a set of indicators which can signal the effects of policy action on their final variables.

All these discussions, evolved out of studies in developed economies where monetary policy is believed to perform better due to the existence of well developed financial sectors. The question regarding the role monetary policy plays in Less Developed Economies (LDCs) is, therefore, one of great interest because such economies are generally characterised by undeveloped financial systems.

It is not surprising, therefore, to note that monetary policy is assigned a limited role in most LDCs with fiscal policy being in the forefront. This policy stance can be attributed to the narrow view in which monetary policy is held. As aptly put by Khathate (1972), if monetary policy is interpreted as merely a method of monetary management, then it implies that with the non-existence of institutional conditions in which monetary policy is managed, there is limited scope for it to operate. On the other hand, when the interaction between money and the real economy is considered, then monetary policy emerges as important.

Despite these opinions about monetary policy in LDCs, it cannot be completely ignored for two main reasons. First, that monetary policy acts as a complement to fiscal policy and secondly, financial sectors of most LDCs including Ghana, are gradually developing thus making room for effective monetary policies to be implemented.

According to Frimpong-Ansah (1971), monetary policy has been a major stabilization tool in Ghana since 1964. Nevertheless, much emphasis has not been placed on its conduct since its impact on policy objectives have not been very

encouraging. It is necessary, therefore, to take another close look at the role monetary policy plays in the stabilization process of the Ghanaian economy.

Under the pressure of a severe economic decline in 1983, Ghana adopted an IMF/World Bank sponsored Economic Recovery Programme (ERP). The first three years of the programme was devoted to stabilizing the economy while the remaining years were devoted to policies aimed at growth. This research will in part evaluate the performance of the economy under the stabilization programme. In particular, the research will examine the efficacy of monetary policy in achieving some of the stabilization goals under the adjustment programme.

1.1 Objectives and Rationale of the Study

The main objective of this study is to assess the role of monetary policy in macroeconomic stabilization in the country. To this end, it is intended among others to:

(i) examine the conduct of monetary policy in terms of objectives and instruments employed and

(ii) assess the impact of monetary policy on the Ghanaian economy in the areas of output growth, inflation and the balance of payments.

This study was motivated partly by the fact that there is limited empirical evidence on Ghana in this area although the reliance on monetary policy as a stabilization tool has grown especially under the ERP.

The study seeks to address the hypothesis that monetary policy has not been very effective as a macroeconomic stabilization tool in Ghana during the period 1965-1990.

1.2 Organization of the Study

This study is divided into seven chapters. Chapter one presents the introduction, the objectives and rationale of the study. This is followed in Chapter 2 by a survey of macroeconomic developments in Ghana over the study period. Chapter 3, contains a survey of monetary policy in Ghana.

In the fourth chapter, we review both the theoretical and empirical literature on monetary policy with the aim of identifying an appropriate model for the analysis. In Chapter 5, a model for the Ghanaian economy is specified while estimation and analysis of the results are carried out in Chapter 6.

Finally, Chapter 7 presents a summary of the results of the study and policy recommendations.

CHAPTER 2

MACROECONOMIC BACKGROUND OF THE GHANAIAN ECONOMY

The economy of Ghana suffered a marked decline for the best part of her post-independence period. From a position of moderate growth, low inflation and a sizable accumulation of external reserves at independence, Ghana started experiencing pressures of both external and internal disequilibria less than a decade after independence. In 1966, after the overthrow of the Nkrumah government, the National Liberation Council (NLC) introduced the first stabilization programme in Ghana. It was aimed, among others at addressing high inflationary pressures and balance of payments crisis. The inflationary pressures emanated largely from huge government borrowing from the banking system to finance its budget deficits as foreign reserves got depleted. Low food production also contributed to high inflation. The balance of payments crisis was generated mainly by worsening terms of trade heightened by a cocoa price slump in 1962. Domestic macroeconomic instability also put pressure on the balance of payments.

Measures taken by the NLC under the stabilization programme included public spending cuts and controlling the excessive government borrowing from the banking sector. State involvement in the economy was curtailed and investments reduced, leading to large-scale economic retrenchment. Growth in money supply was reduced to an average of 0.2 per cent between 1966 and 1967 as compared to 12 per cent over 1961 and 1965. There was a significant drop in the inflation rate from 26.4 per cent to 13.3 per cent in 1966 due to the stabilization measures. The measures, however, resulted in economic decline. Growth of real Gross Domestic Product (GDP) fell by 3

percent in 1967.

In mid-1968, a Two-Year Development Plan was initiated with the aim of revitalizing the economy by stimulating economic growth and reducing unemployment, which had risen to about 10.5 per cent. It included efforts to liberalize trade and foreign exchange in addition to encouraging private enterprise. The civilian government which succeeded the NLC from 1969-71, continued with some of the measures undertaken during the stabilization programme and a marked improvement in economic activity was recorded. Government recurrent and investment expenditures, supported partly by foreign reserves and external borrowing, increased significantly. Favourable cocoa prices on the world market in 1970 added to the improvement in the economy and inflation further declined. In addition, input supplies improved considerably due to the liberalization of trade policies which enhanced growth in the industrial sector. As a result, industrial output increased remarkably to 10.7 per cent in 1969 from 7.0 per cent in 1968. Inflation, further declined to 3.9 per cent in 1970 from 7.1 per cent in 1969.

A downturn in the price of cocoa in 1971, coupled with the liberalized external trade policy, put a lot of pressure on the balance of payments and led to a 28 per cent fall in export earnings. This prompted the government to effect another devaluation of the local currency by 44 per cent to lessen the pressure on the balance of payments. Restrictions on imports and foreign exchange transfers were also imposed. These restrictions, partly contributed to a shortage of imported items on the market leading to price increases in the latter part of 1971. Production bottlenecks such as lack of industrial materials, and outdated technology also retarded domestic production. Over-reliance on the cocoa sector, which fluctuated according to world prices further weakened the

balance of payments. In 1972, the country witnessed another military intervention bringing an end to relatively stable economic conditions.

The decade 1972-82 has generally been described as an era of economic decline, in the face, however, of strong inflationary pressures. A series of changes in government dominated mainly by the military was witnessed within the period. They pursued expansionary fiscal programmes supported by monetary expansions as budget deficits widened and were financed from bank loans to the government. To control the surging inflationary pressures, extensive restrictions on trade and foreign exchange prices and interest rates were imposed. These generated severe shortages in foreign exchange, distorted prices, shortages in goods and economic stagnation, further aggravating the economic situation. Meanwhile, in 1972, the National Redemption Council (NRC) government, revalued the local currency by 26 per cent and reimposed a fixed exchange rate system. Thus, further worsening the foreign exchange crisis.

Furthermore, severe price restrictions were put in place to control the mounting inflationary pressures. This led to the emergence of parallel markets in both consumer items and foreign exchange. The 1973 oil crisis and consequent world price hikes, had diverse impacts on the domestic economy in the ensuing years. In 1974, for example, prices of imports increased rapidly relative to export prices resulting in unfavourable terms of trade and a huge balance of payments deficit of 197 million cedis. A Five-Year Development Plan which envisaged greater participation in direct production was launched in 1977. It also aimed at building an independent economy through a policy of self-reliance.

Money supply kept expanding as the government resorted to borrowing from

the Central Bank to finance the budget deficits. The budget deficits had broadened from 4.0 per cent of GDP in 1974 to 8.0 per cent in 1975 and further to 11 per cent in 1976. Inflation continued to rise and registered 116.5 per cent in 1977 as compared to 56.4 per cent in 1976.

A brief stabilization programme was implemented in 1979 to address some of the economic imbalances. It was, however, shortened by another military intervention. To some extent, demand pressure was suppressed and prices fell slightly from 73 per cent in 1978 to 54.2 per cent in 1979.

Between 1979 and 1982 further deterioration in the economy reflecting low growth, high inflation and balance of payments deficits was experienced. This was the result of poor economic management on one hand, compounded by unfavourable external conditions on the other. By 1982, the economy was in total crisis, and requiring redirection of economic management and economic reforms.

The expulsion of over 1 million Ghanaians in mid-1983 by the Nigerian authorities, coupled with drought conditions then existing in Ghana, brought the economic situation to its climax. Against these severe economic difficulties, the government of the Provisional National Defence Council (PNDC), initiated an Economic Recovery Programme (ERP), to stem the slide in the economy. It was jointly supported by the International Monetary Fund (IMF) and the World Bank.

The ERP aimed principally at reversing the downward trend of the economy and removing distortions in the system which hitherto, had prevented the proper allocation of resources. It was further hoped that the ERP will place the economy on a path of sustainable growth. To this end, economic measures including trade liberalisation, price-

Table 1: Selected Economic Indicators for Ghana

Year	Growth in Money (M2)	Exchange Rate[a]	Inflation Rate	Real GDP	Overall Balance[b]
1965	1.7	0.71	22.7	1.37	15.2
1966	5	0.71	14.8	0.09	-48.1
1967	1.3	0.84	-9.7	-3	-72.3
1968	10.3	1.02	10.7	6.42	-6.5
1969	10.5	1.02	6.5	5.88	-26.9
1970	9.8	1.02	3.0	6.76	2.5
1971	11.2	1.03	8.8	5.56	-34.7
1972	40.6	1.32	10.8	-2.49	30.5
1973	18.9	1.16	17.1	15.25	108.2
1974	26.6	1.15	18.8	3.39	-142.0
1975	38	1.15	29.8	-12.86	106.3
1976	37.2	1.15	55.4	-3.52	-137.3
1977	60	1.15	116.5	2.26	-8.5
1978	68.6	1.51	73.1	8.48	-46.0
1979	15.8	2.75	54.5	-3.17	35.6
1980	33.7	2.75	116.5	0.0	-30.1
1981	51.5	2.75	22.3	-1.79	-288.7
1982	23.3	2.75	22.3	-7.2	-9.6
1983	40.3	8.83	122.8	0.7	-172.9
1984	53..6	35.99	39.7	2.64	35.6
1985	46.2	54.37	10.3	5.09	14.4
1986	47.9	89.2	24.6	5.2	-60.8
1987	53.3	153.73	39.8	4.79	140.2
1988	46.3	202.35	31.4	6.23	181.1
1989	54.7	270	25.2	5.1	155.6
1990	13.3	326.33	37.2	3	112.3

Source: International Financial Statistics, 1991 Yearbook.
Growth Rates have been computed in percentages.
Note : [a] : Period average (cedi per US dollar).
[b] : Millions of US dollars.
Minus sign in the overall balance of payments denotes deficits.

deregulation and financial sector reforms were put into effect. The first three years of the programme(1983-1986) was designated as the stabilization phase while subsequent years after that were supposed to be for adjustment and growth. To achieve these aims various fiscal, monetary, trade and payments and exchange rate policies were adopted.

Available data from Table 1 shows a remarkable macro-performance of the economy after implementing the ERP. Since 1984, output growth has averaged to about 5 percent per annum. The rate of inflation is still undesirably high though it has recorded an immeasurable drop from the 1983 level of 123 percent to about 37 per cent in 1990. The balance of payments has also greatly improved, with higher levels of both exports and imports, and significant increases in capital inflows.

CHAPTER 3

SURVEY OF MONETARY POLICY IN GHANA

3.0 Introduction

In this chapter, we survey the conduct and outcome of monetary policy in Ghana. For this purpose, the study period is divided into two main parts; pre- ERP (1966-82) and the ERP (1983-90) periods in order to highlight the different policy thrusts in the two periods.

The Bank of Ghana, which is Ghana's central bank, has the primary responsibility for the formulation and implementation of monetary policy. Monetary policy in Ghana ,is mainly discretionary where prevailing economic conditions set the stage for which type of policies are implemented.

