DEVELOPMENTS IN MONEY SUPPLY
ISSUES & POLICIES IN DEVELOPING
COUNTRIES: SURVEY OF THEORETICAL
& EMPIRICAL LITERATURE

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Developments in Money Supply Issues and Policies in Developing Countries, with Reference to Stabilization and Structural Adjustment Policies: Survey of Theoretical and Empirical Literature

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Abstract

Since the late 1950s, the scope and method of stabilization and structural adjustment policies and programs have gradually expanded. This requires the expansion of our understanding of the economic theory behind such policies. A survey of developments in monetary issues, such as money supply and money stock policy, is part of such expansion. The choice of the instrument variables to achieve the specified objectives of stabilization and structural adjustment policies is heavily influenced by the stage of development of economic institutions. The specification and characteristics of developing countries make the operation and survey of such instruments somewhat different. The purpose of the paper is to survey and analyze the theoretical developments that have taken place in money supply and credit expansion as the main instrument of monetary policy. Such a survey will show to what extent the ideas are supported by empirical evidence gathered by developing countries.
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INTRODUCTION:

Economic stabilization is broadly defined as policy measures aimed at the elimination of balance of payments deficits and reduction of domestic inflation rates. Structural adjustment programs, on the other hand, share the concern of internal and external balance, but go further in seeking to liberalize internal markets and to reduce the role of the state, with the intention of making the economies function more effectively. The instrument variables available to achieve the specified objectives of stabilization and structural adjustment programs include monetary expansion; fiscal balance; the interest rate, wage and income policies; and the exchange rate. The choice of policy instruments is heavily influenced by the stage of development of economic institutions. In a country with sophisticated financial markets, for example, there are more means available for the government to influence the rate of monetary expansion. In a country with a relatively under developed, sharply segmented financial market, the economy is likely to respond much less flexibly to changes in monetary policy. Here comes the specification and characteristics of developing countries which make the operation and even the survey of such instruments somewhat different.

The growth of knowledge about monetary phenomenon over the last twenty years or so has been enormous and recent literature is embarrassingly thick in surveys of that knowledge. Over the past three decades a large number of stabilization and structural adjustment programs have been undertaken, based to a great extent on the macroeconomic theory of open economies developed during the 1950s and 1960s. In the period since that time, however, the scope and methods of

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4 There is, of course, no unique strand of thought underlying stabilization and structural adjustment programs. Elements of the theory can be found in the workings of Fleming (1962) and Mundell (1968), among many others; work done at the IMF (1977); and developments in the "Chicago Version" of the monetary approach to the balance of payments (Frenkel and Johnson, 1976).
stabilization and structural adjustment policies have gradually evolved and expanded, so that programs implemented today often differ from those of earlier years. Modifications in thinking have arisen from major institutional and structural developments in developing economies. This, in turn, requires the expansion of our understanding of the economic theory behind such policies. Survey of developments in monetary issues, i.e. money supply is part of the expansion of our understanding of economic theory as such.

The role of money in stabilization as well as structural adjustment policies was studied based either on the Keynesian theory of effective aggregate demand which ignores, to a certain extent, the supply factor or the financial factor, or on the quantity theory analysis of monetary problems of developing countries. The Keynesian view, which suggests that expanding money supply and, in turn, lowering interest rates is a good and appropriate policy to deal with unemployment in developing economies, remained acceptable during the post War II period until inflationary presence, caused by such policy, started to affect growth in such countries negatively. As a result, economists started to consider Keynes analysis irrelevant whereas the quantity theory approach started to have more support and acceptance. However, when the quantity theory concepts also did not work as expected, people started to question monetary theory as such on the basis that the concepts were irrelevant to developing countries. At later stages, however, it came to be accepted that the problem is not whether the concepts are relevant to developing countries, or not, but how people look at them accordingly. It was argued that the function of money as a channel of resources from savers to investors is not very valid in developing countries while its other functions, i.e. share of value and medium of exchange, remain valid and important. A growing body of theoretical and empirical literature mainly in recent years reflects, to certain extent, the importance of money and monetary policy in developing countries.

The purpose of the paper, thus, is to survey and analyze, the theoretical developments that have taken place in money supply and credit expansion as the main instruments of monetary policy. Such a survey will show to what extent the ideas are supported by the empirical evidence gathered for developing countries. The paper is divided into three sections. The first focusses on the appropriate definition of money. The second deals with how the stock of money is determined as well as its effects, and the third focusses on the control of stock of money.

