CHAPTER III LITERATURE REVIEW

This chapter begins with a discussion on the effects of financial liberalization followed by the implications of financial liberalization on the conduct of monetary policy. A review of the shift in the technique of monetary control in four industrial countries with special focus on Germany, and two ASEAN countries is presented next. The chapter concludes with discussion on the empirical findings on the relationships between money, income, prices and interest rates.

III.1 Monetary Policy and Financial Liberalization

Monetary policy is implemented to achieve the ultimate goals of the central banks and monetary authorities, which tend to focus on output and inflation objectives. However, these final variables are not directly controllable by them. Moreover, because of lack of timely and accurate information on output and prices, as well as because monetary policy affect prices and output with a lag, central banks or monetary authorities generally use intermediate target variables that are closely related to prices and output but that are more controllable by them, and for which more timely information is available.

Since the mid-70s, a number of central banks have used the growth of a monetary aggregate as an intermediate target. However, as the relationship between monetary aggregates and economic activity became less predictable especially in the 1980s and 1990s to a large extent as a result of financial liberalization, monetary aggregates have become less reliable indicators of monetary conditions. Hence, most

central banks have now placed greater emphasis on short-term interest rates and exchange rate as intermediate targets than on monetary aggregates. As Friedman and Kuttner (1992)[19] say:

"The deterioration of the evidence supporting a relationship to either real or nominal income, or to prices, appears not just for M1 but for other monetary aggregates and for credit as well.

The changes over time in observable empirical relationships bear strong negative implications for many familiar monetary policy frameworks that center the design and implementation of policy on money (or credit). The point is not just that the money-income relationship does not satisfy the stringent conditions that would be required to render optimal the strict use of money as an intermediate target. More importantly, there is no evidence to show that fluctuations in money contain any information about subsequent movements in income or prices".

It is normally assumed that, in the long run, changes in the stock of money will be fully reflected in changes in the price level, with little or no effect on real output. The general agreement among economists is that the quantity of money, or its growth rate, can play a useful role in the monetary policy process only to the extent that fluctuations in money over time regularly and reliably correspond to fluctuations in income and prices. The great money debate (which is at the core of the macroeconomic management debate between the Keynesians and those of the Classicals) arrives at the consensus that in the short run, money can affect real output over the period of one or two years but in the long run, money is super neutral i.e. monetary policy is not powerful in the long run[20].

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[19] Friedman, Benjamin M. and Kuttner, Kenneth N. 'Money, Income, Prices and Interest rates', The American Economic Review, June 1992, pp.490. Hereafter, reference to this article is referred as Friedman and Kuttner.

[20] Espinosa-Vega suggested that there is the possibility that monetary policy has substantial long run real effects. See Espinosa-Vega, Marco A. 'How Powerful is Monetary Policy in the long run?', Federal Reserve Bank of Atlanta, Third Quarter, 1998.

Based on the perception that monetary policy can only affect real output in the short run, the argument is that wages and prices are not perfectly flexible in the short run to medium term. So changes in monetary policy may have consequences on real output over this period. This nominal stickiness may partly be caused by incomplete adjustment of economic agents' expectations of inflation, and partly by the costs of acquiring information on the appropriate price to change and of changing prices accordingly. Some economists argue that these real effects are largely the result of 'structural features' i.e. those institutional arrangements and underlying determinants of individual behavior that are insensitive to changes in fiscal and monetary policies. These dictate the relative importance of different channels of the monetary transmission mechanism, which suggests that structural differences between countries may lead to differences in the effects of a change in monetary policy. However, in the long run, output is supply determined i.e. through the mobilization of real resources such as employment, capital, land and technology. Hence, in the long run, increases in money will ultimately affect only prices but not real output.

Change in the relationship between money and income or prices is to a large degree the result of changes in world financial environment. Financial liberalization, especially those on interest rates have been greatly relaxed and business boundaries between financial institutions are becoming more and more blurred. What is more, since the early 1980s, the waves of financial innovation and liberalization sweeping the advanced countries have spread to the developing countries and they have now become worldwide phenomena. In the 1990s, the current of financial liberalization continued to flow in to these countries even more strongly.

Financial sector liberalization can be viewed as " *a set of operational reforms and policy measures designed to deregulate and transform the financial system and its structure with the view to achieving a liberalized market-oriented system within an appropriate regulatory framework. Such worldwide financial sector reforms have led to greater flexibility in interest rates, an enhanced role for markets in credit and foreign exchange allocation, increased autonomy to commercial banks, a greater depth of money, securities and foreign exchange markets, and significant increases in cross border flows of capital* "[21]. Countries that have seriously repressed financial system are more likely to be associated with instability and inefficiency and lower economic growth. Proper sequencing of financial reforms is deemed important as it is considered as a crucial success factor in moving towards higher rates of growth.

Within the scope of financial liberalization, various aspects of reform process emerge and these include financial sector reforms, deregulation, re-regulation and innovation. Financial liberalization encompasses the move away from directed credit and also credit ceiling and away from control on interest rates. In the process, market forces will determine prices for credit as well as direction of credit. In addition, it may involve the privatization of government-owned financial institutions, and decrease segmentation within the banking system in terms of activities of the various tasks of the financial institutions. This represents a move towards universal banking system, which is part of the reform process in some developed countries. Likewise, financial reform involves the introduction of new financial products and greater reliance on electronic banking as part of innovation. Other aspect is the reduction in the burden of

[21] International Monetary Fund (IMF). Sequencing Financial Sector Reforms:Country experiences and issues, 1999, pp. 2-3.

international capital, which is primarily brought about due to reliance of market forces which in turn allows international capital to move freely among countries [22].