Monetary policy objectives for the Ghanaian economy have normally included;

a. controlling inflation
b. improving the balance of payments and
c. supporting economic growth.

In other words, monetary policy has always aimed at achieving both domestic and external stability.

The main instruments used by the Bank of Ghana are credit controls (both global and selective), reserve requirements, interest rate and Open Market Operations (OMO). Moral suasion is also used from time to time as a monetary policy tool. The reserve base of the commercial banks is controlled by setting minimum cash reserve

requirements (including cash balances with the Bank of Ghana) for the commercial banks. The reserve requirement refers to the proportion of bank deposits required to be held as reserves,and it is regulated by the Bank of Ghana in line with monetary policy objectives. For instance, the Bank may raise the reserve requirements in pursuance of tight monetary policy to reduce excessive liquidity and/or as an anti-inflationary weapon. On the other hand, it may be lowered to inject more liquidity into the system as part of an expansionary monetary policy.

Another policy instrument which is frequently used, entails the setting up of credit ceilings. This is generally expressed in terms of both global and selective ceilings. The former serves as a credit rationing mechanism to control excessive monetary expansion whilst the latter directs funds to priority sectors. For instance,in order to boost the productive sectors of the economy,the central bank can raise credit ceilings to agriculture and manufacturing. Interest rates have not performed very well as a monetary policy tool because of the weak money market in Ghana.

Interest rates in Ghana, were strictly controlled and administered by the monetary authorities until 1989. The weak financial system existing in the country has not made it a very successful tool. An increase in the bank rate, that is, the rate at which the commercial banks borrow from the Bank of Ghana, affects other interest rates as well. Since heavy discounting suggests a shortage of loanable funds within the commercial banks. In general,the main target for putting up interest rates is to influence the loanable funds available to the public via the commercial banks.

Changes in the exchange rate specifically devaluation, was used sparingly before the Economic Recovery Programme (ERP). The objective of devaluing the local currency

under the recovery period is to ensure the consistency of the value of the cedi with relative price developments in both Ghana and her trading partners. Its effectiveness as a monetary policy tool is subject to factors like; effectiveness of supporting fiscal measures and the demand for exports as well as domestic demand for imports.

Quite recently, a more indirect monetary policy tool is employed by the Bank of Ghana namely - Open Market Operations. This entails the sale (or purchase) of government securities or bonds on the open market to absorb (or inject) liquidity into the system.

We now proceed to examine monetary policy implementation in Ghana.

3.1 Pre-ERP Era, 1966-1982

For most part of the period 1966-1982, the challenge for monetary policy was to curtail the excessive liquidity in the system. the excess liquidity had arisen from excessive government borrowing from the banking sector, especially the Bank of Ghana, to finance government budget deficits.

During the stabilization phase initiated by the National Liberation Council (NLC), from 1966, monetary policy was largely restrictive. Interest rates were increased and credit controls and other restrictive policies were adopted. A 10 per cent ceiling was placed on commercial bank loans in 1967 whilst credit was rationed towards the priority sectors of the economy (including manufacturing, agriculture and exports). The restrictive fiscal and monetary policies implemented contributed immensely to reducing the inflationary pressure resulting in an average rate of inflation of 2.5 per cent between 1966 and 1967.

Monetary policy from 1968 to 1970 remained cautious as the monetary authorities aimed at avoiding excessive liquidity injection into the economy. Between 1970 and 1971, monetary policies pursued were restrictive in nature due to the continuity of the stabilization policies introduced by the NLC government.

Instruments such as interest rates, reserve requirements, and credit ceilings were employed to control the money supply. The Bank rate which was 5.5 per cent in 1970 went up to 8.0 per cent in 1971. Credit ceilings to priority sectors of the economy was lowered to 20 per cent from 33.3 per cent in 1971 to encourage support for the industrial and agricultural sectors which were performing badly due to foreign exchange shortages and other factors. As a result of the restrictive nature of the policies, growth rate in narrow money supply, M1 (currency in circulation and demand deposits) averaged 7.5 per cent whilst inflation averaged 7.0 per cent over the period.

Between 1972 and 1978, monetary policy was highly expansionary. Under the self-reliance policy of the National Redemption Council (NRC) government, some pressure was placed on the Bank of Ghana to expand money supply to support national programmes. This led to excess liquidity in the system.

Monetary policy was expansionary at the beginning of the NRC era. Interest rates were reduced from 8.0 to 6.0 per cent in 1973 and maintained at that level till 1975 whilst more credit was assigned to priority sectors of the economy as compared to non-priority sectors [See Table 2]. The expansionary trend changed slightly to restrictive in 1975. Interest rate was adjusted once again to 8.0 per cent and credit margin for priority sectors increased to 25-50 per cent. Despite these restrictions, monetary growth rate continued its ascending trend to 44.8 per cent in 1975 from a low rate of 23.6 per cent

in 1974. A possible explanation for this could be increases in government borrowing from the banking sector.

The Bank rate remained virtually stable over 1975-77 period signifying the administrative nature of this policy tool. In 1977, the minimum cash ratio was raised to 42.8 per cent. Increases of 72.4 per cent money supply was registered in 1978. On the whole, 1972-78 was characterised by large money supply increases leading to high inflationary rates which climaxed at 117 per cent in 1977 and averaged 46.0 per cent over the period. Most of the liquidity problems were generated by chanelling too much credit to government.

Consequently, net credit assigned to the government was exceeded for most part of the period and this virtually annulled monetary and credit projections set up by the central bank. Growth in domestic output also remained at low levels with an average of 1.5 per cent whilst balance of payments did not indicate any major improvements. A rigid exchange rate system also prevailed over the period.

A brief stabilization programme in 1979, intensified the contractionary policies with interest rates being increased to 13.5 per cent. The Bank of Ghana also imposed limits on the net domestic assets of the banking sector and net claims by the government were regulated quarterly to cut back on credit expansions. These measures were in support of the main objective of achieving the required adjustments in total domestic demand in order to control the high inflationary pressures. Towards the later part of 1979, a currency reform programme was embarked on to mop up excess liquidity in the system. The reform programme targeted further reductions in the monetary growth rate.

Table 2: Summary of Monetary Policy Measures (1972-1978)							
	1972	1973	1974	1975	1976	1977	1978
1. Interest Rate (%)[d]	8.0	6.0	6.0	8.0	8.0	8.0	13.5
2. Reserve Requirement (min.) (%) :							
a. Cash Ratio	20	20	20	20	20	42.8	48
b. Other Reserve Ratio	20	20	20	20	20	25[e]	40[e]
3. Credit Ceilings (%):							
a. Priority Sectors	20/NL	20	15/20	25/50	10/50	10/NL	20
b. Non-Priority Sectors	-30	5/10	5/10	0/20	0/10	0/10	0/10
4. Monetary Growth (%) :	44.0	21.9	23.6	44.8	41.6	67.5	72.4

Source : Bank of Ghana Annual Reports (various issues)
Note : [d] Bank Rate
[e] Maximum
NL No Limit

It involved the replacement of all old currencies with new ones. Currency outside the banks was exchanged at 30 percent discount while bank deposits were exchanged at full value. As a result, remarkable decreases in the money stock was recorded. The monetary growth rate dropped from 72 per cent in 1978, to 13 per cent in 1979. In addition, government borrowing from the banking sector slowed down considerably as tax collection methods improved. Inflation also declined to 54 per cent

from 73.1 per cent in 1978. However, growth in domestic output continued to be low.

Monetary policy between 1980 and 1982 alternated between expansionary and restrictive stance. Although the bank rate of 13.5 per cent was not changed in 1980, reserve requirements were restructured. Cash ratio was lowered to 40.0 per cent from 48 per cent while other reserve ratios went down to a minimum of 20 per cent. Money supply growth rate rose to 30.0 per cent in 1980 from a low rate of 13.0 per cent in the previous year. As a result, inflationary pressures started mounting up.

This necessitated a return to restrictive monetary policy measures in 1981 with the main objective being reduction of the substantial increases in credit expansion. Bank rate was correspondingly revised upwards from 13.5 to 19.5 per cent whilst cash ratio and other reserve ratios went up to 42.0 per cent and 27.0 per cent respectively. In addition, credit ceilings for priority sectors was set within 20 to 100 per cent margin indicating more credit being allotted to those sectors. Despite these restrictive measures, money supply increased by 54.7 per cent as a result of increases in government borrowing from the banks to support the widening budget deficits.

In 1982, the bank rate was reduced from 19.5 per cent to 10.5 per cent. Minimum reserve cash ratio was also reduced to 30.0 per cent while other reserve ratios went down to 25.0 per cent. In the same vein, the PNDC government which was in power at the time, introduced new contractionary monetary measures which sought to reduce the level of money supply in the economy. The first step was to withdraw all fifty-cedi notes in circulation worth about 1.3 billion cedis from the system. Another step in that direction, was to freeze all bank deposits of fifty thousand cedis or more and subject them to vetting for any fraudulent gains.

These drastic monetary measures, achieved the main target of reducing the growth rate of money to 19.0 per cent with inflation declining to 22.0 per cent. The demonetisation of the fifty-cedi notes and other un-orthodox financial measures severely eroded public confidence in the banking system, aggravating the problem of currency hoarding by the public. As a result, savings deposits in the banking sector were jeopardized.

On the whole, monetary policies implemented within the pre-ERP era were largely unsuccessful as the main problem of excessive liquidity still persisted in the economy. This, in addition to the low output growth rates, in one way or the other contributed to the high inflationary rates that were registered for most part of the period.

3.2 The ERP Era, 1983-1990

In response to the precarious economic situation, an Economic Recovery Programme (ERP) was initiated in April, 1983. It was designed to rehabilitate the economic deterioration suffered over the past decade. The ERP is a package of monetary, fiscal, trade and payments policies geared at stabilizing the economy and promoting growth. Thus monetary policy was targeted to compliment fiscal and exchange rate policies in a major role of lowering the persistent high rates of inflation, eliminating the chronic balance of payments problems, and encouraging growth in output. In line with these goals, institutional and policy reforms were carried out in the financial sector. The main monetary tools that came under rationalization were interest rates, credit ceilings, reserve ratios, and the exchange rate.

(a) Interest Rates

As mentioned earlier, real interest rates under the controlled regime were negative. Under the ERP, interest rate policy was targeted at achieving positive real rates. This was to encourage more saving in order to support economic growth. To this end, there was a gradual move towards a liberalized system in which market forces would determine rates of interest.

Soon after the commencement of the ERP, interest rates were adjusted upwards by 3-5 percentage points. The bank rate rose to 14.5 percent in 1983 whilst savings and lending rates were maintained at 11.5 and 19.5 percent, respectively. This restrictive measures did not yield the desired goal of lowering the rate of inflation. In 1983, inflation accelerated to 123 percent due to other internal and external factors.[3]

1984 witnessed further restrictive monetary policies with the main focus on tightening credit to the government in order to ensure financial and fiscal discipline. Government borrowing from the banking sector was discontinued and instead the deficit was funded through external borrowing. The monetary policy objective for 1984 and 1985 was directed at further restriction of growth of money supply within the range of 25-30 percent and chanelling permissible credit to designated priority sectors of the economy.

Consequently, interest rates were reviewed quarterly with the objective of

[3] See for example, Sowa and Kwakye (1993) or Chibber and Shafik (1991)

obtaining positive real interest rates by April, 1986. The bank rate was increased to 18.0 per cent in 1984 (See Table 3). The minimum savings deposit rate rose to 15.0 per cent while the maximum lending rate was also increased to 21.17 per cent to support efficient allocation of bank credit.