1. DEFINITION OF MONEY:

Because the definition of "money" is sometimes difficult to comprehend, a convincing answer to such definition for policy purposes has become a major issue to be addressed by monetary theorists. One of the schools of thoughts stresses the role of money as a medium of exchange, thus defining money supply as currency held by the non-bank public plus private demand deposits of commercial banks. However, Karl Brunner and Allen Meltzer define money in

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7 See H. Latane, "Cash Balance and Interest Rate : A Pragmatic Approach". Review of Economic and Statistics.
terms of its "functions".\textsuperscript{8} So, money supply is defined as currency held by the non-bank public plus private deposits of thrift institutions. This narrowly defined money supply is referred to as $M_1$.

Friedman on the other hand stresses the empirical functioning of money where assets which serve as a temporary reservoir of purchasing power should also be regarded as a partial money supply.\textsuperscript{9} Definition of money supply then becomes currency held by the non-bank public plus private demand deposits plus time deposits. This broadly defined definition is referred to as $M_2$. A third school stresses the fact that money should be explained according to measurable and immeasurable concepts. The fourth and final school of thought is represented by Gurley and Shaw, which defines money supply as currency held by the non-bank public plus all claims against non-bank financial intermediaries which include mutual savings banks, savings and loan associations, life insurance companies and finance companies.\textsuperscript{10} Because they are close substitutes for money they should be considered as a part of money supply which is referred to by $M_3$.

Even the theories of the demand for money give an ambiguous indication of what constitutes money. The, transactions and precautionary models, for example, clearly suggest the use of cash plus demand deposits as the appropriate definition since these are universally recognized as the means of exchange in developed as well as most developing countries. However, Friedman, for example, views time deposits as a temporary abode of purchasing power and includes them in the "broad" measure of money.\textsuperscript{11} Few economists go beyond this "broad" concept to include savings and loan shares, mutual savings bank deposits, etc., in their measure of "money".

Recent innovations in financial markets have made this distinction more ambiguous. For example the risk aversion model gives no clear indication of the appropriate definition of money since a wide variety of capital-certain assets could be defined as acting as a store of value in nominal terms. The inventory and precautionary models yield demand functions for average money balances, and therefore some form of time-average data is appropriate, while the consumer theory and mean-variance models determine money balances at a point in time.\textsuperscript{12}

To Meltzer, among others, a criterion for selecting the appropriate definition of money, focuses on the implications of the definition for the degree of control that the monetary authority has over


\textsuperscript{9} Milton Friedman and Anna Schwartz, \textit{Monetary Statistics of the United States}, (NBER, 1970), New York: 137.


crucial macroeconomic variables. Laidler, considered Friedman's broad definition of money (M2) to be a more appropriate definition, based on the stability of the money demand function criterion. Lee, on the other hand, claims that the definition should be extended to encompass an even broader collection of assets, including shares in savings and loan associations. Chetty makes a similar proposal and suggested that an even broader measure of money may be more appropriate where the definition includes currency and demand deposits in addition to time deposits, saving and loan shares, and mutual savings bank deposits.

While their findings clearly favor a broader definition of money, other empirical studies contain persuasive evidence that focuses on the narrow measures of money. Goldfield's empirical results suggest that in model building more rather than less disaggregation of the money is desirable and the narrow definition is more appropriate. Feige's results are not different where he concludes that the narrow definition of money is the preferred definition.

Even though some studies have indicated that time and saving deposits of banks are strong substitutes for demand deposits and currency in developing countries, the narrow definition of money is consistent with the definition of money supply in such countries especially that it conforms with the concept used by the International Monetary Fund. "Money" defined as such, includes only the financial assets that can be used directly as "means of payment"; they are completely liquid and therefore, non-interest bearing.

There are a number of other issues relating to the definition of money in developing countries, especially in the Arab countries, that need further attention where, in some of them, the public sector is large and extends into manufacturing and other industries. While the conventional definition of money supply includes balances held by public economic entities with their own financial resources and budgets separate from that of central government, it doesn't include deposits of central and local governments or any entities under direct government control.


However, the distinction between public sector entities along the above lines should depend on the behavior of the entities concerned rather than on their legal or accounting status. In some instances, it may be that deposits of public enterprises should be excluded from the money supply statistics.

A study by Moosa (1983) on the monetary sector in Kuwait adopted a definition of money which is one of two aggregates used by the central bank following the IMF rules. The aggregates of money stock comprised of currency in circulation outside banks and demand deposits in Kuwaiti Dinars (M1); the concept of money stock is the most suitable for different reasons such as: It is a medium of exchange; more liquid than other financial assets; simple and avoids the problem of aggregation; the most internationally-accepted monetary aggregate; recommended by the IMF; and non-interest bearing. Another study of money supply in Kuwait by Al Mahmeed and Amer (1989), adopted the narrow definition of money supply to measure the money multiplier and its determinants. M1 is used to represent money supply in another study for Kuwait which tried, among other things, to specify the money growth equation and its effect on real output in Kuwait during the period 1961-88.