However, based on a World Bank study (1993) [23] of financial sector reforms in Asian and Latin American Countries, two reservations were identified. The first is that reform will result in high real interest rates replicating the experiences of Southern Cone economies during the early 1980s. But, Indonesia, Malaysia and New Zealand all demonstrated that financial reform was possible with real interest rates remaining in the single digit range. This was not the case in Turkey in early 1980s where real deposit rates were quite volatile and lending rates were hard to determine due to macroeconomic uncertainty. The large spreads induced both by limited competition in the banking system and by continued high reserve requirements to finance government deficits accorded the Turkey financial reforms as unsuccessful. The second is the reason related to the fear of a possible loss of monetary control, a factor which may inhibit developing countries from reforming their financial markets. Where a deregulation of interest rates and credit controls occurred abruptly after a long period of control, countries have experienced significant financial deepening but also some problem of a loss of monetary control. Turkey experienced increasing budget deficits and inflation in early 1990s and the Central Bank had to abandon the practice of designing annual monetary program, which was just initiated. However, evidence from New Zealand, Malaysia and Indonesia where the post reform inflation experience performance was extremely good, suggested that effective monetary control can be retained consistent with a broad-based financial reform program. 'It was noted that these three countries benefit from highly capable as well as

[22] Financial liberalization and innovation:Supervisory concerns, Report on SEACEN Seminar, 1995.
[23] Financial Sector Reforms in Asian and Latin American Countries, The World Bank, 1993.

independent central banks, which suggests that the building up of such capacities is a vital precondition for successful reform' [24]. In addition, it was also noted that the retention of effective monetary control is easier when domestic banking system is large relative to the foreign owned component of the system. Foreign banks are likely to be more resistant to domestic monetary policy measures and will be able to circumvent some of them.

Experiments in financial liberalization and reform had failed frequently in several countries. Several factors were implicated in such failures including poor design, hasty and poorly organized implementation, inadequate bank legislation and regulations, and incentive structures that encouraged risk-taking. Future success would undoubtedly require a judicious mix of sound general economic policies and appropriate adjustments of financial legislation. A gradual and cautious approach was probably needed, although this did not necessarily mean that the reform process needed to take a long time.

An important reason for financial liberalization is to develop a system, which promotes an efficient allocation of savings and credit in the economy. In the monetary arena, financial liberalization involves a movement away from direct monetary controls towards indirect ones. The latter is operated by the central bank by controlling the prices or volume of the supply of its own liabilities - reserve money - which in turn may affect interest rates more widely and the quantity of money and credit in the whole economy.

[24] Op. Cit.

The vast experience of countries changing from direct to indirect monetary instruments provided a strong basis for (most) developing countries to emulate and take lessons from. In a recent study by the IMF [25], the experience of 19 developing countries and formerly centrally planned countries in their transition from direct to indirect monetary instruments was compared. The transition period was assumed to begin when government or central bank bills were first auctioned. The end of the transition period was marked by the elimination of interest rate controls, and by central bank directed credits accounting for no more than 25% of total credit to the economy. The findings from the study revealed that although there was a wide range of speed of adjustment, the average length of transition of the sample of countries was 3.7 years, which was considered quite long. This reflects the fact that it takes time to establish the expertise, the institutional arrangements for indirect market-based controls, and the necessary changes in attitude in favor of the market determination of interest rates and competition in financial markets. There is also the need for supporting measures, such as improvements to the payments system, stronger banking supervision, remove of barriers to competitiveness in the banking sector, and development of techniques of monetary analysis [26].

With respect to monetary reforms, many countries with repressed financial system face problems of monetary control associated with the ineffectiveness of direct control and interest rate controls. Administered interest rates and credit allocation have tended to be eroded over time, and are not flexible in the face of substantial international capital flows. Moreover, they are associated with inefficiency in resource allocation. The modification of monetary policy instruments in order to

[25] 'Introduction to monetary operations', Bank of England Handbook No. 10, 1996.
[26] Op. Cit.

achieve more effective monetary control is an important motivation of financial sector reforms, and the freeing of direct controls on interest rates and credit is central to most financial sector reforms. More indirect, market-based approaches have increased the scope for macroeconomic control while allowing for a deregulation of interest rates. The experience of countries reforming monetary controls indicated that the "introduction of indirect approaches has often been accompanied by an initial active use of SRR and refinance facilities, and for a time, guidance on interest rates and bank credit were continued because of concern over the weak institutional capacity of financial markets"[27].

[27] IMF. Sequencing Financial sector reforms:Country experiences and issues, 1999, pp.9-10.

III.3 Implication of financial liberalization

Several salient features of the implication of financial liberalization based on a study by the IMF[28] indicated the following:

i) In nearly all countries, financial liberalization has been followed by a period in which credit growth exceeded the growth of deposits, and in several countries, the gap between the growth of credit and the growth of deposits widened following the reforms. The initial tendency for credit to grow more rapidly than deposit was because previously credit growth was constrained by direct controls. But with the built up of excess reserves under credit controls, after liberalization credit will expand rapidly. In the pre-reform period, deposits were not limited by direct controls, and so a similar excess demand did not exist. Deposit growth however responds to the adjustment in interest rates.

ii) The adjustment of interest rates to positive real levels and the adoption of interest rates flexibility to contain inflationary pressures appear to be critical policy actions in the reform period to deal with the credit and monetary effects of reform. When the authorities maintain positive real interest rates, the experience of various countries suggest that the tendency for credit to grow more rapidly than deposits will be temporary. Following the initial stock adjustment, credit growth slows down, while deposit growth continues in response to the ongoing financial deepening. After an adjustment period, the growth of deposits, and credit converge, allowing for balanced growth with a

> higher level of overall resource mobilization. Thus, over time, liberalization of the financial system results in increased financial savings, and the economy can tolerate a somewhat more rapid growth of money and credit without increasing inflationary pressures. In those countries that did not increase their real interest rates, however, financial reforms often impeded economic growth and efficiency. In these cases, the credit expansion resulted in inflation, unproductive investment, and weak bank credit portfolios.