Table 3: Summary of Monetary Policy Measures (1984-1990)

	1984	1985	1986	1987	1988	1989	1990
1. Interest Rate (%)[d]	18.0	18.5	20.5	23.5	26.0	26.0	30.0
2. Reserve Require -ment (min) (%) :							
a. Cash Ratio	20.0	15.0	15.0	21.0	19.0	22.0	22.0
b. Other Reserve Ratio	25.0	25.0	25.0	6.7	10	15	20
4. Monetary Growth (%) :	60.6	42.7	44.0	52.6	45.0	52.7	10.8

Source : Bank of Ghana Annual Reports (various issues) and International Financial Statistics (Yearbooks)
Note : [d] Bank Rate

Interest rate policy in 1985 and 1986 continued to be restrictive. By the end of 1986, the bank rate had reached 20.5 per cent. Deposit and lending rates were correspondingly increased to 17.0 and 20.0 per cent respectively. Also, between March and September 1987, the bank rate was further reviewed upwards from 20.5 in 1986 to 23.5 percent per annum.

In 1988, interest rate policy shifted entirely from administrative control to a market determined system, where the inter-play of market forces determine the levels of interest rates. The main objective was to remove distortions in the financial market which had

disallowed the rate of interest from reflecting the true opportunity cost of capital. The freeing of interest rates from administrative controls was also to prepare the way for effective implementation of the new monetary policy of open market operation (OMO) which was to be introduced later.

The structure of interest rates that resulted after the liberalization, however, did not provide enough incentive for savings mobilization in an inflationary environment. Average interest rate on 12-month deposits recorded between June and December 1990 was about 17.0 per cent per annum whilst average inflation rate registered around 35.0 per cent for the same period.

The later part of 1990 witnessed further liberalisation of the financial sector. Bank rate had remained unchanged at 26 per cent level since 1987 changed in November 1990 when the Bank of Ghana offered attractive discount rates by intervening in the money market. The bank rate was adjusted upwards three times; from 26 per cent per annum to 30 per cent and finally, to 33 per cent in December 1990. Variations in the bank rate were undertaken mainly to mop up excess liquidity in the system and reduce the rate of inflation which recorded 37 per cent at the end of the year.

The Discount rate increased in 1990 and this influenced the level of short-term rates on the money market. A decline in excess cash reserves held by the commercial banks was observed and this resulted in reduction of the excess liquidity within the economy.

(b) Reserve Requirements

Policies related to reserve requirements of the banks did initially not conform to the restrictive monetary policy rule under the ERP. The reserve requirements of the commercial banks were restructured to ease the liquidity situation of the banks in order to increase loanable funds and hence encourage investment.[4] But, this policy failed to prompt the banks to increase credit to the private sector.

At the beginning of the ERP, secondary reserve requirements were made more restrictive than cash reserve. In 1988, there was a switch so that cash reserves became more restrictive than secondary reserves (See table 3). The cash ratio was raised from an average of 23 per cent to 25.0 per cent in 1988 whilst other ratios went up to 12.5 from 10.2 per cent.

The reserve requirements did not appear to be an effective monetary policy tool. Most of the time, the banks had excess reserves and were really not affected by the reserve limits. It seemed the high rates of interest did not encourage borrowing from the banks.

Monetary policies in 1990 targeted further reduction in the level of money supply by restricting bank credit and reviewing interest rates. To achieve these goals, appropriate policy measures such as revision of reserve requirements, credit ceilings and interest rates were conducted. In March 1990, the reserve requirements of banks were revised upwards to further mop up excess liquidity in the economy. Cash reserve ratio was set at 27 per cent of total deposits as compared to cash ratio of 30 per cent on

[4] Bank of Ghana Annual Report (1985) p. 7

demand deposits and 10 per cent on savings and time deposits during the preceding year.

(c) Credit Ceilings

Credit policies, in 1987, aimed at channelling the bulk of permissible domestic credit to the growth sectors of the economy. The agricultural sector benefitted a minimum of 20.0 per cent lending from the commercial banks. Global quantitative credit ceilings were also imposed for the first time on the banks as a measure to control and monitor bank credit in the economy. It was realised that the ceilings, particularly the sectoral credit ceilings, did not allow for proper allocation of resources in the economy. Further, the sectoral credit ceilings did not encourage innovation and competition between the banks. By 1988, plans were under way for abolishing the credit ceilings. Sectoral credit allocation was terminated in 1988 whilst global ceilings remained. The banks were advised to use their discretion in channelling permissible credit in line with priority sectors of the economy.

(d) Open Market Operations

Open Market Operations (OMO) was introduced as a policy instrument by the Bank of Ghana in 1988. In this light, treasury and auction bills as well as government bonds and securities were made accessible to both the banking and non-banking sectors in the open market. The main aim of the operation was to provide investment opportunities for the initial overhang of liquidity in the system. Additionally, to create a conducive environment for the on-going management of market determined interest rates and the development of a more active money market. The central bank has through the use of OMO, been able to mobilise idle funds and private savings in areas where the banks have been reluctant to offer effective intermediation and develop the savings habit in the public. OMO, has also aroused public interest in the holding of Treasury and other bills and bonds as alternatives to bank deposits.

(e) Exchange Rate Policies

Prior to the ERP, the government of Ghana, pursued a fixed exchange rate policy which resulted in the over-valuation of the local currency and consequently weakened production for export. Rationalization of the exchange rate became one of the corner stones of the Economic Recovery Programme. It was part of the package to stimulate production and reallocate resources which the fixed exchange rate regime had failed to do for the economy.

The first step towards a more realistic exchange rate was taken in 1983 with the introduction of a scheme of bonuses and surcharges leading to a system of multiple

exchange rates which was finally unified in October 1983. By the end of 1983, the exchange rate has been devalued from ¢2.75 to the US dollar to ¢30 to the dollar. There were repeated devaluations between 1984 and 1986 culminating in a rate of 90 cedis to the dollar by September, 1986.

As a move towards a flexible exchange system, the government introduced a system in which the exchange rate was determined by market forces through a weekly foreign exchange auction. Eligible bidders submitted their bids to the Bank of Ghana, and an equilibrium rate was determined through the forces of supply and demand.

In the continuing process of further liberalization of the foreign exchange market, the government in February 1988, allowed the establishment of foreign exchange bureaux by individuals and companies who sold the foreign exchange on the open market at their own determined rates. The motive behind this was, to formalise the parallel market for foreign exchange and to increase the supply of foreign exchange in the economy so as to narrow the spread between the auction determined rate and the parallel market rate. Further, the process also assisted in the mobilization of foreign exchange and increased the accessibility of the public to a free market of foreign exchange. This contributed immensely to the revival of the export sector.

To improve the role and participation of commercial banks in the foreign exchange market, the retail foreign exchange auction was replaced by the wholesale auction in 1990. This was to permit commercial banks and eligible foreign exchange bureaux to purchase foreign exchange from the Bank of Ghana as principals for sale to their customers and to meet their own foreign exchange needs. Based on these exchange rate adjustments, the foreign exchange rate (Cedi per U.S.dollar) has moved

from a fixed rate of 2.75 in 1982 to 326 in 1990. To some extent, these changes contributed immensely to an improvement in the country's net foreign assets. They, however, add up excess liquidity in the system which the monetary authorities have to control. The rationalization of the exchange rate together with the liberalized trade system under the ERP have helped to increased export volumes despite declining terms of trade.

(f) Institutional Restructuring

A comprehensive programme of restructuring and gradually liberalizing the financial sector was initiated under a Financial Sector Adjustment Programme (FINSAP). This programme primarily sought to improve banking operations in Ghana, through institutional reforms, recapitalization and absorption of non-performing assets of distressed banks. Abolition of maximum and minimum deposit rates was carried out under FINSAP and minimum saving deposit rates were temporarily fixed at 21.5 per cent. In February 1988, minimum lending rates for commercial banks were removed. Under FINSAP, the banks have been restructured to be more competitive and aggressive in banking.

(g) Policy Response

As mentioned earlier, the main thrust of monetary policy in the ERP period has been contractionary. Most of the policies implemented - interest rate policies, reserve ratios, credit ceilings and exchange rate policies were therefore geared toward that goal. Table 4 presents growth in money stock over the period. Growth in money supply in

the ERP period was as high as it was in the pre-ERP period. On the average money supply expanded in the ERP era at about 40 percent per annum. However, as Sowa (1992) observed, the source of growth in money stock was different in the ERP period. Since 1983, increases in money supply had been through external capital inflows and hence has different impact on inflation (See figure 1).

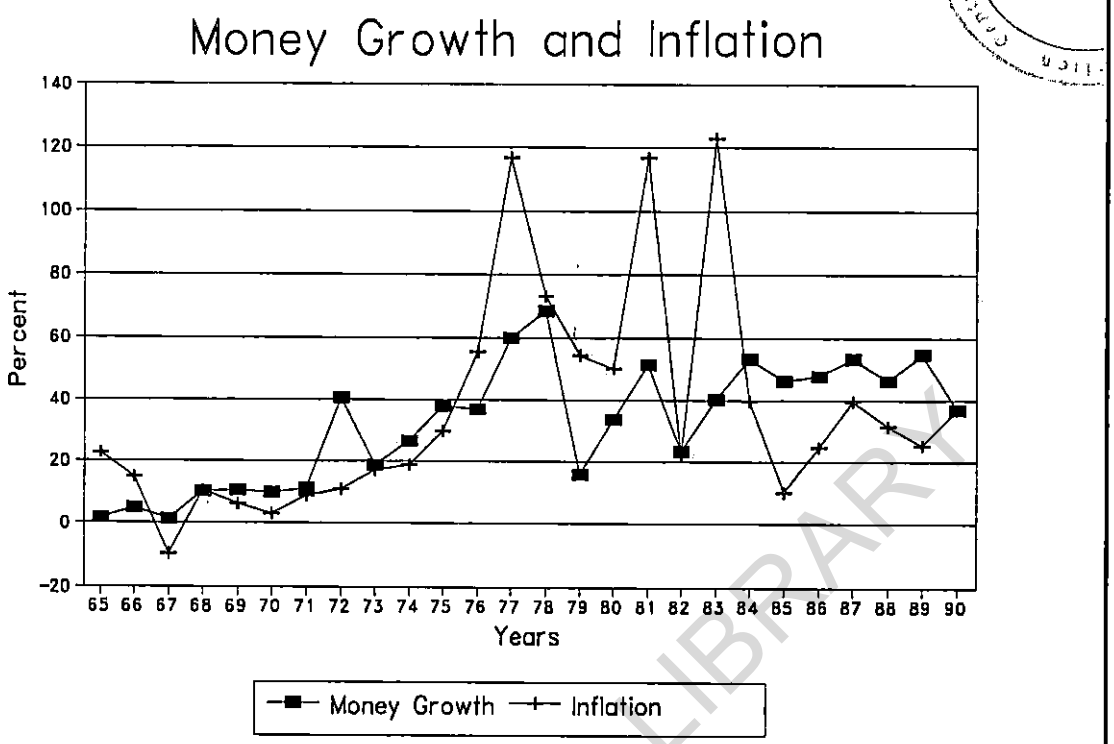
As noted earlier, the major factor behind monetary expansion and high rates of inflation in the early 1980's was government borrowing from the banking sector to finance the widening budget deficits. Thus, the core of credit policies under the recovery programme was to lessen central government's dependence on the banking sector. Net credit to government was therefore, kept under tight control. This compelled the authorities to improve their revenue collection methods and mobilize external financial resources to support government budget.