Another issue is the treatment of balances held in foreign currency. Generally, foreign currency balances held by residents with domestic banks are treated as part of the money supply especially when we know that they contribute much to liquidity available to the holder because of their convertibility into domestic currency. But at the same time foreign currency balances may be held for purposes other than local currency balances.

So, theoretical as well as empirical evidence is inconclusive in determining whether a broad definition of money or a narrow one is more appropriate and related to the macroeconomic variables that need to be influenced as part of stabilization or structural adjustment policies. Even though it is generally accepted that substitutability of assets is a main criteria for the duplication of money supply, it is sometimes held that ... “to be operationally useful, a money definition should comprise an aggregate that the monetary authorities can adequately control”. This principle supports the adoption of a narrow definition of money (M1) in developed economies and to a certain extent in developing countries where development in M1 could indicate the impact of monetary policy on total output especially where a stable relationship between M1 and output had been established. So, the narrow definition of money M1 which

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24 For example, foreign currency balances may be held as savings by residents spending long periods outside the country or by firms exercising foreign exchange retention privileges.
includes currency outside the banks and demand deposits is the most appropriate definition of money.

2. DETERMINATION AND EFFECTS OF THE STOCK OF MONEY:

Virtually most stabilization and adjustment programs involve restrictive monetary policies, especially ceilings on the rate of domestic credit expansion, whether by the banking system as a whole or by the central bank.  

Despite the attention it received in both the theoretical and empirical literature, the size of the effect of changes in the rate of domestic credit expansion on economic growth is still a matter of considerable controversy. The simple version of the monetary approach to the balance of payments suggests, for example, that in the long run in a small open economy operating under a fixed exchange rate regime, a reduction in domestic credit will be offset by international reserve flows that restore the money stock to the level desired by the public. Consequently, this policy would have no long-run effect on the level of output relative to its trend or on the rate of growth of output. During the adjustment process a decline in the growth of domestic credit may be associated with a reduction in capacity utilization and a possible use of unemployment. However, the estimated size and duration of the deflationary effect created by a restrictive monetary policy depends on several factors and as these factors can interact in complex ways, the net outcome clearly remains an empirical question. Some consideration should also be given to the issue of whether, in some circumstances, it would be more effective to target money or reserve money, as an intermediate variable, than domestic credit. The choice between credit and money depends on the exchange rate arrangements, which is related to the relationship between domestic and external good on one hand and between domestic and external financial markets on the other. With closely integrated markets, the combination of a ceiling on the domestic credit of the banking system and a fixed exchange rate has been viewed as a means of achieving an improvement in the current account balance without generating a sustained inflation. But because, in most developing countries, the linkages between domestic and external prices are less direct, these weaker linkages provide scope for extended periods of domestic inflation. In this situation, a ceiling on domestic monetary growth or the rate of growth of reserve money would be required to limit inflation.


28 Such factors include the speed with which the initial credit restriction is offset by international reserve movements; the response of domestic inflation to the excess demand for real money balances created by the credit restraint policy; the extent to which the excess demand for money reduces aggregate demand; and the effect on private investment of a rise in the cost, or a reduction in the availability of credit.


30 Because of trade barriers, transactions costs and shipping charges, etc.
In some cases, the effectiveness of ceilings on domestic credit is more closely related to the presence of unregulated domestic and foreign sources of credit than to the exchange rate regime. If sources of credit other than the domestic banking system are limited, then a ceiling on domestic credit of the banking system can be quite effective in influencing domestic spending and activity, regardless of the exchange regime. The rudimentary nature of capital markets in developing countries is considered a major characteristic that needs to be taken into account in designing a macro-model in developing countries. Typically, the only important source of financial intermediation in a developing country is the banking system. This situation makes it much harder to use the financial system to efficiently mobilize and allocate savings, and it means that some of the traditional instruments of monetary policy can't be used in support of stabilization policy. Lack of development in the financial sector in most of the developing countries plays a major role in limiting the effectiveness of monetary policy in such economies. Developing countries' efforts to promote economic development in the past by controlling interest rates, directing credit to priority sectors have, to certain extent, undermined financial development, where the financial system remains small and undeveloped. Interest rate controls discourage savers from holding domestic financial assets and discourage institutions from lending longer term. This lack of money and capital markets has limited the effectiveness of monetary policy in such countries. In addition to the financial structure, a "clean float" or flexible exchange rate does not exist in developing countries for many reasons, such as, the country is a member in a currency union or another arrangement that indicates long-term fixed exchange rate, or because of some degree of government intervention. As a result, there are limits to the ability of the monetary authorities to control monetary aggregations. So, ceilings on domestic credits rather than on such aggregates is more appropriate and has been chosen in most IMF adjustment cases.