In addition, implication of financial liberalization also included increased mobility of capital in search of higher returns without any particular preference to any particular country but universal in character, moving and shifting all the time and looking for better returns. Because of the technological advancement, the amount of funds that moved from one place to another can be very huge as well as the movement can be extremely fast. Because of this scenario, major implication in the movement of capital can be very short-term in nature and because of this short tenure of capital there could be some destabilizing effects. Examples are in the case of Mexico in 1994/1995 as well as the Malaysian experience in 1993/1994 and in 1997/98 Asian crisis. The policy to maintain a sort of independent monetary policy through high interest rate regime as influx of capital attracted by this interest rate had resulted in a destabilizing effect on the Malaysia economy. This prompted the Central Bank to impose restrictions on capital flows through the imposition of negative interest rate (1994/95) and selective capital controls (1998). This is one important implication in terms of capital mobility and the potentially destabilizing effect of short-term capital

[28] Op. Cit.

on the conduct of monetary policy as well as the macroeconomic stability. This high capital movement imposes four major problems in the conduct of monetary policy.

- First is the inability of central bank or monetary authority to conduct independent monetary policy. The liberalization and globalization of financial markets, with accompanying capital inflows, have complicated monetary and exchange rate management. Capital flows have destabilized domestic monetary aggregate, threatening their reliability as indicators as monetary policy. In addition, inflows have also distorted the term structure of interest rates and caused divergence in the yield curves for short term money market instruments.
- Secondly, due to the mobility of capital, there will be more and more volatility in the exchange rate. An exchange rate that moves not all the time by economic fundamentals but through speculative purposes is very dangerous and of great concern to central banks. This has far reaching implications on the allocation of resources between the tradable sector and non-tradable sector, between import and export and current account position and balance of payments position in general. It is therefore undesirable to have exchange rate which is determined by speculative elements and not by economic fundamentals of a country.
- Thirdly, the effectiveness of monetary policy contributed to some extent to the inability to conduct an independent monetary policy. The effectiveness of monetary policy is the ability to deal with proper indicator and target. Likewise, the definition of monetary aggregate will change and the relevance of these aggregates will be of less concern. This give rise to the

question which monetary aggregate to monitor and whether any particular monetary aggregate is reliable. There is already much controversy on the strict relationship between money and economic activity and now this is further compounded by the inability to identify which monetary aggregate figures in a permanent relationship.

- Fourthly is the effect of the financial disintermediation whereby funds are no longer raised through the banking system but through the capital market or through the so-called 'private debt securities' which are going to be cheaper and will be a great threat to the banking system. Therefore, monetary policy, which principally worked through the banking system, is going to be less effective because increasingly more and more is being coordinated outside the banking system and have shifted to the capital market in general. This is going to happen and there will be an increased competition among banks and between banks and non-banking institutions in the years ahead.

To manage the monetary and credit shocks and the potential foreign capital inflow effectively, the authorities would need to develop indirect instruments of monetary control. Because of the close technical and operational linkages between the design of monetary policy instruments and operations, and the structure and depth of money markets, including the supporting payment systems, reform of monetary control procedures are accompanied by parallel measures to strengthen money and inter-bank markets and payments systems[29]. Countries with successful financial

[29] Op. Cit.

reforms tended to liberalize monetary controls in stages, ensuring that necessary concomitant reforms were implemented in a timely manner. They also relied on a range of monetary control instruments during the initial stages of reforms. For example, it may be necessary to impose temporary direct restriction on the post-liberalization credit expansion because of its potentially destabilizing effects on both the macroeconomic variables and the balance sheets of the commercial banks. An attempt to constrain credit demand solely through interest rates could result in high real interest rates, thereby encouraging substantial foreign capital inflows, while weakening a bank's loan portfolio. However, countries have generally found it necessary to speed up the introduction of and reliance on indirect monetary controls to help manage the effects of foreign inflows of capital.

In general, there are five major issues in implementing monetary policy following the financial reforms[30]:

1) financial liberalization has increased the volatility of interest rates, stock market prices and exchange rates, and that in turn has increased the degree of uncertainty of financial markets;

2) some new financial market instruments have emerged along with the process of financial deregulation, and these innovations have caused money definitions to become vague;

3) financial liberalization also caused instability in money demand behavior, and that in turn had made it more difficult for the Central Bank to select appropriate intermediate target variable of monetary policy;

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[30] Op. Cit.

4) financial liberalization has changed the importance of the transmission channels of monetary policy and as a result it has become more difficult for the Central Bank to forecast the impact of monetary policy on economic activity; and

5) financial internationalization has led world financial markets to become closely integrated with each other which as a result has caused the domestic economy to face increasing external shocks.

Indeed, financial liberalization emphasized the shift towards market-oriented allocation of resources, exchange rate and interest rate to be determined by market forces and bringing the domestic market closer to the international market in terms of movement of international capital. This has also contributed to the difficulty of maintaining the interest rate differential for some period of time.

III.4 Monetary Policy and Financial Liberalization in major industrial countries

The case for financial liberalization was initiated by McKinnon-Shaw (1973)[31] who highlighted the dangers of financial repression[32]. Prior to the take-off stage and even after the take-off stage of development, many developing countries were characterized by financial repression – which may be defined as a situation in which Government and Central Bank regulations distort the operation of financial markets. These regulations include: ceilings on the nominal rate of interest (making the real rate of interest very low or negative in times of inflation), the imposition of reserve requirements on the commercial banks, limiting their ability to lend, the requirement that the banks lend to the Government to finance budget deficit, and compulsory credit ceilings. The consequence of these restrictions, so the argument goes, is to reduce the flow of funds to the formal financial sector and to distort the most productive allocation of resources, leading to lower levels of savings, investment and growth than otherwise would be the case. To put simply, the financial sector operates inefficiently.

From the mid-70s, many countries underwent financial liberalization and now the number has been quite significant, including not only virtually all the developed countries but also an increasing number of developing ones. The transition toward financial liberalization saw many countries making the transition to a system of market-based interest rates although it needs to be made clear that financial

[31] Mc Kinnon's main argument is that positive (and high) real interest rates are necessary to encourage agents to accumulate money balances, and investment will take place as long as the real interest rates does not exceed the real rate of return on investment. On the other hand, Shaw's argument stresses the importance of financial liberalization for financial deepening, and the effect of high interest rates on the encouragement to save and the discouragement to invest in low-yielding projects. The increased liabilities of the banking system, resulting from higher interest rates enable the banking system to lend more resources for productive investment in a more efficient way.

liberalization is not quite synonymous with market determination of interest rates. Financial liberalization encompasses a range of policies that go well beyond the formal freedom of financial institutions to determine interest rates. These policies include arrangements to spur financial market competition such as freedom of entry of new financial institutions as well as orderly exit of failing institutions; the limitation of reserve liquidity and portfolio requirements to what is necessary for the proper conduct of monetary policy and prudential regulation; and the elimination of preferential credit by the central bank at concession interest rates. On the international side, financial liberalization is associated with the dismantling of capital controls to allow for market-determined financial transactions between residents and non-residents. The removal of capital controls, and the opening up of the market to foreign financial institutions, can have a decisive influence on the behavior of domestic financial markets and, therefore, on the determination of domestic interest rates[33].