Table 4: Changes in Money Supply and Sources of Changes (billion cedis)

	1965	1970	1975	1980	1983	1984	1985	1986	1987	1988	1989	1990	1991
Money Supply-													
1. Currency plus Demand deposits	0.00	0.02	0.31	1.41	5.52	10.13	11.46	16.85	29.0	37.86	64.3	20.05	15.98
2. Quasi- Money	0.01	0.02	0.07	0.60	0.46	1.02	3.30	5.55	7.84	11.18	20.38	11.84	29.43
3. Restricted Deposits and Other Items	0.01	0.05	0.08	-0.05	1.85	-6.96	-0.99	-3.86	-25.40	-80.66	-65.54	7.22	15.00
4. Total Money Supply	0.02	0.09	0.46	1.96	7.83	4.19	13.77	18.54	11.45	-31.62	19.20	39.11	60.41
Sources of Changes													
5. Net For Assets	-0.05	0.06	0.13	-0.12	-5.77	-12.10	-15.34	-22.77	-74.79	-21.79	-28.27	29.32	54.24
6. Domestic Credit -	0.08	0.02	0.35	2.08	13.60	16.29	29.10	41.32	86.24	-9.83	47.44	9.82	5.92
a. to Central Government (net)	0.06	-0.02	0.34	1.62	16.99	9.41	10.59	28.54	80.34	-8.69	-38.33	9.36	-32.38
b. to nonfin. public & other fin. inst.	-0.03	0.05	-0.04	0.33	-4.67	3.75	13.82	4.89	0.92	-10.6	35.94	-11.38	15.52
c. to private sector	0.03	0.01	0.05	0.14	1.28	3.14	4.68	7.89	4.98	9.47	49.83	11.84	22.78
7. Total sources	0.03	0.08	0.48	1.96	7.83	4.19	13.76	18.55	11.45	-31.62	19.17	39.14	60.16

Note: Total changes in money supply may not be equal to total changes in sources, due to rounding.
Source: Sowa, N.K. (1992) ***Policy Consistency and Inflation Targets in Ghana.*** AERC Research Paper.

Figure 1:

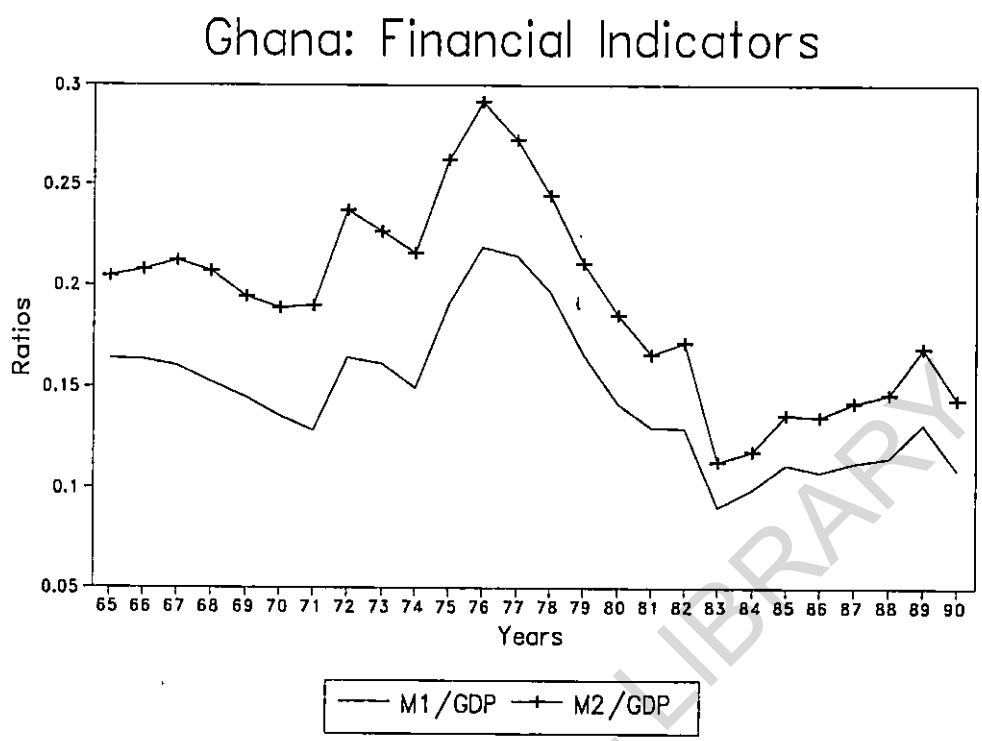


The rate of inflation also fell drastically to 10.5 per cent by the end of the year due mainly to favourable weather conditions and good harvest.

Another objective of credit policy under the ERP was to channel the bulk of planned domestic credit expansion to the productive sectors of the economy. To this end, strict limits were placed on credit to government from the banking system.

Increases in broad money supply in 1986 was attributed to increases in both narrow and quasi-money as shown in Table 4. The major factor behind increases in quasi-money was noted as greater preference by the public to holding interest bearing

Figure 2:



bank deposits following the upward revision of interest rates during the period. This contributed to the attainment of positive real interest rates by the end of 1985.[5]

The objective of monetary policy in 1987 was in line with the ERP objectives. That is, further reduction in the rate of inflation, mobilizing domestic financial resources and stimulating domestic production[6] The monetary authorities pursued a number of

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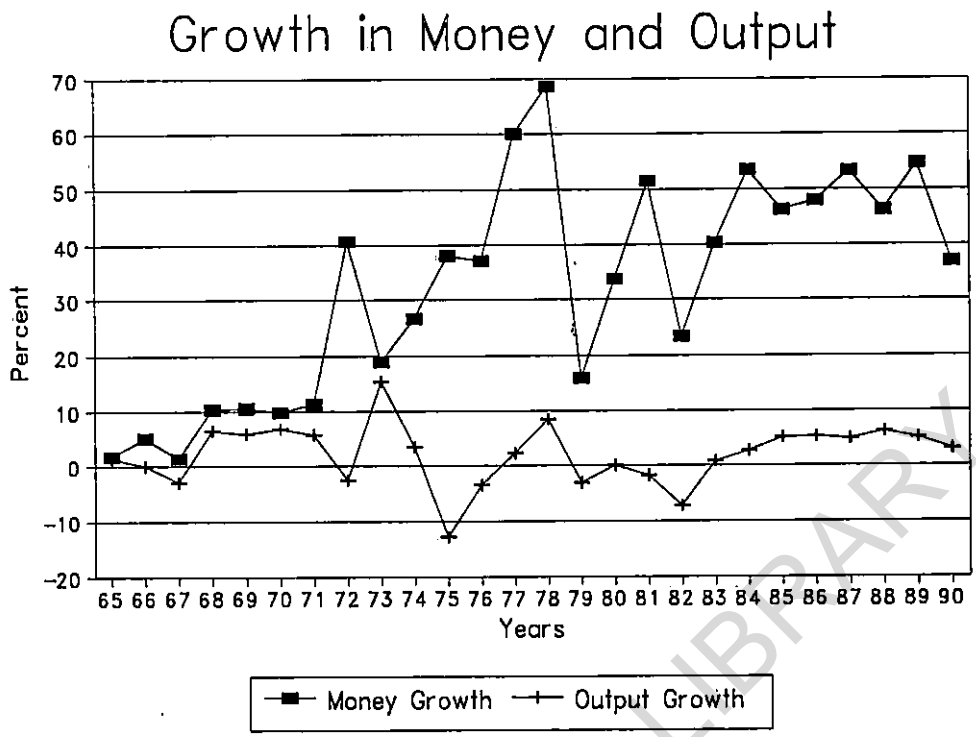
[5] Bank of Ghana Annual Report (1986), p. 40.

[6] Bank of Ghana Annual report (1987), p. 28

Figure 3:



monetary measures to achieve these targets and notable among them were the revision of reserve requirements, complete deregulation of interest rates towards the end of the year and further revision of credit control measures.

Even though restrictive monetary policy measures were still pursued in 1987, broad money supply increased by 54 per cent. One major contributing factor to the high of growth in money supply is the substantial rise in the net foreign assets position of the

banking sector.[7] On the other hand, the financial depth, which is measured by the ratio of broad money stock to GDP, indicated an increase in the desire by the public to hold financial dominated assets. A sharp decline is noted in M2/GDP from 1977 to 1981 (See Figure 2) and also from 1982 to 1983 signalling periods of high inflation. The prevalence of inflation in any economy, correspondingly restricts the degree of monetization and the public chooses to hold their savings in non-monetary forms rather than in either cash or bank deposits. The relationship existing between changes in money supply and real growth in GDP is of vital importance in assessing the performance of an economy and the extent to which that economy is financially deepened. (See figure 3).

Monetary growth in 1987 was slower than the pervious year. Even though interest rates were revised upwards within the year, real interest rates remained negative due to soaring prices. Despite a 4.8 percent growth in real GDP, inflation was higher at 39.8 per cent in 1987 as compared to 24.6 per cent in the previous year. This was largely due to the continued depreciation in the value of the Cedi during the year.

Monetary policy in 1988, was geared towards improving the mobilisation of domestic financial resources whilst aiming at further reduction in the rate of inflation. Nevertheless, the overall monetary outlook for 1988 once again showed an upward growth in broad money supply by 43 per cent with the net foreign assets position of the banking sector signalling marked increases. (See table 4). Increased agricultural

[7] The World Bank, Trends in Developing Economies, 1989, p. 174.

production and close control over fiscal and monetary policies dampened the inflation rate slightly to 31.4 per cent in 1989. Narrow money however,increased by 24.9 per cent at the end of 1990 as compared to 28.9 per cent increase in the previous year. Sources of monetary growth were attributed to increases in credit to the private sector and credit for cocoa financing (¢1.54 billion or 18 per cent) as well as decreases in credit to public institutions and further improvement in government credit position.[8]

In sum, performance of monetary policy under the ERP era has comparatively been encouraging. Even though monetary growth rates have remained above targets levels, inflation has considerably lowered and growth in the economy has turned positive. Discipline in the monetary sector has contributed extensively to the attainment of these achievements. Low levels of inflation has been recorded over 1984-90 as compared to the period 1970-83 (See Figure 1). For instance, growth in broad money fell to 29 per cent in 1984 from 49 per cent in 1983 and inflation correspondingly declined to 40 per cent from the 1983 level of 123 per cent.

The high increases in money growth relative to output growth rates also reflect the inflationary trend in the economy (See Figure 3). Another major achievement for monetary policy in the ERP over the Pre-ERP period, was the gradual shift from a controlled regime to one of liberalised system and this has relatively enhanced the performance of monetary policy in the country.

One major issue that appears to have been consistently tackled by the monetary

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[8] Bank of Ghana, Annual Report, (1989/90), p. 22.

authorities is excess liquidity in the economy. Notedly, excess liquidity generated in the pre-ERP era was attributed to the extreme borrowing from the banking sector by the government, to finance its widening budget deficits. In addition, more credit was channelled to priority sectors of the economy. In the ERP period, however, the major contributing factor to excess liquidity in the banking sector has been through capital inflows (as shown in Table 4).

This section had attempted to highlight the intents of monetary policy and the instruments which were employed to stabilize the economy. In the remaining chapters, we shall proceed to investigate econometrically the performance of monetary policy over the period under study.

CHAPTER 4

LITERATURE REVIEW

4.1 Theoretical Issues

There are two basic theoretical approaches which underlie the role of money in economic activity - the Monetarist and Keynesian approaches.

According to the Monetarists, a stable but not precise relationship exists between the growth rates of money and nominal GNP or national income. If money balances, grow more rapidly than income, the public will spend the excess and put upward pressure on prices. Conversely, if money grows slowly in relation to income, individuals will store up cash balances by cutting spending and this would result in slowing down of income growth and increasing unemployment. Short-run variations in prices, output and employment are noted by this approach, to be dominated by movements in a policy-determined money supply. In the long-run, monetary change is noted to affect only the price level. Therefore, the basic objective of monetary policy as noted by Friedman[9] "is to prevent money itself from being a major source of economic disturbance." It follows then that, stabilization policy, should seek a growth rate of money which closely approximates the long-term rate of growth of real productive capacity.