Several empirical studies assessed the effects of contractionary monetary policy (defined as a reduction in the growth of either domestic credit or the supply of money) on the growth of output in developing countries. This issue is important to developing countries where control over bank credit is usually the main direct instrument of monetary policy and where bank credit is also the major means of financing public expenditures, so that the effects on output growth of equivalent doses of credit, monetary, or fiscal restraint (or expansion) are essentially the same in the short run.

31 IMF, Occasional paper 55, op. cit.
In one of the earliest studies of stabilization programs supported by the IMF covering experience from 1963 to 1972, Reichman and Stillson (1978) concluded that while the rate of domestic credit expansion was reduced significantly in a large majority of the programs that called for such a reduction, there is no evidence that programs systematically affected the level of economic activity within the period considered. However, this conclusion must be interpreted with caution, for two reasons. It applies not to the effects of credit policy per se but to the effects of stabilization programs in which credit restraint was frequently accompanied by other expansionary measures such as devaluation. It also refers to growth of industrial production, which is not an adequate indicator of aggregate economic activity in most developing countries, whose economies are predominantly agricultural.

A similar lack of evidence of the adverse effect of stabilization programs - including contractionary monetary policy - on growth performance in the short run was reported by Connors (1979), and by Donovan (1982) and Killick (1984). According to another study based on an econometric financial-programming model applied to data for twenty-nine developing countries during 1967-1975, a once and for all reduction of domestic credit by 10% lowered output by only about one-half in the short run (Khan and Knight, 1982). However, the model is exclusively financial and thus ignores real aspects as well as the supply side of the economies.

More recent empirical evidence indicates that a 10% reduction in the growth rate of domestic credit or money supply leads, on average, to less than 1% reduction in the growth rate of output (GDP or GNP) over one year in developing countries. In this respect, it seems that even the rule of thumb proposed by Hanson (1980), that 10% change in the rate of growth of money supply would change output in the same direction by about 1%, is somewhat over-estimated. Table (1) summarizes the empirical evidence of such studies. It is worth noting that in the studies examined, the effect of monetary restraint on growth takes place mainly in the short run (first year) where growth starts to pick up soon after that.

38 Mohsin Khan and Malcolm Knight, "Some Theoretical and Empirical Issues Relating to Economic Stabilization in Developing Countries", World Development, 10 (September, 1982).
## TABLE (1)
Short-Run Effect on the Growth Rate of Output of a 10% Change in the Growth of the Money Supply or Domestic Credit

<table>
<thead>
<tr>
<th>Stand By</th>
<th>Policy Variable</th>
<th>Countries</th>
<th>Effective Growth of Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Aghevli and Khan (1980)</td>
<td>Domestic Credit</td>
<td>8 Developing Countries</td>
<td>0.8</td>
</tr>
<tr>
<td>(2) Khan and Knight (1981)</td>
<td>Domestic Credit</td>
<td>29 Developing Countries</td>
<td>0.5</td>
</tr>
<tr>
<td>(3) Blejer and Khan (1984)</td>
<td>Domestic Credit</td>
<td>24 Developing Countries</td>
<td>0.5</td>
</tr>
<tr>
<td>(4) Edwards (1983_b)</td>
<td>Domestic Credit</td>
<td>4 Latin American Countries</td>
<td>1.2</td>
</tr>
<tr>
<td>(5) Blejer and Fernandez (1980)</td>
<td>Domestic Credit</td>
<td>Mexico</td>
<td>0.4</td>
</tr>
<tr>
<td>(6) Edwards (1983_a)</td>
<td>Money</td>
<td>3 Latin American Countries</td>
<td>1.7</td>
</tr>
<tr>
<td>(7) Edwards (1983_b)</td>
<td>Money</td>
<td>9 Latin American Countries</td>
<td>0.8</td>
</tr>
<tr>
<td>(8) Hanson (1980)</td>
<td>Money</td>
<td>5 Latin American Countries</td>
<td>1.0</td>
</tr>
<tr>
<td>(9) Barro (1979)</td>
<td>Money</td>
<td>Brazil, Columbia &amp; Mexico</td>
<td>0.9</td>
</tr>
<tr>
<td>(10) Leiderman (1984)</td>
<td>Money</td>
<td>Columbia &amp; Mexico</td>
<td>0.2</td>
</tr>
<tr>
<td>(11) Von Wijnbergen (1982)</td>
<td>Money</td>
<td>Korea</td>
<td>0.7</td>
</tr>
<tr>
<td>(12) Lipschitz (1984)</td>
<td>Money</td>
<td>Korea</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Source: The table is constructed by the author based on Khan & Knight, Occasional Paper # 41.