In most Western countries in the early 1970s, money supply target was not a definite feature in the conduct of their monetary policy. Only in late 70s was there a clear move towards money supply targets where the United States, the United Kingdom, Germany, France, Switzerland, Canada and the Netherlands began to announce growth rates for the money supply. What happened was that the adoption of monetary targets was seen as a response to the failings of economic policy in the early 1970s. The collapse of the fixed exchange rate system of Bretton Woods, the worsening of the inflation-unemployment trade-off and the failure of interventionist all called for a new approach. That fixed money supply targets could provide the answer was encouraged by the growth of monetarism and the evidence that at least in

[32] A. P. Thirlwall. Economics Development, 1994.

the long run, the link between the money supply and prices was a close one. In addition, the existence of high rates of inflation in the early 1970s caused the money supply target to impart a discipline into policy and that monetary target introduce considerable discipline into the economic behavior of all sectors.

However, the substantial liberalization that occurred in financial markets in the major industrial countries necessitated major changes in the implementation of monetary policy in these countries. In the passage of time (in particular the experience since 1980), the empirical relationships previously taken to support a central role for money in the monetary policy process has been altered. Before 1980s, there was widespread agreement that fluctuations in money did contain at least potentially useful information about future income and price movements. In the 1980s, however, the empirical basis underlying that agreement disappeared such that the relationships that would have to hold in order to warrant using money as the central focus of monetary policy had diminished. Towards this end, many countries have sharpened their focus on interest rates as the operating objective as the interest rates were found to be a more useful variable for predicting subsequent fluctuations in income or prices. In addition, there also appeared to be the conviction that even where monetary aggregates were still an essential element of policy strategy, a more quantitatively oriented approach policy implementation would result in greater volatility in short term interest rates with little or no gain in terms of medium-term controllability of intermediate objectives[34].

[33] Galbis, Vicente. 'High real Interest Rates under financial liberalization: Is there a problem?' SEACEN Occasional paper no.22, 1998.
[34] Bank for International Settlements. 'Implementation and Tactics of monetary policy'. Conference Papers vol.3, March 1997.

Currently, four monetary strategies can be distinguished. The first is monetary targeting in which monetary policy is geared to a publicly announced intermediate monetary target. This strategy was adopted by many countries in the second half of the 1970s. However, during the 1980s, monetary targeting was abandoned in a number of countries by instability of money demand functions due to financial deregulation and innovation[35]. In recent years, some of these countries switched to a strategy of direct inflation targeting, in which explicit inflation targets are publicly announced (New Zealand, Canada, Australia, the United Kingdom, Sweden, Finland and Spain). Other countries adopted a strategy based on a wide range of monetary indicators (the United States and Japan). The strategy of monetary targeting is still in use in Germany, Greece, Italy and Switzerland. In most smaller European countries, the central banks focus on exchange rates as intermediate targets (Table III.1).

Table III.1

Monetary strategy in 21 OECD countries

Australia	P	Japan	E
Austria	Er	Netherlands	Er
Belgium	Er	New Zealand	P
Canada	P	Norway	Er
Denmark	Er	Portugal	Er
Finland	P/Er	Spain	P/Er
France	Er	Sweden	P/Er
Germany	M	Switzerland	M
Greece	M	United Kingdom	P
Ireland	Er	United States	E
Italy	M		

Notation: P:inflation targeting; M: monetary targeting; Er: exchange rate target; E: eclectic strategy

[35] Op. Cit.

The following presentation describes and analyzes the changes in the conduct of monetary policy as well as the instruments and procedures employed to implement monetary policy in the short run by monetary authorities of four major industrial countries - the United Kingdom, the United States, France and Germany. These countries were selected due to significant variations in their monetary policy framework.

In the ***United Kingdom***, the principal objective of U.K. monetary policy is to influence the growth of nominal gross domestic product (GDP) over the medium term as a means of achieving price stability [36]. From the mid-70s until late 1980s, the Bank of England pursued this objective by employing monetary aggregates as intermediate targets. However, as in a number of other countries during the 1980s, the relationships between some of the targeted monetary aggregates and economic activity have been found to be generally unstable and unpredictable. Consequently, the targeting of a broad monetary aggregate (M3 - comprises of notes and coins in circulation with the public plus all sterling deposits including certificate of deposits held by the U.K. private sector with U.K. banks) was suspended in March 1987. However, the authorities still place importance on limiting the growth of the narrowest published monetary aggregate (M0 - defined as all notes and coins in circulation with the public plus banks' till money and banks' operational balances with the Bank of England). The Bank of England sets the annual target growth range for M0. However, in view of the openness of the U.K. economy, the extremely large volume of flows into and out of London capital market, and the associated increased uncertainty surrounding the link between the monetary aggregates and economic performance, have led to a more

[36] 'Implementing Monetary Policy in the United Kingdom', International Monetary Fund Occasional paper no.70, 1990.

broadly based approach to the implementation of monetary policy. In particular, a range of indicators other than monetary aggregates, such as the exchange rate, indicators of the real economy, estimates of real interest rates, the behavior of markets in financial and other assets, and the current course if nominal GDP, have also been used as guides for the stance of monetary policy.