The other theoretical approach, which is, the Keynesian, evolved out of a series of questions posed about the quantity theory of money. In this, very little attention was

[9] Friedman,M.(1968), p.12.

attached to the short-run process through which long-run equilibrium was noted to occur. The quantity theory of money specifies that, the quantity of money together with the level of output determines the level of prices but not long run productive growth.

This generated an alternative theory of money, interest and output spearheaded by Keynes and it was labelled as the Income-Expenditure approach. Firstly, its basic characteristic was that the domestic economy comprises consumption, investment and government sectors and all these were lumped together to determine aggregate demand which was referred to as gross national product (GNP). Secondly, it was characterised by a built-in policy transmission mechanism that de-emphasizes the role of money.

4.1.1 Transmission Mechanism of Monetary Policy.

Broader questions of how monetary action affect the economy and how effectively this is approached borders around how monetary policy and particularly open market operations influence spending decisions of particular sectors of the economy.

Park, has explained transmission mechanism as "how monetary influences affect real output, employment and the price level"[10] Duesenburry and Mcpherson also defined the transmission mechanism as "various channels whereby monetary policy may influence expenditure decisions."[11] Monetarists and Keynesians propose different

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[10] Park, (1972),p.1.

[11] Duesenburry and Mcpherson, (1991), p.59.

transmission mechanisms for monetary policy.

Keynesians specify an indirect linkage of money with aggregate demand through interest rates. Simply put, an open market purchase of government securities by the monetary authorities increases commercial bank reserves and raises banks reserves earning assets ratio. The commercial banks in turn, give out more loans which creates new demand deposits and increases money supply. The money supply increases cause the general level of interest rates to decline given the publics' liquidity preference. Ceteris paribus, the fall in interest rates induces an increase in investment and then stimulates final demand through the investment multiplier.

Another related explanation is that the transmission process involves Keynesian liquidity preference trade-off between money and other financial assets. This trade off specifies that, there are numerous assets with different interest rates on the open market. Policy induced changes in bank reserves cause portfolio adjustment over a wide range of financial and real assets which eventually influence the components of final demand spending, stimulating production.

Monetarists on the other hand, attach less importance to the influence of interest rates in the process. Interest rates in their opinion, plays no significant role in the portfolio adjustment process. Since its impact on changes in money is both too brief and weak to be identified as a strategic variable in the process.

As stated by Friedman and Meiselman , "the end result need not be a change in

interest rates at all; it may be a change in the general price level or in output...."[12] Thus, money supply is considered by the monetarists as the strategic variable affecting income directly.

The Keynesian approach which stresses an indirect effect of money on final demand is considered more relevant to developed economies, since well developed financial markets with a wide range of assets are prevalent in such economies.

On the other hand, the Monetarist approach which places much emphasis on the direct effect of money on final demand is considered more applicable to LDCs.[13] The range of financial assets is very limited in LDCs due to either the absence of or the undeveloped nature of financial markets. Money, in such economies, is mostly held for transaction purposes which is likely to be insensitive to interest rates. Consequently, 'money may matter' in such economies and its control is regarded as important by policy-makers.

According to Park (1973), credit-rationing is also considered as the most powerful and direct source of transmitting monetary changes to the real economy in LDCs. The basic reason is that, the high demand for credit in LDCs at prevailing interest rates in the organised credit market remains "continuously unsatisfied." As a result, commercial banks ration available credit supply to borrowers. Interest rates, are therefore kept below their true borrowing costs of capital in most developing countries.

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[12] Friedman and Meiselman,(1963), p.221.

[13] Park Y. Chul, 1973, p. 411

4.1.2 Monetary Policy Targets and Indicators.

Stabilization policies are "judged by how successful they are in attaining the goals of full employment, stable equilibrium prices and balance of payments equilibrium."[14] Therefore, a simplest stabilization problem is embedded in the choice of policy instruments which are in accordance with certain economic objectives. Although, this appears to be a simple problem, it depends greatly on the unresolved 'target - indicator' issue of monetary policy.

The question is should monetary policy be aimed at stabilizing prices, reducing unemployment or increasing output? Further, supposing the right economic variable(s) is targeted, which indicator should be used to achieve that target? The effectiveness of monetary policy can further be explained in terms of the extent to which indicators (or policy instruments) impact on their respective targets (goals of monetary policy).

A lot of the differences in opinion over the indicator problem as noted by Saving (1967) is centered on the failure to distinguish between a target and an indicator. This problem arises because the monetary authorities do not possess as much information about the structure and workings of the economy as possible. Thus, what is considered as the channel from instrument to goal variable depends on the working and nature of the economy. This, however, is not sufficient to measure the impact of the instruments on final variables.

Target variables are, therefore, set up within the framework of meeting certain

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[14] Gurley, (1972), p.19.

conditions such as; their ability to be quickly and firmly influenced by the instruments at hand and also their readily and accurate measurements. The indicator variable should also have a direct, short, statistically firm and theoretically unambiguous connection with the goal variables. The monetary authorities, therefore, have the uphill task of choosing the correct targets and indicators, otherwise the economy may be destabilised rather than stabilised.

In her contribution, Schwartz (1969) essentially eliminates the distinction between targets and indicators. She proposed that, an ideal target ought to be judged by whether it is measurable, subject to the control of the central bank or a reliable indicator of monetary conditions. On the basis of her study of data for United Kingdom, Canadian and Japanese central banks, she finds money stock as the best indicator among others.

Keran (1970), after conducting a similar study on six countries including U.S. and Canada, argued that monetary and fiscal influences must be measured by their impact on the final variables. Particularly, he noted that, an indicator should first of all be responsive to the monetary tools of the Central Bank; should have a theoretically unambiguous association with total demand and finally; should have a high degree of statistical association (with correct theoretical sign) on the final variables. His conclusion, was in agreement with Schwartz findings: that money stock was a better indicator.

As noted by Addison and Demery (1987), targeting the rate of domestic credit expansion to the public sector is common in developing countries especially under IMF - supported programmes.

Nevertheless, as Saving (1967) cautioned, in a world where both incomplete knowledge of the structure of an economy and information lags exists, the necessity of short run targets for policy and indicators of the effects on policy may arise.

4.2 Empirical Issues of Monetary Policy.

Empirical research on monetary policy are again based on the two main different schools of thought - the Monetarist and Keynesian approaches that have been discussed in the theoretical literature.

A major study conducted by the Federal Reserve Bank and the Massachusetts Institute of Technology (FRB-MIT), demonstrated two basic characteristics of the non-monetarists approach. These are, a highly detailed sector-by-sector build up of aggregate demand and secondly a detailed specification of the portfolio adjustment that attaches central role to interest rates as an indirect link between monetary policy and final demand. Prices in this model were determined by real sector forces. Demand shifts and non-labour cost-push factors underlie the non-monetarist theory of the price-level.

In another study, the Federal Reserve Bank of St. Louis used a model which incorporated the monetarist approach. It however, did not specify the structure of the economy, instead it explained such broad measures as total spending and prices in terms of changes in money, government expenditure and price expectations. The model places much emphasis on the monetarist view that monetary changes eliminate short-run changes in the real economy whilst money affects nominal quantities in the long-run.

The St. Louis model, used a simple reduced-form model to explain changes in broad economic aggregates.

Basically, the two main approaches explained above that is, non-monetarist (structural) and the monetarist (reduced-form) are used to assess the role of money on economic objectives.

A comprehensive empirical study was carried out by Aghevli and Rodriguez (1979) on the role of monetary factors in the process of short-run determination of output growth, inflation and trade balance for the Japanese economy. The formulated model was based on the theoretical premise that an excess supply of real cash balances will tend to increase prices, reduce the gap between actual and potential output and further reduce the trade surplus. Consequently, three equations were specified - inflation, output and trade balance equations. Although, a simultaneous system emerged in the model to be estimated, Aghevli and Rodriguez used single-equation technique for estimation and explained that the system of equations was non-linear in variables and therefore difficult to estimate simultaneously.

The results obtained showed very high R-squared coefficients even though all the endogenous variables indicated a large degree of fluctuation with no apparent trend in their movements. All the estimated coefficients also had the correct signs. On the whole, the results indicated variations in the money supply as having major stabilization effects on the Japanese economy. This suggests that monetary policy could be used as an effective policy tool for stabilization purposes in Japan.

In addition, the level of excess capacity in the economy acts as an important self-equilibrating variable. A larger level of excess capacity is shown to reduce inflation and to stimulate growth in output. The above study was basically an extension of Friedman's (1970) analysis to an open economy. Whilst Friedman's analysis concluded that an excess supply of money reflects in an increase in inflation and output growth, Aghevli and Rodriguez's study extended any excess supply of money to reflect deterioration in the trade balance as well. A possible weakness that may be pointed out with Aghevli and Rodriguez work was the use of single-equation technique instead of simultaneous technique; thus some biases have been introduced in the system due to contemporaneous relation between the error terms.

The influence of money on the inflationary processes in various countries have well been documented in the literature. de Silva (1977) worked on the monetary effect on inflation in Sri Lanka over the period 1959-74. He formulated a model based on the quantity theory approach to changes in the price level and specified eight different equations which included demand for exports, balance of payments deficits and inflation equations. The model emerged as a simultaneous system but de Silva used ordinary least square (OLS) estimation technique for his econometric analysis with the explanation that the sample size was too small for the model to be estimated simultaneously. Estimation results for the whole period indicated that the influence of money supply on the domestic price level has been negligible thus did not exert a statistically significant influence on inflation equation. However, money supply appeared to be a significant explanatory

factor in the inflationary process over 1967-74. He also stated that the impact of monetary expansion on prices was felt after a lag. In addition, he noted that several other factors such as import prices are also determinants of inflation. de Silva's study can only be considered as tentative due to the limited data he used.Another major weakness was the use of ordinary least square estimation technique for a simultaneous system. A similar study by London (1989) on some selected developing countries, further asserted the fact that money supply exerts significant influence on the inflationary process.

From the theoretical literature, monetary and structural factors are noted to generate inflation. In an attempt to contribute to the existing literature on the influence of structural elements in the inflationary process of developing countries, Argy (1970) conducted an empirical study over the period 1958-65 with 22 developing countries. He listed four main variables as structural elements namely; demand shift, export instability, agricultural bottleneck and foreign exchange scarcities and estimated them accordingly. The only element which showed some significance was the agricultural factor (which was measured as the difference between rates of change of the food and general price indexes). This suggests some slight inclination for countries where food prices have risen most relative to the general price level to have higher rates of inflation. He also recognised monetary variables as having their correct a priori signs thus indicating the importance of money in the inflationary process of developing countries.

On the whole, Argy's results suggested that structural elements did not seem to have played any important role in the inflation process of the 22 countries he studied.

One outstanding limitation to his work was the difficulty in citing appropriate indicators for structuralists ideas as well as the limited period of the study.

A test on the relative importance of monetary and fiscal actions was examined by Anderson and Jordan (1968) using post-war quarterly data. They considered both the money stock and monetary base as strategic monetary variables. Anderson and Jordan established empirical relationships between the measures of fiscal and monetary actions and total spending for goods and services (Gross National Product). The estimation results showed the total response of GNP to changes in money or monetary base as consistent with the postulated relationship (that is, a positive relationship) and the coefficients were all statistically significant.

On the other hand, taxes and government expenditure which represented fiscal actions were of low statistical significance. Their conclusion, based on the strong empirical relationship between economic activity and either of the monetary variables was that monetary actions should play a more prominent role in economic stabilization. One major weakness of this study is that it ignores the use of structural information in the model formation.