A study by Gylfason (1987) reviewed the relationship between credit policy and growth performance, as well as other relevant aspects of economic record, under stabilization programs supported by the IMF during 1977, 1978 and 1979. It examined whether these programs in the entirety have influenced growth directly and indirectly, or whether other developments have accounted for changes in the growth rate. The evidence shows that credit expansion in several non-oil-developing countries was reduced markedly and the overall balance of payments improved substantially. At the same time, the inflation rate, although increasing on average, was generally kept below the rates prevailing in other non-oil-producing developing countries. These results were achieved at the cost of a relatively modest reduction in the average growth rate of output during and immediately after the program period.

In Asthaly and Doukas (1987), ten countries have developed a macro-economic model which provides a framework for the analysis of stabilization policies in developing countries during the period 1974-83. It concluded that a monetary contraction would cause a further reduction in

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42 Ibid.: 30.
43 The countries are: Brazil, Columbia, Greece, India, Israel, Korea, Pakistan, Philippines, Sri Lanka and Turkey.
output due to increased scarcity of credit and as a result would cause a further increase in prices due to higher borrowing costs. As a result, it is not recommended to advocate monetary contraction following a devaluation in developing countries.

A study by Doroodian (1993) of 43 developing countries, of which 27 are program countries that used the IMF financial resources during 1977 (the period of observation is from 1977-83) tried to examine directly the effects that a typical stabilization program which includes reduction in the growth of domestic credit and an increase in real interest rate may have on the rate of growth of output, the inflation rate, and the current account balance. The statistical results show that while the adjustment policies, in general, improve the inflation rate modestly, and the current account growth examine directly. However, the unanticipated growth of domestic credit turned out to be an important variable in the equation and the variation in it generally leads the program country toward the desired goals. However, the effect on growth and inflation rate is inconclusive while the impact on current account balance is clear. This is consistent with the Barro results (1977) in which he used annual data for the U.S. covering the period from 1941 to 1973, where his statistical tests provided support for one of the main predictions made by the flexible-price rational expectations model. Unpredictable monetary growth is important in the determination of the level of output and unemployment, while predictable monetary growth is irrelevant. Tests by Leiderman (1980) for U.S. covering the period 1946-73; Attfield, Demery and Duck (1981) for U.K. covering the period 1946-77 and 1963-78; Evans (1984) for U.S. covering the period 1947-1978; Kormendi and Meguire (1984) for some industrialized and Latin American countries covering the period 1950-77; and Dutkowsky (1987) for U.S. covering the period 1949-84, support Barro's component of monetary growth causing output to alleviate from its natural rate. However, several tests challenged such results and pointed out that anticipated money growth has real output effects. Moreover, in some cases the distinction between anticipated and unanticipated

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48 See, for example, F. Mishkin, "Does Anticipated Monetary Policy Matter? : An Econometric Investigation",
changes turned out to be unimportant (Bean, 1984). This is a new classical view of macroeconomics which was developed by Lucas, Sargent and Wallace and was best illustrated by the "policy ineffectiveness" proposition of Sargent and Wallace which asserts that anticipated money growth has no effect on real variable and that only the unanticipated money growth has a significant effect on real output and employment. Even though evaluation of such studies were mainly concerned with industrial, rather than developing countries, the fact remains that the issue is relevant to both group of countries.

The effect of growth of money supply on output has been shown in several studies in Arab countries. A study for Kuwait (1993) showed that unanticipated money growth that lagged one and two years has a significant effect on the growth of real non-oil GDP (See Table 2). A study of the effect of money growth on output in oil producing countries of Iraq, Kuwait, Libya, and Saudi Arabia indicated that the coefficients of the unanticipated money growth have all of the correct positive signs and are statistically significant in the cases of Libya and Saudi Arabia. It is suggested that a percentage increase in the unanticipated money growth, other things remaining constant, would raise the next quarters output in Libya by 0.2 per cent and in Saudi Arabia by 0.3 per cent. This is consistent with Sargent and Wallace results that only the unanticipated component of money growth has a significant impact on real output. When the unanticipated money growth values were replaced by anticipated values, the coefficients turned out to be statistically insignificant and with opposite theoretical signs.

A study by Moosa (1986) indicated that the effect of lagged money supply on real output in Kuwait is significant and has a coefficient of nearly three times that of government expenditure. Looney (1987), in a study regarding Saudi Arabian monetary policy, where he applied Bronfenbrenner Test and Modigliani Test to Saudi Arabia, indicated that lagged money supply doesn't have significant effect on real GDP in Saudi Arabia. This was consistent with Bronfenbrenner approach which assumes that growth of real GDP is insensitive to small

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51 Talal Al-Gharabally, op.cit.: 142.
52 Real non-oil GDP is used rather than total GDP because the oil sector is dependent, to a large extent, on external and internal factors.
55 Imad Moosa, An Econometric Model of Kuwait's Monetary Sector, the IBK papers, Series # 22, September 1986.
variations in the rate of change in money supply. Modigliani's procedure of Saudi Arabia was supportive of results found in Bronfenbrenner method.57 (Table 2).