As mentioned above, the decade of broad money targeting in UK was between 1976-1986, after which there was a shift away from strict intermediate monetary targeting. This was the result of the findings that the money-income relationship in the United Kingdom was adversely affected by the effects of financial liberalization in the 1970s and 1980s[37]. That is, in broad terms, the significance of virtually all the indicators of money and credit growth was substantially distorted. More fundamentally, it was found that there was a radical change in the relationship between money and credit growth on the one hand and nominal income on the other. The broader measures of money ceased to be a transactions medium, but became a means of holding wealth. With the demise of explicit monetary targets, money demand equations no longer became the fulcrum of the monetary policy framework. Money remains important in that aggregate money determines the aggregate price level over the medium term. But its importance was no longer seen as being tied to money demand stability.

In the early 1980s, the UK discontinued the use of the minimum lending rate (the rate that the Bank of England lends to the banks which is used as a signal of the Bank of England's stance of monetary policy) and intensified the role of open marke

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[37] Bank of England Quarterly Bulletin, May 1997. 'Information in money', p.175.

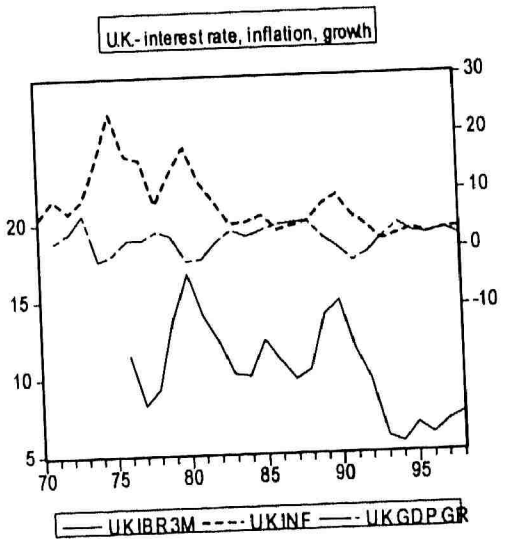
erations, in order to provide additional interest rates flexibility so that financial arkets could respond to shocks in a more timely manner[38]. Since these changes were troduced, little adjustment has been made to the operating procedures even though veral different intermediate targets have been used. In its conduct of open market ansactions, the Bank of England stance of monetary policy is channeled through ignificant discrete changes in the Bank of England's dealing rates - either the rate at vhich it rediscounts bills or its lending rate. In consequence, an upward or lownwards movement in the Bank of England's dealing rates generally feeds through quickly into the wider economy and indicates a change in the stance of monetary policy.

In autumn 1992, the Bank of England introduced a new monetary framework, which is an explicit target for underlying inflation. In this framework, no single indicator assumes primacy as a measure of monetary conditions. Instead, policy decisions are based on an eclectic mix of indicators – monetary and real, quantitative and qualitative – which together offer a guide to future inflation. Monetary and credit aggregates are among these indicators. However, these aggregates are not simply used without any justification. To know how important a role the money and credit aggregates ought to play in the assessment of inflation, the determination of the information content of these variables over future real and nominal magnitudes were first verified. What Bank of England does in their reliance over the money variable is to use the role of money as an indicator of monetary conditions over the medium term, the period over which they think money determines inflation in a causal sense. This is how the monitoring ranges for broad and narrow money in the new monetary

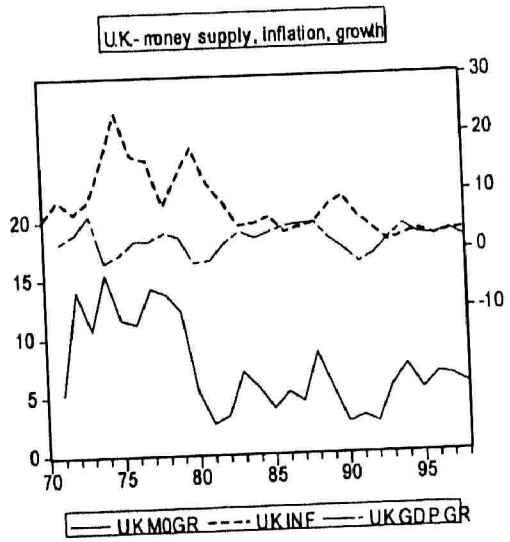
[38] Op. Cit.

framework have been used. The Bank of England now relies on narrow money M0 and broad money M4 - which comprises of deposits held with U.K. banks and building societies by the domestic non-bank private sector. Developments in money, interest rate, inflation and growth in the U.K. economy over the period since 1970 is as shown in the graphs below:

GRAPH III.1



GRAPH III.2



In the ***United States***, since the mid-70s, monetary aggregates have been the intermediate targets of Federal Reserve policy. The Federal Reserve generally has established target ranges for the growth rates of M1, M2 and M3. (M1 consists of currency, travellers checks, demand deposits, and other checkable deposits. M2 is 1 plus savings accounts, money market deposit accounts, general purpose and broker/dealer money market mutual funds, small (less than $100,000) time deposits, overnight repurchase agreements, and overnight Eurodollars issued to U.S. residents by foreign branches of U.S. banks. M3 is M2 plus large time deposits, institution-only money market mutual funds, term repurchase agreements, and term Eurodollars

issued to U.S. residents). During the 1980s, however, the relationship between monetary aggregates and economic activity became less stable and less predictable, especially in the short run. In light of the increased uncertainty surrounding the link between money and economic activity, the Federal Reserve has not set a target range for M1 since 1986, widened the ranges for both M2 and M3 in 1989 and 1990[39]. Furthermore, the Federal Reserve has broadened the scope of the variables that it monitors in formulating and evaluating policy to include a wide range of what it considers to be leading indicators of the course of the economy and inflation, such as commodity prices, exchange rates, the yield curve, and indicators of incipient pressures in the real economy[40].