In a similar study, Friedman and Meiselman (1963) also correlated levels and differences of consumption expenditures with levels and differences of both broad money supply (M2) and a version of autonomous expenditures. The regression results showed money supply as highly correlated to consumption expenditures as compared to

autonomous expenditures. Their conclusion further stresses the importance of monetary policy. Their results agreed with Anderson-Jordan's study.

Some empirical works on the effect of monetary influences on the external sector have adopted the monetary approach to the balance of payments as their theoretical base. Guitian (1978) obtained a close (negative) relationship between the balance of payments and domestic credit expansion during 1955-71 for the Spanish economy. Using both current and overall balances as balance of payments measures in both levels and differences forms, and 10 domestic credit measures (comprising four Central Bank's variables and six consolidated banking system's variables), he obtained high R-squares and significant t-ratios for the majority of his estimates.

Guitian explained that his results implied the balance of payments position depended significantly on domestic credit changes. Also, that the results strongly showed balance of payments disequilibria as a monetary phenomenon. He then inferred that, the best way to deal with external imbalance may be to control the rate of central bank credit expansion or the rate of net credit expansion by the banking system. If domestic credit expanded at a larger (smaller) rate than that at which the economy wanted to hoard cash balances, external deficit (surplus) will result. Furthermore, experiences of the Spanish economy during the study period provided added confirmation of the opinion that exchange rate changes without any accompanying appropriate credit policies would not be effective.

In view of Guitian's simplistic model, his results can only be taken as suggestive

rather than definitive. The use of absolute levels and first differences of the balance of payments instead of the conventional rates of change was bound to enhance the statistical significance of his results. Magee (1976) has given prominence to some of the statistical estimation problems associated with the monetary approach to the balance of payments. He noted that the simplistic underlying assumptions and the use of single equation systems would result in more successful empirical results. The apparent strong results of Guitian were obtained partly because of these assumptions. Assumptions like small-country and long-run full employment allowed researchers to assume that arguments like prices, interest rates and output in the money demand function were exogenous. However, the use of ordinary least square estimation technique for the model will result in a simultaneous bias.

Khan and Knight (1981) offered a very detailed study on the effect of stabilization policies in developing countries.They formulated a model like Aghevli and Rodriguez (1979),which tested the effect of stabilization policies on output, prices and international reserves (which was used as a measure of the balance of payments). Notably, the model stressed the key role of monetary disequilibrium which is considered as a formal representation of the theory underlying stabilization programmes implemented to combat the twin problems of inflation and adverse balance of payments. The model was estimated using pooled sample of time - series and cross-sectional data for 29 developing countries and estimation was done by Full Information Maximum - Likelihood (FIML) technique.

The estimated results showed that the model was a fair representation of the structural characteristics of those developing countries and that monetary disequilibrium does indeed have a significant effect on the behaviour of prices, output and reserves. It could be inferred from the results that monetary policy could have significant impact on prices, output and reserves. Simulation tests were carried out to investigate other policy issues relevant to the study.

Another study in progress on the stabilization effects of monetary policy in Tanzania has been initiated by Rutayisire (1992). In this work, the major features of the economy were incorporated into the model and three main areas were specified. These are the real expenditure, financial and price determination sectors.

Tentative results of his estimation indicated that, money supply was a very significant explanatory factor of inflation in Tanzania. This suggests that a monetary policy which accommodates inflationary financing cannot be pursued in the hope of accelerating the speed at which Tanzania requires so as to achieve higher output growth rate. The real sector part of the model also, indicated agricultural supply as being explained by the previous trend. That is, any deviation of agricultural supply from its previous trend can be explained by the extent of random shocks which have occurred in the economy.

In a model formulated by Sanatorum (1989), a money growth equation as well as a price equation were specified for China. This was because, inflation happens to be the main target of monetary policy in China. Price was regressed on real consumption,

money supply and expected rate of inflation. On the basis of the results, Sanatorum explained that in the 1980's unexpected monetary growth seems to have been a major cause of inflation in China.

Lane (1989), has also noted that changes in credit have not always corresponded with output in the Ivorian economy. After estimating the demand for money he noted that real narrow and broad money aggregates were significantly and positively related to real income. Broad money supply was also linked positively to rate of income growth. Lane further noted, that a partial adjustment mechanism did not greatly improve the equation performance, suggesting that money demand responds rapidly to changes in the economy. Nevertheless, effectiveness of monetary policy was observed during the 1980's as policies became more closely linked to the Central Banks objectives in Ivory Coast.

Another comprehensive study conducted by Killick and Mwega (1990) to examine the effects of money on the performance of the Kenyan economy was carried out in three main stages: First, money and inflation were investigated using 1971-88 data and results showed a good statistical behaviour of prices. Both monetary expansion and import price inflation provided powerful explanatory variables with statistically significant results. Secondly, money and the balance of payments was examined. A test for causal relationship between net foreign assets and the supply of credit was carried out. Results obtained specified non-monetary factors as exerting major increases on balance of payments to be of great importance. Finally, money, savings and investment was considered. The results showed that the real growth of the economy and a dummy

variable representing a variety of 'structural adjustment' measures adopted during 1980s, were the strongest influences on total private savings. A negative relationship between private savings and inflows of capital from the rest of the world was also established. On the whole, behaviour of monetary variables was found to be relevant for the Kenyan economy. Money was also noted to exert influence on the real economy through interest rates. Consequently, this suggests that, effective monetary policies could have significant effects on the stabilization process of the Kenyan economy.

Studies by Chhibber and Shafik (1990), Sowa and Kwakye (1993) and Sowa (1992) have all showed that monetary growth is a significant factor in Ghana's inflationary process.[15] Jebuni, Sowa and Tutu (1991) used a revised version of Khan and Knight's (1981) reduced-form model to determine the effect of stabilization policies on aggregate production in Ghana. Their results suggested the dominance of the external sector in explaining the performance of GDP. That is, Ghana's economy is highly dependent on imports. They further explained that surprise money does not seem to have any significant impact on output because that part of the role of surprise money is picked up by government expenditure.

The effectiveness of monetary policy depends to a large extent on the stability of the demand for money function. Money demand and money supply equations have been estimated separately using two stage-least squares (2SLS) over the period (1960-

[15] Sowa and Kwakye (1993) however, found supply pressures to be more pronounced than monetary pressures.

1988) by Sowa (1991). The results showed that money supply has a high and significant elasticity with respect to the monetary base. The money demand estimation also showed apparent economies of scale in the use of money in the short-run. The existence of long-run finite multipliers for the demand for money equation was an indication of its stability. Sowa, therefore, suggests that it should be easier for the Bank of Ghana to specify its monetary targets and set rates of growth in the money supply to achieve its targets.

In conclusion, the reduced form model is seen as providing a useful framework for analysing monetary influences on economic objectives such as inflation,output and balance of payments. Khan and Knight's (1981) work used this approach and a similar procedure is adopted for this study.

CHAPTER 5

THE MODEL

5.0 Introduction

In this chapter, we specify an econometric model for analysing the role of monetary policy as a stabilization tool in Ghana. The selected target variables are output growth, inflation and balance of payments. These target variables are also the same as those for which monetary policy is targeted in Ghana.

The complete model adopted here is a modified version of Khan and Knight's (1981) model of a formal framework for stabilization policies in developing countries.

5.1 Specification of the Model

(i) Output

Most output equations are specified in terms of deviations of actual output from its full capacity level. However, under-utilization of capacity which may be explained by lack of demand and distortionary effects of import controls exists in most developing countries which undertake stabilization programmes. Thus, adopting such an equation for Ghana, with about 30 per cent capacity utilization rate in industry before the recovery programme may be inappropriate.

We note, however, that there are various factors which explain movements in GDP in any economy, some of which are government expenditure and total investments.

A simple reduced form function for real GDP is specified with some of these factors being taken into consideration. The function is written as follows;

$$Y_t = g [M_{t-i}, G_t, FKF_{t-i}, RER_t] \quad .....(5\text{-}1)$$

where Y is the real gross domestic product

M is real money supply.

G is real government expenditure

FKF is real fixed capital formation

RER is real exchange rate

t is the time period and

i = 0, 1, 2 ....

This function is a modified version of what Jebuni and others (1991) used in their analysis. Output is specified as a Keynesian aggregate demand which is a function of money, fiscal behaviour,capital formation and the external sector. Real GDP, from theory, is expected to be positively related to real money supply, real government expenditure,and fixed capital formation. Given the measurement of real exchange rate as nominal exchange rate deflated by the ratio domestic to foreign prices, it is expected to have a negative sign in relation to output. Real GDP can be influenced by aggregate expenditure variables proxied by government expenditure, total investments and money supply. An increase in money supply, ceteris paribus, is expected to yield positive effects on growth in output.

Both government expenditure and fixed capital formation are components of

aggregate demand. Fixed capital formation is used as a measure of total investments in this model. Increases in government expenditure through public sector participation in development projects and increases in total investments are expected to generate positive effects on output growth.

Real appreciation of a country's currency will reduce the international competitiveness of the country's exports while making imports more attractive.This will depress production of exports and import substitutes,while stimulating imports. Therefore, increases in the real exchange rate is expected to have a negative effect on output.

(ii) Inflation

Inflation has generally been identified as emanating from monetary, real or structural factors in Ghana. A simple function that incorporates the known major causes of inflation in Ghana is therefore specified as;[16]

$$P_t = f\,[M_{t-i}, Y_t, E_t, P_{t-1}] \quad \text{.....(5-2)}$$

where, P is consumer price index

M is money supply (broadly defined)

Y is real gross domestic product.

E is exchange rate

P_{t-1} is proxy for price expectations (last year's inflation).

[16] See for example, Sowa and Kwakye (1993)

The rate of inflation is positively related to money supply, exchange rate, and price expectations and negatively related to output. An increase in money supply relative to growth in output, is expected to exert pressure on the price level. On the other hand, an increase in output eases out the supply pressures and hence has negative impact on inflation.

Currency depreciation, is expected to increase the cost of producer and consumer goods imports and thus contribute to high domestic inflation. Therefore, increases in the exchange rate are expected to be inflationary. Food supply shortfalls have often been observed to precede inflationary peaks in the country. However, we have not included relative food price index which could be measured as the difference between food and general price level indices.[17] Since its high correlation with the general price index may introduce multicollinearity into our model.[18] Price expectations by the public is also expected to have positive influence on inflation.

[17] See Argy, (1970)

[18] In Ghana the weight of food prices in the Consumer Price Index (CPI) is about 50%.

(iii) The External Sector

We use a simplified model of the monetary approach to the balance of payments.[19] The monetary approach places much emphasis on monetary factors in the determination of the balance of payments. Assume a demand for money function specified as;[20]

$$MD = y [P, Y, E] \quad .....5.2a$$

where MD is money demand

P is consumer price index

E is exchange rate and

Y is real gross domestic product.

Money supply (MS) is also defined as;

$$MS = NDC + NFA \quad .....5.2b$$

where NDC is Net domestic credit

NFA is Net foreign assets.

Assuming equilibrium in the money market, we equate Equation 5.2b to Equation 5.2a giving:

$$NDC + NFA = f[P, Y, E] \quad .....5.2c$$

Re-arranging 5.2c results in

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[19] This approach is based on the assumption that the demand for money is a stable function.

[20] See Sowa, (1991)

$$NFA = f[P, Y, E] - NDC \quad .....5.2d$$

Equation 5.2d specifies a version of the monetary approach to the balance of payments. With that as a basis, we include in our external sector model, the following variables;

$$NFA_t = f[NDC_{t-i}, Y_{t-i}, P_t, E_t] \quad .....5.3$$

where all the variables are as defined before.

Net foreign assets in equation 5.3 is expected to be positively related to real output, prices and exchange rate. The relationship between net foreign assets and net domestic credit is however, expected to be negative.