Table (2)
Empirical Evidence of The Effect of Money Growth on Real Output in Selected Arab and Developing Countries

<table>
<thead>
<tr>
<th>Author / Year</th>
<th>Policy Variable</th>
<th>Country &amp; Period</th>
<th>Results and Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Looney (1987)</td>
<td>Money Supply</td>
<td>Saudi Arabia (1960-1979)</td>
<td>Money supply doesn't have a significant effect on real GDP</td>
</tr>
<tr>
<td>Al Saji (1989)</td>
<td>Lagged M₁</td>
<td>Iraq (1964-77), Kuwait (1973-83), Libya (1968-78), Saudi Arabia (1972-83)</td>
<td>1% increase in unanticipated money growth raises next quarter output by 2% in Libya and 3% in Saudi Arabia.</td>
</tr>
<tr>
<td>Barro (1978)</td>
<td>Money Growth</td>
<td>Brazil, Columbia and Mexico</td>
<td>Unanticipated money growth effects real output in Mexico</td>
</tr>
</tbody>
</table>

Source: The table is constructed by the author based on the studies mentioned in the table.

Because monetary policy may affect growth through its impact on investment, changes in domestic credit or money is likely to affect output through investment. The availability of financial resources is one of the main constraints on investment mainly in developing countries.58 There is a growing literature now on the effects of financial constraints on investment where firms may face binding financial constraints in domestic capital markets because interest rates are controlled or because of endogenous credit rationing.59 Due to the high demand for credit at the prevailing low interest rate in developing countries, commercial banks will be forced to ration the available supply of credit by non price terms. So, domestic interest rates will influence private investment through stimulating a larger volume of savings by the domestic private sector. Thus, an increase in real credit to the private sector will encourage private investment and vise versa. Since the control of bank credit represents the main instrument of monetary policy in

developing countries, the authorities can influence the level of investment by changing the availability of domestic credit.

The restrictive monetary and credit policies included in stabilization programs may affect investment in two ways: they raise the real cost of bank credit; and increase the opportunity cost of retained earnings. Both mechanisms raise the upper cost of capital and lead to a reduction in investment. However, several other studies indicated that credit policy in the repressed developing countries financial markets affects investment directly rather than through the indirect interest rate channel. So, the structure of financial markets in developing countries is important in determining the effect of monetary policy and money supply on investment. Results obtained by several empirical studies [Blejer and Khan (1984); Tun Wai and Wong (1982); and Fry (1984)] confirm the hypothesis that credit extended by the banking system in developing countries can have a significant impact on real private capital formation which would imply a connection between changes in money supply and growth through the effect on private investment.

3. CONTROL OF THE STOCK OF MONEY:

Having determined the appropriate definition of money as well as the stock of money, monetary authorities must understand how its behavior is determined in order to control it (if possible) in a way consistent with price and other policy objectives. It is implicitly assumed that the monetary authorities can determine the growth of the money supply. One of the main assumptions of the fund approach to the balance of payments adjustment is that money supply is controllable. This requires careful evaluation in the light of the ongoing controversy between monetarists and non-monetarists in the question of the monetary authorities' ability to control the stock of money.

"If, as an increasing body of empirical evidence indicates, monetary influences exert an important and predictable influence on economic activity, then such questions as how is the supply of money is determined? and can the Federal Reserve control the money supply process? become very pertinent".

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60 This effect has been confirmed in a studies by Jaime de Melo and James Tybout, "The Effects of Financial Liberalization on Savings and Investment in Uruguay", Economic Development and Cultural Change, 34, No. 2, 1986: 561-88; and Joshua Greene and Delano Villanueva, "Private Investment in Developing Countries: An Empirical Analysis", IMF Staff Papers, 38, No. 1, 1991: 33-58.


62 Blejer and Khan (1984) found out that the change in real private investment (in dollar terms) with respect to a $1.00 change (in real terms) in credit to the private sector in 24 developing countries to be 0.21. It was 0.36 in Tun Wai and Wong (1982) study for 5 developing countries. However, it was 0.07 in Fry (1984) study for 14 Asian countries. See : Tun Wai and C. Wong, "Determinants of Private Investment in Developing Countries", Journal of Development Studies, Vol. 19, October, 1982 : 19-36; and Maxwell Fry, "Saving, Investment, Growth and Terms of Trade in Asia," Unpublished, Irvine, California, 1984.