Since the advent of monetary targeting, the Federal Reserves have used three different operating procedures to implement monetary policy. During most of the 1970s that is prior to October 1979, the Federal Reserve conducted open market operations to maintain the federal funds rate – the overnight interbank rate – within relatively narrow bands to influence the money supply. However, as the control of inflation of inflation became increasingly more difficult, the Federal Reserve adopted a new procedure in October 1979 designed to improve monetary control. The Federal Reserve switched to non-borrowed reserves operating target, with greater emphasis on monetary aggregates as intermediate targets, primarily to enhance its ability to reduce the rate of inflation. As the financial innovation and deregulation of the early 1980s rendered this approach less effective and as inflation subsided, the Federal Reserve changed its operating objective to borrowing by banks from the Federal Reserve, a

[39] 'Implementing Monetary Policy in the United States', IMF Occasional paper no.70, 1990, p.24.
[40] Op. Cit.

procedure that involves greater smoothing of short term interest rate fluctuations and hence is very similar to targeting the federal funds rate[41].

The event of financial liberalization produced a situation in which many of the traditional indicators of monetary policy and many of the once popular 'rules of thumb' relating to the workings of policy simply are no longer reliable. Those problems have been particularly evident in the breakdown in the relationship between the various money and credit aggregates and nominal income. In addition, there was also some evidence of sharp variations in the behavior of the velocity of money and credit over the decade in the 1980s. The role of monetary targeting in the conduct of monetary policy was diminished in practice in the mid-80s because of the disruptive impact of interest rate deregulation on the predictability of the relationship between the monetary aggregates and economic activity [42]. The period of non-borrowed reserve targeting ended in late 1982. The non-borrowed reserve procedure was dropped at the same time that M1 was de-emphasized in relation to the other monetary aggregates as an intermediate target of monetary policy. The Federal Reserve monetary targeting strategy was based on the assumption of a steady and predictable relationship in practice between the monetary aggregates and broader measures of aggregate economic activity. M1 was de-emphasized as a monetary target in the fall of 1982 because there was a growing concern at the time that the predictability of the relation between M1 and the economy was breaking down. More precisely, there was a growing concern that the public's demand for the assets included in M1, given the aggregate level of national income, was becoming unpredictable. As a result, by late 1986, the Federal Reserve's monetary targeting

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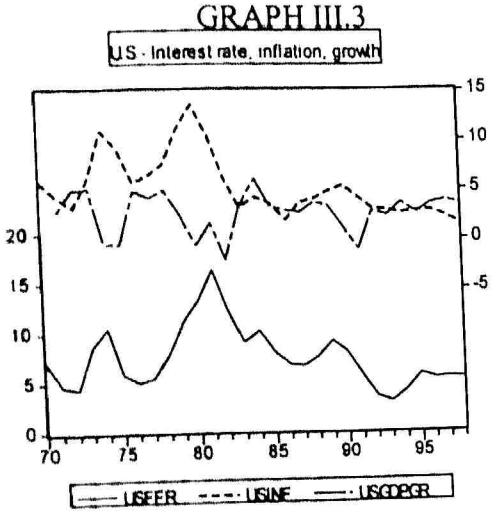
[41] Op.Cit.
[42] Broaddus, Alfred. A Primer on the Fed. Federal Reserve Bank of Richmond, 1988.

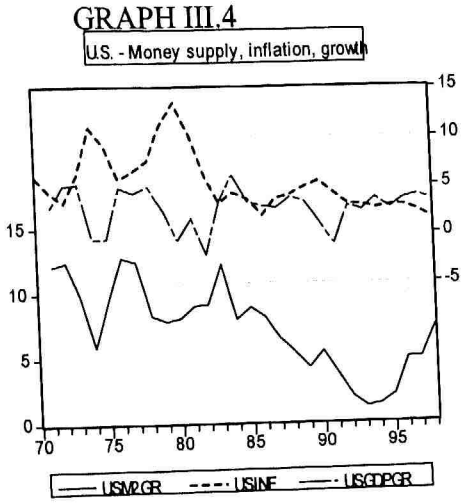
strategy had been significantly diluted. In effect, some weight was given to the behavior of the broader M2 and M3 aggregates. However, the strategy of monetary policy was then essentially to react in a discretionary manner to the signals provided not only by the monetary aggregates but also a number of other economic and financial variables.

Under the new operating procedure, the Federal Reserve actively employed open market operations in which the Federal Reserve buys or sells securities, thereby adding reserves to, or draining reserves from, the banking system. Under this procedure, a greater degree of reserve restraint, that is, a tighter monetary policy stance, corresponds to a higher borrowing objective. For a given discount rate, this would be accomplished through open market operations that would reduce non-borrowed reserves, force additional borrowing at the discount window, and thereby exert upward pressure on the federal funds rate, widening the spread between the federal funds rate and the discount rate. The higher federal funds rate then leads to a higher level of interest rates that is intended to slow growth in the monetary aggregates and the overall economy, thereby exerting some restraint on actual and potential inflationary pressures. Similarly, a more accommodative policy stance, corresponds to a lower borrowing objective, a lower federal funds rate, increased growth in the monetary aggregate and stimulus to the real economy. Developments in money supply, interest rate, inflation and growth in the U.S. economy since 1970 is as shown in the graphs below:

GRAPH III.3



GRAPH III.4

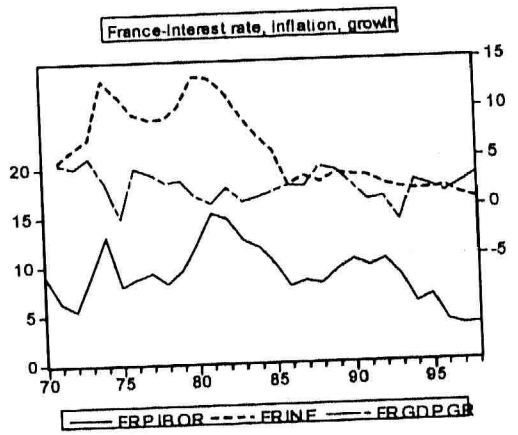


In ***France***, as a consequence of movements of financial liberalization, deregulation and innovation, the instruments and procedures of French monetary policy underwent drastic changes in the mid-80s[43]. Its conduct of monetary policy used two intermediate objectives, the money supply and the exchange rate. Up to 1990, the domestic objective was based on a growth target for M2 money aggregate, but as a consequence of financial innovation and deregulation, M3 was chosen as the target. However, in view of the two factors and the fact that the external objective was more binding in the short-term conduct of monetary policy, from 1993 onwards, the monetary target was assigned a medium term objective while interest rates was used as the intermediate variable of monetary control and also to provide as a signal of monetary policy stance.