Expansion in real output, may cause increases in the demand for money. This increase, without a change in domestic credit is may be accounted for through the balance of payments. Similarly, increases in prices are expected to have similar effect on money demand and the balance of payments.

Proponents of the monetary approach, argue that depreciation of the exchange rate can improve the balance of payments in the short-run.[21] By leading to price increases, exchange rate depreciation is expected to increase money demand and therefore improve the balance of payments. Depreciation, therefore exerts a transitory positive impact on the external sector which prevails so long as prices and money supply have not increased above import prices. Increases in domestic credit adversely affects balance of payments by raising money supply over demand for money in the economy.

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21 See Dornbusch and Fisher, 1984, p. 641.

In summary, the basic model for examining the impact of monetary policy [which is defined as changes in money supply by the Cental Bank] in the stabilization process in Ghana are equations (5-1), (5-2) and (5-3). If we log-linearise and add on the error terms, we obtain the following econometric model.

5.4 $Y_t = a_o + a_1 M_t + a_2 G_t + a_3 FKF_t + a_4 RER + U_1$

5.5 $P_t = b_o + b_1 M_{t-i} + b_2 Y_{t-i} + b_3 E_t + b_4 P_{t-1} + U_2$

5.6 $NFA_t = c_o + c_1 NDC_{t-i} + c_2 Y_{t-i} + c_3 P_t + c_4 E_t + U_3.$

Where all the variables are as defined above and are denoted in logs. U_1, U_2 and U_3 are error terms which are assumed to be normally, and independently distributed with zero means and constant variances.

CHAPTER 6

ECONOMETRIC ANALYSIS

6.0 Introduction

The model as stated in the previous chapter,is a system of simultaneous equations which examine the effects of money on output, inflation and the external sector, respectively. We present in this chapter, the estimation results and analysis based on our postulated model in Chapter 5.

6.1 Data Sources

Most of the data for the empirical analysis is obtained from various issues of the International Financial Statistics published by the International Monetary Fund. Other data sources were the Quarterly Digest of Statistics published by the Statistical Service and Economic Reports published by the Bank Of Ghana. The sample period chosen for the study is from 1965 to 1990. It is significant to note that this period includes all the years when active stabilization policies were embarked on in post-independent Ghana. In this study, broad money supply which is Bank of Ghana's working definition of money is used.

6.2 Estimation and Results

The simultaneous model presented in equations 5.4, 5.5 and 5.6 is complete, and all the equations are identified. All variables are expressed in logs. The error terms are assumed to be normally, independently and identically distributed. Further, we assume that the error terms across equations are not contemporaneously related.

To obtain consistent, efficient and unbiased estimates a technique of Two-Stage Least Squares (2SLS) is applied to each of the equations in the model. The results are discussed in the sequence of the output, inflation and external sector estimations, respectively.

(a) Output

Table 5 presents the results of the estimation of the output equation. The regression results of the output equation 5.5 as presented in Table 5 presents a good fit with value of the F-statistic showing the overall significance of the equation at both 1 and 5 per cent levels. The R-Squared indicates that about 88 per cent of the variations in the dependent variable is explained by the independent variables. There appears to be no indication of serial correlation in the results since the Durbin-Watson statistic is close to 2. Equation 5.4 is therefore satisfactory in terms of its explanatory power and fit. All the estimates are statistically significant.

The coefficients of real money supply and total investments have their theoretically correct signs and they were significant.This result agrees with Anderson and

Jordan's(1968) which confirmed a positive relationship between money and output. The elasticity measuring the impact of real money supply on output is about 0.38. This suggests that a one percent change

Table 5: Results of Output Equation (2SLS Estimation)

Dependent Variable is Y
List of Instruments: Constant, Z41, Z42, Z43, FKF(-1), Z45
25 Observations used for estimation from 1966 to 1990.

Regressor	Coefficient	Standard Error	T-Ratio
Constant	4.7675	0.2806	16.9900*
m	0.3754	0.0575	6.5249*
g	-0.1962	0.0491	-3.0054*
fkf	0.1295	0.0552	2.3455**
fkf(-1)	-0.1593	0.0517	-3.0823*
rer	0.0314	0.0037	8.5432*

R-Squared	0.8825	F-Statistic F(5,19)	28.5379
R-Bar Squared	0.8516	S.E of Regression	0.0490
Residual S. Sq.	0.0455	Mean of Dep. Variable	5.820
DW-Statistic	1.9685		

Note: * - Significant at 1% level.
** - Significant at 5% level.

in real money supply, will lead about 0.38 percent increase in output. Fixed capital formation is also significant at the 5 per cent level and this is important to economic activity since investment creates additional capacity for the economy which directly or indirectly leads to increases in output. Lagged fixed capital formation, though significant

carried the wrong sign which could be due to a multicollinearity problem.

Even though real government expenditure was significant, it carried the wrong sign. This could be due to possible 'crowding out' effect of government spending which is the main engine for growth in the economy. It could also be due to over concentration of government expenditure on consumption and non-directly productive investments.

Real exchange rate bears a wrong sign as increases in it were expected to have a negative effect on output. The negative effect on output be explained by the fact that increases in the foreign price level due to depreciation of the domestic currency results in the increase of imports and this adversely influences net exports. From the income-expenditure identity, output will decrease with regards to decreases in net exports (ceteris paribus). It is worth noting that, the wrong sign obtained was quite surprising and may be explained by the fact that exchange rates were fixed for a long period in the country before the ERP.

One of the objectives of macroeconomic stabilization is to increase growth in output. The significance of real money supply in the output equation would therefore seem to suggest that, over the study period, the two variables are highly correlated. Monetary policy, therefore, could be an effective tool for macroeconomic stabilization so far as growth in output is concerned, if properly implemented.

(b) Inflation

Table 6 presents the results of the estimation of the inflation equation:

Table 6: Results of Inflation Equation (2SLS Estimation)

Dependent Variable is P
List of Instruments: Constant, Z51, M(-1), LREST, P(-1)
25 Observations used for estimation from 1966 to 1990.

Regressor	Coefficient	Standard Error	T-Ratio
Constant	5.4129	3.4136	1.5857
M	0.395	0.4096	0.9265
M(-1)	1.0145	0.4390	2.3108***
Y	-2.5935	0.5993	-4.3272*
P(-1)	-0.0037	0.0012	-2.9812**

R-Squared	0.9952	F-Statistic F(4,20)	1033.4
R-Bar Squared	0.9942	S.E of Regression	0.1998
Residual S. Sq.	0.7982	Mean of Dep. Variable	1.8209
DW-Statistic	1.4812		

Note: * - Significant at 1% level.
** - Significant at 5% level.

The initial estimation results of the specified inflation equation (Eq. 5-5) did not present a good fit [See Appendix 2]. The high R-squared and the low t-values may be an indication of spurious correlation introduced into the model by possible non-stationarity of some of the variables. It was noticed that omitting lagged output and exchange rate variables yielded improved estimates although the value of the R-squared slightly reduced.

Table 6 shows the regression results with about 99 per cent of the variations in inflation explained by variations in the independent variables. The overall significance of the equation is confirmed by the high F-statistic at the 1 per cent significance level. The Durbin-Watson statistic value obtained lies in the inconclusive region and thus fails to establish the presence of serial correlation in the results. On the whole, results in Table 5 seem to present a fairly good fit of the inflationary process in Ghana and compares very well with earlier estimations of inflation in Ghana[22]. With the exception of expected inflation, the other variables carry their correct expected signs. Output and lagged money supply are significant at 1 percent and 5 percent respectively.

As presented here, the results suggest that supply constraint is the strongest force behind inflationary pressures in the country. The elasticity measuring the impact of real output on the price level is significantly different from zero at 1 percent. Lagged output as shown in Appendix 2 was not significant even though it carried the correct a priori sign. This result is consistent with Sowa and Kwakye's (1993) findings that output exerts the strongest influence in inflation in Ghana and that its impact is almost instantaneous. As observed by them, food prices constitute a major share of the consumer price index (about 50 per cent), therefore any variations in food production may have an immediate impact on prices and consequently influence the general price level.

Both current and lagged money supply turned out with their correct signs showing the importance of monetary variables in the inflationary process. Current money supply

[22] See for example, Sowa and Kwakye (1993) and Chibber and Shafik (1991).

was not significant whilst lagged money supply emerged significant at the 5 per cent level. This result gives evidence to the general notion that monetary influences on prices are generally felt after some lag as de Silva (1977) found in his study. This finding could possibly serve as a guide to the monetary authorities in their monetary policy formulations. A one per cent increase in the money supply is noted to generate a 1.01 per cent rise in the consumer price index - a direct influence with almost the same proportional effect. Sanatorum's (1989) study, also confirms the significance of money supply in the inflationary process.

The official exchange rate (quoted as cedi per U.S. dollar) was neither statistically significant nor carried the correct sign. This may be attributed to the prolonged and controlled exchange rate regime that persisted in the country before the introduction of the recovery programme. Other studies, have however found the unofficial (parallel) rates to significantly influence the price level.[23] Price expectations,as represented here,carried the wrong sign and its influence on the general inflation could be discounted for this study.

The significance of money supply in the inflation equation suggests that it is still a contributing factor towards inflation. This implies that using monetary policy to control inflation has not been effective. Since, lowering inflation is another objective for macroeconomic stabilization, the results suggests that, monetary policy was not

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[23] See Sowa and Kwakye, (1993).

successfully deployed to achieve this objective for the study period.

(c) External Sector.

Initial estimation of the external sector equation in (5.6) by a method of two-stage-least squares (2SLS) did not yield satisfactory results [See Appendix 3]. All the variables, except exchange rate were insignificant although the R-squared was quite high, giving a possible indication of spurious correlation. The Durbin-Watson statistic also indicated the presence of autocorrelation in the results. A Cochrane-Orcutt Method AR(2) was later used to correct the autocorrelation. A slight improvement of the results was observed [see Appendix 4]. However, some of the variables had low t-values. When these variables were omitted from the list of independent variables, significant improvement in the results was recorded as shown in Table 7.

The results in Table 7, give us quite a good statistical explanation of the behaviour of the external sector. From the regression results, about 94 per cent of the variations in net foreign assets are explained by variations in the explanatory variables. The F-statistic confirms an overall significance of the regression at 1 per cent level. In addition, parameters of the autoregressive error specification yielded significant t-ratios at the 5 and 10 per cent levels for the first and second processes respectively. All the variables are statistically significant at the 5 per cent level.

Table 7 : Results of the External Sector Estimations.

Dependent Variable is NFA
25 Observations used for estimation from 1966 to 1990.

Regressor	Coefficient	Standard Error	T-Ratio
C	-12.5428	3.8064	-3.2951*
NDC(-1)	-3.1364	1.1434	-2.7606*
Y	4.4383	1.6601	2.6735*
Y(-1)	-2.8254	1.3309	-2.1229**
E	2.7056	0.4422	6.1188*

R-Squared	0.9412	F-Statistic F(6,16)	42.6782
R-Bar Squared	0.9191	S.E of Regression	0.9420
Residual S. Sq.	14.1976	Mean of Dep. Variable	-0.4246
S.D of Dep. Var	3.3027	Maximum of Log-Likelihood	-27.0877

Parameters of Autoregressive Error Specification.

U = -0.5535* U(-1) + -0.4084* U(-2) +V
(-2.1956)* (-1.6677)***

T-Ratio(s) based on assymptotic standard errors in brackets.

Note: * - Significant at 1% level.
** - Significant at 5% level.
***- Significant at 10% level.