Based on the works of Friedman-Schwartz, Cagan and others,64 monetarists argue that monetary authorities can control the stock of money which emerges on the result of the interaction between the banks, the public, and the monetary authorities. In the process, the monetary authorities will have a control over the base (high powered money), and the banks and public will adjust their positions accordingly.65 It was concluded that the growth in the monetary base is the dominant factor influencing long-term growth in money. However, other economists especially who share the new view of monetary theory argue that the stock of money is determined not only by the monetary authorities, but also by the behavior of the public and is not subject to control by such authorities.66 The Brunner-Meltzer approach, for example, incorporates the behavioral interactions of the public, the banks, and the monetary authorities.67 Their approach includes the policy variables under the direct control of the monetary authorities, on one hand, and takes into account the existing institutional framework within which the policy makers must operate, on the other. The Brunner-Meltzer approach has been expanded and modified versions have been advanced by many other economists.68 Having such relatively different perceptions, the issue between monetarists and others is therefore empirical.

The role of the central bank in such inter-relationship is presented by the money multiplier concept and in turn the multiplier-base relationship which is much related to the specification and stability of the supply factors for money. The foundation of the multiplier framework is the monetary base defined as the net monetary liabilities of the central bank.

\[ M = mB \]

Where M is the stock of money, m is the multiplier while B is the monetary base which is equal to the central bank’s credit to the government (CG) plus net foreign assets of the central bank (NF) plus the central bank credit to the banks (CB). So, \( B = CG + NF + CB \) 69

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65 In Friedman-Schwartz work, two identities are used to determine the stock of money:

\[ M = C + D \] and \( H = R + C \), where M is nominal stock of money; C is currency held by the public;

D is deposits in the commercial banks; H is high powered money; and R is legal reserves against deposits.


68 Putting into consideration the definition of the stock of money \((D + C)\) and the ratios of currency to demand deposit \(k\), of time deposit to demand deposit \(t\), in addition to reserve requirements \(r\), and the banks excess reserves \(e\), the money supply function can be written as:
Given the money supply equation, the difference in opinion between monetarists and others is related to which variables can be controlled by the monetary authorities, on one hand, and to stability and predictability of the money supply function that explains such variables, on the other. The k and t ratios are determined by the public's preference for various monetary assets and the attractiveness of such assets, based on rates of return as well as an institutional factors, measured by the degree of monetization, i.e. money supply to GNP ratio. Reserve requirement ratio r and the banks excess reserves e would determine the level of the deposits that can be created which, when added to currency, gives the stock of money. Since commercial banks in developing countries are likely to keep their loans to maximum levels permitted by their reserve assets, excess reserve ratio will be small. So, for the relationship between the multiplier (m) and its determinants, positive change in k, r, e, or t reduces the multipliers and thus the money supply, while a negative change gives the opposite result.

Since central bank credit to the government (CG) is mainly influenced by budget considerations of which the monetary authorities have little influence, and the net foreign assets of the central bank (NF) are influenced by external factors such as fluctuations in exports, imports, ... etc., the monetary authorities would have insignificant direct control over the monetary base. This is more evident in the case of developing countries where they are much more vulnerable to external factors which affect their foreign exchange assets. Due to the lack of developed securities in developing countries, changes in government debt which are reflected in the monetary base in the form of central bank credit to the government makes inflation a self-generating issue where it increases government borrowing from the central bank (CG) which increases the base (B) and, in turn, the money stock M. This would increase the rate of inflation and worsens the government deficit.

So, monetary base reflect, to certain extent, the policy actions of the monetary authorities where its growth shows how influential monetary authorities are in effecting the stock of money. "The degree of accuracy that can be achieved by the monetary authorities in controlling the money stock is a function of their ability to determine the monetary base, and to predict the net influence of the public's and bank's behavior as summarized by changes in the money multiplier". Even though monetary authorities could still effect stock of money by implementing some monetary measures such as through reserve requirement ratio, open market operations, and the discount rate, this could hardly be possible in developing countries due to the ineffectiveness of their

\[ M = \frac{1 + k}{r + e + k + t} (CG + CB + NF) \]


monetary policy instruments. The multiplier is found to be moderately predictable in developing countries and contributes very little to monetary changes over longer periods of time. Money's behavior is almost always overwhelmingly dominated by the base which is significantly affected by net foreign assets and/or the government's deficit.

A study for Egypt, for example, reveals that there is no significant variation in the money multiplier during the 1961-1975 period. Therefore, changes in the money supply can be attributed to the change in the monetary base. The study also found out that it is difficult to explain variations in the money multiplier through changes in conventional monetary policy instruments such as the discount rate and reserve ratio, where discount rate is not effective and reserve ratio is not significant.