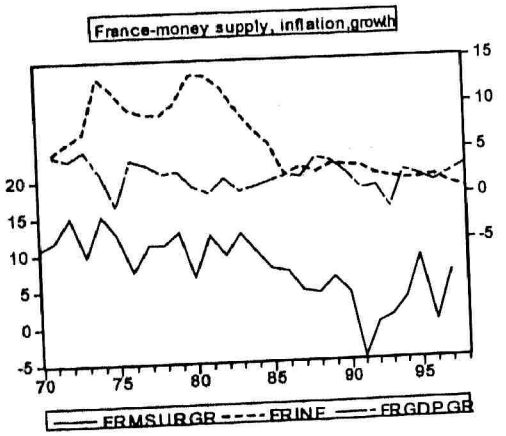
[43] BIS March 1997.

Before 1985, the financial markets were highly segmented and monetary policy was implemented primarily through quantitative credit allocations. This system, which imposed extremely high financial intermediation costs on the French economy, resulted in a loss in international competitiveness as French financial institutions were increasingly unable to meet the needs of a domestic economy faced with growing international competition. In part to alleviate this problem, the French financial system was significantly restructured by consolidating and liberalizing financial markets and replacing credit allocations with open market operations as the primary instrument of monetary policy. Developments in the money supply, interest rate, inflation and growth in France economy since 1970 is as shown in the graphs below:

GRAPH III.5



GRAPH III.6



Bundesbank's monetary targetting

For more than two decades, the Deutsche Bundesbank has followed a strategy of pre-announcing targets for the growth in broad money. The stable economic environment contributed to the stability of the monetary system in general and money demand in particular, thus facilitating the maintenance of the strategy. Monetary policy in Germany is bound by statute to have the aim of 'safeguarding the currency', which is interpreted to mean price stability. Based on an article by Otmar Issing (1997)[44], the Bundesbank's record in safeguarding the currency has itself facilitated the strategy of monetary targeting, which was said to be true in several respects. First, low and stable inflation in Germany did not encourage innovations, which were prompted precisely by the desire to avoid the consequences of inflation. German inflation rates, which have historically been low, combined with their low variances have therefore reduced the volatility in the demand for money. Second, Germany's stability record was the crucial factor in the Deutsche Mark becoming the anchor currency in Europe, which in turn allowed the Bundesbank to pursue a largely independent monetary policy. Whereas for other central banks, exchange rate targeting assumed a key role, in Germany a monetary aggregate could consistently be used as the nominal anchor. Finally, Germany's stability record also contributed to the adoption of mechanism and policy approaches that increase the credibility of monetary targeting.

In contrast to many other countries, liberalization of the financial markets and cross-border money and capital movements was largely complete in Germany at the

[44] Issing, Otmar. 'Monetary Targetting in Germany: The stability of monetary policy and of the monetary system'. Journal of Monetary Economics, Volume 39, No.1, June 1997.

beginning of the 1970s. The Deutsche Mark had been made convertible at the end of 1958, cross-border capital movements had been fully liberalized, and interest rate decontrol was completed in 1967. According to Issing, the fact that the regulatory framework in Germany remained largely unchanged seems to be a key factor in explaining why monetary conditions were more stable there than elsewhere. Furthermore, new financial products, which were introduced abroad as spectacular innovations, generally turned out to be of little relevance in Germany. This is not to say that the process of financial market innovation has come to a stand still in Germany. In fact, from the growth of short-term bank debt securities in the early 1980s and the expansion of Euro-deposits held by German non-banks to recent changes in certain characteristics of savings deposits, constant challenges have arisen for the concept of the German money stock.

The approach to the strategy of pre-announcing targets for the growth of broad money has been followed ever since with only a few technical modifications as can be seen from Table III.2. Important steps involved in determining the target include the definition of a suitable monetary aggregate, estimating an appropriate growth rate for the chosen aggregate, and the formulation of the target. The Bundesbank has displayed considerable continuity, and flexibility, in how it approaches these issues and how it operates in financial markets to achieve a given target.

Table III.2 : Germany - Monetary targets and their implementation

(in percentages)

	Target of growth of the central bank money stock or the money stock M3 [a]			Actual growth (rounded figures)		
Year	in the course of the year [b]	as an annual average	more precise Definition during the year	in the course of the year [b]	as an annual average	Target achieved
1975	8	-	-	10	-	no
1976	-	8	-	-	9	no
1977	-	8	-	-	9	no
1978	-	8	-	-	11	no
1979	6-9	-	Lower limit	6	-	yes
1980	5-8	-	Lower limit	5	-	yes
1981	4-7	-	Lower half	4	-	yes
1982	4-7	-	Upper half	6	-	yes
1983	4-7	-	Upper half	7	-	yes
1984	4-6	-	-	5	-	yes
1985	3-5	-	-	5	-	yes
1986	3.5-5.5	-	-	8	-	no
1987	3-6	-	-	8	-	no
1988	3-6	-	-	7	-	no
1989	about 5	-	-	5	-	yes
1990	4-6	-	-	6	-	yes
1991 [c]	3-5	-	-	5	-	yes
1992	3.5-5.5	-	-	9	-	No
1993	4.5-6.5	-	-	7	-	No
1994	4-6	-	-	6	-	Yes
1995	4-6	-	-	2	-	No
1996	4-7	-	-		-	

a From 1988: money stoc M3

b Between the fourth quarter of the previous year and the fourth quarter of the current year; 1975: December 1974 to December 1975.

c In accordance with the adjustment of the monetary target in July 1991.

SOURCE : extracted from Otmar Issing, JME 39 (1997)

c:table 1.xls

A *sine qua non* for the operational application of monetary targeting is the definition of a suitable monetary aggregate. The aggregate should first be sufficiently sensitive to interest rates changes for the central bank to be able to control it by means of its various instruments and second, display a stable relationship over time to the movement of the overall price level. From the outset, the Bundesbank has favored broad monetary aggregates. The choice of such an aggregate was based not least on the perception that in countries with a highly developed financial sector, large scale switching often occurs between saving, time and sight deposits. Hence, the pace of growth of narrow money aggregates may fluctuate considerably over the course of an interest rate cycle.