Current domestic credit did not carry its expected negative sign and was not significant [See Appendix 4]. Its influence on net foreign assets might have been captured by the presence of a lagged domestic credit variable. The one year lagged

credit variable was statistically significant and carried the correct sign. The sum of the coefficients of both lagged and current variables resulted in an overall negative sign. The magnitude of the coefficient reveals that a one percent increase in net domestic credit may cause about three percent decline in net foreign assets.This result agrees with Guitian's(1978). That is, the balance of payments position depended significantly on domestic credit changes.

Both current and lagged output variables were represented in the estimation. However, the correct a priori sign was attached to the current output variable; conforming to theoretical expectations. The sum of the coefficients of both variables indicated an overall positive impact on net foreign assets. This could be explained by the fact that a rise in nominal output will induce an increase in the demand for money over the money supply. A percentage increase in output as observed from the results could lead to about four percent increase in net foreign assets.

The price variable in the estimation did not turn out as significant neither did it carry the expected sign. The positive sign associated with the exchange rate conforms with suggestions made by proponents of the monetary approach.[24] By resulting in price increases, exchange rate depreciation could lead to increases in money demand and therefore an improvement in the balance of payments.

The above regression results show that non-monetary factors exert major

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24 See Dornbusch and Fisher, (1984), p. 641.

influences on balance of payments outcomes. However, to the extent that net domestic credit expansion contributed to external instability, it could be deduced that monetary policy contributed to macroeconomic instability in the external sector over the study period.

6.3 Economic Analysis

The econometric results in section 6.2 suggests that there is a statistically significant relationship between money and each of output, inflation and the balance of payments. In other words, an effective stabilization policy could rely on changes in money supply to effect changes in these variables. However, the performance of the economy over the years, has shown that stabilization policy has not been successful in Ghana.

Monetary policy is only one of stabilization policies pursued by the government. The econometric results amply demonstrates this. In the output equation for instance, we noticed that the elasticity of output with respect to money is about 0.37 whereas the elasticity of output with respect to government expenditure is 0.20. This implies that, an effective use of monetary policy could generate a greater change in output than fiscal policy can. The fact that over the years, monetary policy has not been effective in increasing output could be due to increases in money supply which had come about through printing of money. This leads to an increase in money supply which only goes

to support excessive government spending without generation of new capital formation needed for economic growth.

In the inflation equation, money is secondary to output in the explanation of changes in inflation. This means that, reliance on monetary policy without due attention being paid to ways of increasing output will not be effective in reducing the levels of inflation.

Finally, the balance of payments is more affected by changes in output than changes in money supply. This is because, with increased output, there is increased potential for export growth which may lead to greater acquisition of international reserves.

In sum, our econometric analysis has demonstrated that monetary policy can be an effective complementary tool for economic stabilization, if properly implemented.

CHAPTER 7

CONCLUSION

7.0 Summary

Economic stabilization is necessary for sustainable growth in any economy,a fact which was highlighted by the World Bank in its 1991 World Development Report. An attempt is made in this study to assess the effectiveness of one of the major policy tools normally associated with macroeconomic stabilization - namely monetary policy, in Ghana. In order to critically examine the performance of monetary policy in Ghana, we formulated an econometric model to empirically test its effectiveness in stabilization programmes. Specifically, the model tested the impact of money supply on three main economic variables - inflation, output and the balance of payments.

Macroeconomic stabilization has not only had different meanings among economists but, has also remained a very difficult issue in terms of the pace and sequencing of policies that are implemented under it. The International Monetary Fund, which usually has a hand in stabilization policies in developing countries, holds the view that most economic problems that occur the world over are underlined by the prevalence of excessive liquidity within the system. In spite of this, the term macroeconomic stabilization is generally associated with a mix of policy instruments geared towards correcting economic problems such as high inflationary rates, balance of payments deficits and low output growth rates.

A brief background of the Ghanaian economy revealed that the rapid economic

development programme embarked on after independence cast two main shadows over the Ghanaian economy. These are: persistent inflationary pressures and balance of payments deficits. These problems gained the attention of various governments and unceasing official commitments to lessen their effects were attempted. However, very little success was attained. The country witnessed its first stabilization era in 1966 after which the economy relapsed again into economic crisis from the mid-70's to early 1980s. The emergence of high inflationary rates, severe foreign exchange constraints, and acute commodity shortages resulted in another major stabilization era in 1983 under an Economic Recovery Programme. This ERP has achieved some success by encouraging growth in the economy and lowering the high inflation rates formerly experienced.

The survey of monetary policy conducted over the period 1965-1990, indicated that monetary policy in Ghana aimed at lowering inflation, improving the balance of payments position and encouraging economic. Monetary instruments such as reserve requirements, credit ceilings and administered interest rates were mostly used before the Economic Recovery Programme.

One pertinent issue that affected the monetary sector before 1983, was excessive liquidity in the system. This was mainly generated by excess borrowing from the banking sector (particularly the Central Bank) by the government to finance its budget deficits. This resulted in increases in the money supply and consequently led to high inflationary rates.

Monetary policy under the Economic Recovery Programme, however, witnessed

a new direction as cuts in government borrowing were seriously adhered to and monetary growth rates reduced substantially. In addition, there has been a gradual shift from a controlled regime to a more liberalised system where interest rates are no longer controlled by the Central Bank. This has boosted monetary policy's performance with an overall general improvement in the economy.

Our postulated model for the Ghanaian economy was examined econometrically using time series data from 1965-1990. The analysis was based on estimating a simultaneous system which had prices, output and net foreign assets as independent variables. The results firmly established a close link between monetary factors and these economic variables. In this study, monetary policy changes is closely associated with changes in the money supply.

The econometric results obtained had money supply as exerting a significant influence on all the three variables over the study period. The results showed that money supply significantly contributed to inflation. Also, domestic credit expansion was observed as contributing to external instability over the study period. Therefore, monetary policy can be used as a stabilization tool in Ghana. It also came to light that monetary policy may not be the only tool needed for stabilization purposes. For instance, the influence of supply factors on the price level was observed and output constraints happen to immensely affect price changes in Ghana. This could mean that sound agricultural policies should be implemented to avoid any setbacks in food production which may put undue pressure on prices if not dealt with.

Another important factor which was affirmed by the econometric analysis is the year's lag associated with money supply in affecting price changes. This must be given the necessary recognition when monetary policies aimed at inflation are being formulated. Otherwise, as Friedman (1968) has noted, monetary policy may have a destabilizing instead of a stabilizing effect on the economy. The results, finally confirm the importance of monetary variables in the Ghanaian economy. To this end, sound monetary policies, are therefore expected to yield positive influence on inflation, balance of payments and overall improvement in the economy. Its failure to do so, may be attributed to problems associated with either its implementation, formulation or the absence of the institutional mechanisms through which it can operate. We would, however caution here that, greater reliance should not be placed on monetary policy alone to the detriment of other appropriate and complementary policies.

Having realized that monetary policy implementation in Ghana is far from perfection, we offer some policy recommendations for its needed impact on the economy.

7.2 Policy Recommendations

Monetary policy is one economic tool that has gained the attention of many economists in different countries. However, its influence and effectiveness are difficult issues to be addressed particularly for developing countries like Ghana, where the existing financial sector is under-developed. We offer the following policy recommendations which may help the monetary sector and enhance monetary policy effectiveness in the country.

1. We recommend that the existing financial institutions for monetary policy should be strengthened to ensure sound monetary policy implementation in Ghana. For instance, more instruments could be introduced on the money market to encourage more people to take active part in the financial markets. It is noted that a lot of effort is already being made under the Financial Sector Adjustment Programme, albeit at a very slow pace.

2. The link between instruments of monetary policy and institutional development on the other hand is relevant for effective monetary policy. Interest Rate Policies, for instance, if properly formulated will serve as an important tool to promote the money and capital markets in Ghana. This in turn will lead to mobilization of savings and creation of favourable conditions for effective monetary policy. Interest rate will be essential as a policy tool as the economy progresses steadily towards a more liberalised one.

3. We also recommend that, a study should be conducted and necessary information obtained on the unorganised money market. This may prompt the monetary authorities to implement policies which will incorporate the unaccounted large and informal financial sector existing outside the confines of the banking system. By so doing, a considerable portion of currency which is held outside the banks could effectively be monitored to ensure that excess liquidity in the economy is lessened.

4. The banking sector should also be encouraged to create healthy competition among themselves by way of improving customer services in order to boost public confidence in that sector. This may promote the mobilization of savings by the banks which could be channelled to developmental projects in the country.

5. The Bank of Ghana, has played intervening roles in curbing adverse trends in the economy over the years. Needless to say that but for these timely monetary control measures, the economic situations might have gone worse. However, we recommend that the Bank of Ghana be given a free hand to initiate and implement monetary policies.

In conclusion, we need to make mention of the fact that monetary policy can be helpful in tempering the essential moderate fluctuations in economic activities that occur in Ghana. But, it would be a dangerous mistake to over-rate its potency. Monetary

Policy in Ghana should be complemented by appropriate fiscal policies. We hope the findings of this study will add up to the already existing literature on monetary policy in Ghana and help in better monetary policy formulation.

APPENDIX 1

List of Variables and their Descriptions

Y	:	Log of Real Gross Domestic Product.
m	:	Log of Real Money Supply.
g	:	Log of Real Government Expenditure.
FKF	:	Log of Fixed Capital Formation.
RER	:	Log of Real Exchange Rate.
P	:	Log of Consumer Price Index.
LREST	:	OLS estimation of Y.
LPEST	:	OLS estimation of P.
M	:	Log of Money Supply (Broadly defined).
Z41	:	log (m)
Z42	:	log (g)
Z43	:	log (FKF)
Z45	:	log (RER)
Z51	:	log (M)
Z52	:	log (E)
M(-1)	:	Lagged Broad Money Supply.
E	:	log of Exchange Rate.
NFA	:	Log of Net Foreign Assets.
NDC	:	Log of Net Domestic Credit.
Constant	:	Intercept Term.

APPENDIX 3

External Sector Estimation (2SLS)

Dependent Variable is NFA.
List of Instruments C NDC NDC(-1), LREST, LPEST, Z52.
24 Observations used for estimation from 1967 to 1990.

Regressor	Coefficient	Standard Error	T-Ratio
C	-25.6303	20.3703	-1.2582
NDC	0.7746	1.5984	0.4846
NDC(-1)	-3.0003	1.8301	-1.6394
Y	3.9825	3.5654	1.1170
P	-2.5958	3.0863	0.8411
E	1.9361	0.4396	4.4045*

R- Squared	0.9111	F-statistic F(5,18)	36.9021
R- Bar Squared	0.8864	S.E. of Regression	1.1091
Res. Sum of Sq	22.1428	Mean of Dep. Variable	-0.2793
DW- Statistic	2.6819		

Note: *- Significance at 1% level.

APPENDIX 4:

Cochrane-Orcutt Method AR(2) Converged after 9 iterations

Dependent variable is NFA
25 observations used for estimation from 1966 to 1990

Regressor	Coefficient	Standard Error	T-Ratio
C	-17.3351	14.2538	-1.2162
NDC	.3207	1.1954	.2683
NDC(-1)	-3.6947	1.5347	-2.4075
Y	5.1032	3.0396	1.6789
Y(-1)	-2.6610	1.6225	-1.6401
P	-.6995	1.8865	-.3708
E	2.7441	.5082	5.3996

R-Squared	.9419	F-statistic F(8,14)	28.3948
R-Bar-Squared	.9088	S.E. of Regression	1.0005
Res.Sum Sq.	14.0152	Mean of Dep.Var.	-.4246
S.D. Dep.Var.	3.3027	Max Log-likelihood	-26.9390
DW-statistic	2.3134		

Parameters of the Autoregressive Error Specification

U = -.5848*U(-1) - 0.4589*U(-2) + V
(-2.1572) (-1.6134)

T-ratio(s) based on asymptotic standard errors in brackets

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