A similar study for Kuwait, where a money supply model was tested, indicated that the factors that determine the stock of money in Kuwait are not government injections into the economy and capital outflows. The central bank's actions, in an attempt to control the money supply in Kuwait seem ineffective, since the monetary authorities have no control over government expenditures and exports in Kuwait. Another study of money supply function of Kuwait also indicated that last period's government expenditure in addition to lagged money supply is the main determinant of money supply. However, it was concluded that there is a clear coordination between monetary and fiscal policies to achieve sustained economic growth and to provide a stable, predictable environment for the private sector rather than smoothing out short term fluctuations. El-Mallak and Atta specified a function in which money supply (excluding foreign currency deposits) in Kuwait was determined by credit to the private sector, government deposits with the central banks, and foreign assets of the central bank. On the other hand, The Claremont Model specified money supply growth rate in Kuwait to be determined by a lagged real government expenditure and the KD/dollar exchange rate. To Moosa, supply of credit in Kuwait was a function of government and total deposits in the commercial banks, the ratio of lagged commercial bank credit to private sector to total deposit as well as the interest rate differential between 3 month Euro interest rate and 3 month KD inter bank interest rate.

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74 Coates and Khatkhate, 1980, op. cit.: 18.
75 The academic literature has always maintained the distribution between government deficits financed by commercial banks and deficits financed by the central bank. The former doesn't change (at least directly) the base and has negligible effects on the multiplier and thus on the money supply, while the latter leads directly to an increase in the base (B) and a multiplier increase in the stock of money (M). (See Coates and Khatkhate, "Money Supply Implications of Commercial Banks' Financing of Government Debt in Developing Countries", Oxford Bulletin of Economics and Statistics, May, 1978).
78 See Talal Al-Gharabally, 1992, op. cit.
80 Claremont Economic Institute, Kuwait Econometric Simulation Model, Claremont, Calif., 1983.
81 Imad Moosa, Alternative Model of Kuwait's Monetary Sector, The IBK Papers, Series No. 22, Kuwait, September, 1986.
may indicate a relatively important role for monetary policy in determining money supply in Kuwait.  

A study of money supply determination in Iraq, Kuwait, Libya, and Saudi Arabia found out that it is determined mainly by lagged money supply in Libya and by real government expenditure and two period lagged unemployment rate in Iraq and by real government expenditure and one period lagged international reserves in the case of Saudi Arabia. The strong effect of government expenditure on money supply in countries under consideration is explained by the fact that the monetary authorities tried to finance economic development plans, while governments were not willing to impose taxes to finance such spending.

Given the structure of developing countries, it would be appropriate to shape monetary policy as well as fiscal policy to meet the long-run objectives by having steady monetary growth. Using monetary policy as an instrument for short run stabilization may not be appropriate. Lack of developed financial markets and banking institutions, which limits the role of monetary policy, makes it necessary for monetary and fiscal policies to be determined according to long term considerations.

CONCLUSION:

The purpose of this study has been to survey and analyze theoretical as well as empirical developments in money supply issues and policies in developing countries. The theoretical and empirical investigation has led to the following conclusions.

Over the past twenty years or so a large number of stabilization and structural adjustment programs have been undertaken, mainly, in developing countries, based on the macroeconomic theory of open economies developed during the 1950s and 1960s. Since then such programs and policies have expanded which, in turn, requires the expansion of our understanding of economic theory behind such policies. Developments in theoretical and empirical monetary issues, i.e. demand for money reflect such expansion and, at the same time, are considered one of the main elements of stabilization and structural adjustment policies.

Theoretical as well as empirical evidence is inconclusive in determining the definition of money supply, and whether a broad or a narrow definition of money is more related to macroeconomic variables that need to be influenced by stabilization and structural adjustment policies. However, because it is generally accepted that a money definition should compromise an aggregate that the monetary authorities can adequately control, narrow definition of money (M1) which include currency outside the banks and demand deposits is considered more appropriate for such a purpose.

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82 It was found out that a 100 basis points increase in the Eurodollar rate will induce a 23 basis points increase in domestic interest rate and about KD.112 million increase in supply of deposits. Also 100% increase in total deposits induces 113% increase in supply of credit.

Because restrictive monetary policies are considered a major element of stabilization and structural adjustment programs, the effect of changes on rate of growth of money supply on economic variable is still a matter of considerable controversy. While several empirical studies, in both developed and developing countries, concluded that the effect of monetary restraint on growth takes place mainly in the short run, it is widely accepted and empirically proven that unanticipated rather than anticipated money growth effect real output in developing as well as Arab countries.

Even though it is implicitly assumed that monetary authorities can determine the growth of money supply, which is one of the assumptions of the IMF approach to balance of payment adjustment, it is argued that the stock of money is not controlled by only the monetary authorities, but is also influenced by the behavior of the government, the commercial banks, and the public. This, in addition to the underdeveloped financial structure and some institutional constraints, limit the role of monetary policy in developing countries, which strengthen the case against using it primarily as an instrument for stabilization and structural adjustment policies.
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