Between 1975 and 1987 the Bundesbank targeted the central bank money stock, defined as currency in circulation plus required reserves as calculated, using the (constant) reserve ratios from January 1974. This aggregate can best be interpreted as a kind of weighted and scaled M3. As currency in circulation, unlike the other components, was included with full weight, this aggregate displayed considerable 'currency bias'. The Bundesbank was increasingly bothered by this, notably in the second half of the 1980s, when a number of external factors (notably demand for Deutsche Mark currency abroad) boosted the stock of currency in circulation. For this reason, the Bundesbank decided in 1988 to make aggregate M3 the center of its deliberation. The M3 is simply an aggregate and unweighted liability components.

In the determination of the money growth target, the Bundesbank recognized the importance of adopting a simple and transparent method for deriving the annual monetary target. The targeted growth rate is the sum of the predicted growth in

potential output, the normative rate of inflation that is acceptable in the medium term, and the trend rate of change in the velocity of circulation of money. The Bundesbank defines potential output to be the overall level of output that can be generated with given technology and capital stock and normal utilization of factors of production. The annual exercise of deriving the monetary target growth of potential output should yield a forecast for the coming year. In practice, the forecast is based on an estimated model of overall output as a function of two input factors, namely labor and capital. The Bundesbank's monetary targets include a normative, medium term rate of inflation of not more than 2%. Such a rate, on the one hand, allows for some inaccuracy in the measurement of inflation, and on the other, is low enough that any residual inflation should not lead to allocative distortions or impede economic activity. Finally, the Bundesbank allows for a falling trend in the velocity of circulation of money by adding (currently) one percentage point to its annual targets for monetary growth. If the money stock can be kept on the target path calculated in this way, the monetary conditions should be met for corresponding real growth to be compatible with monetary stability.

In the implementation of policy, the Bundesbank steers the quantity of money within the announced range only indirectly through its influence on the interbank market for central bank money. The Bundesbank was a leader in the move to indirec market-based instruments, and direct controls had all been eliminated before 1974 Since 1985, the Bundesbank has relied on its open market repurchase operations a the main means of controlling short-term money market rates. Short-term mone market rates are approximately bounded by the official rates available at the Lombar and discount facilities, which are both long established central bank instruments. Tl

Lombard rate is the penal rate at which banks may obtain liquidity at short notice to meet temporary shortfalls in their reserve balances (notably at the end of the monthly required reserve holding period). The discount facility offers banks refinancing at somewhat below market rates, but access is limited. Thus, the Bundesbank has maintained considerable stability not only in its monetary policy strategy, but also in the institutional framework of instruments that it uses.

In Issing's article, he wrote that the constancy of approach and responsiveness in application displayed by the Bundesbank is in contrast to the experience of many central banks over the past two decades. A number of other central banks have tried the concept of intermediate monetary targets, but most abandoned this strategy after some time. There have been many attempts at explaining why monetary targeting strategies have failed, but often the explanation lies in the specific situation of the countries concerned. In this connection, Issing quoted Goodhart's Law, where according to this law :

' ... *any observed statistical regularity will tend to collapse*

once pressure is placed upon it for control purposes'

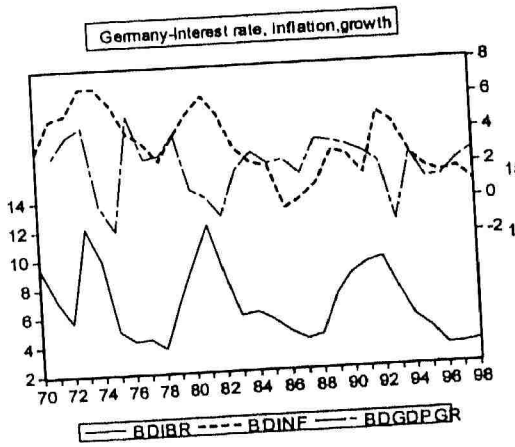
He viewed that Goodhart's Law can be interpreted as a special case of the well-known Lucas critique[45] of the rather mechanistic view of economic policy in traditional macro econometric models.

[45] According to Lucas (1976), ' given that the structure of an econometric model consists of optimal decision rules of economic agents, and that optimal decision rules vary systematically with changes in the structure of series relevant to the decision maker, it follows that any change in policy will systematically alter the structure of econometric models'

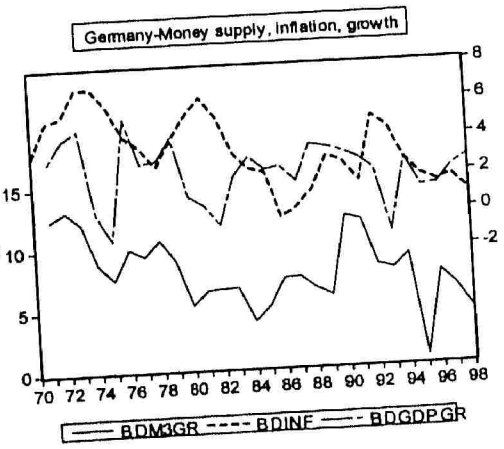
Issing further commented that the appeal of Goodhart's Law hypothesis has to be seen against the backdrop of experience gained in the United Kingdom. In the 1970s, the Bank of England, backed by the findings of empirical studies, made the money stock M3 the focus of its monetary policy strategy. At the same time, however, a number of administrative restrictions and regulations of the money and capital markets were abolished and it rapidly became apparent that the money demand functions which had previously been stable were showing a dramatic deterioration of their explanatory and forecasting qualities. In the first half of the 1980s, the Bank of England encountered similar problems when the new target aggregates LM3 and M0 also displayed unpredictable behavior in the wake of further deregulation and financial innovation.

On the other hand, experience in Germany has been quite different. Issing found that most empirical studies analyzing the stability of the demand for money come to reassuring conclusions. Where structural breaks have been found, they were associated with external shocks such as the end of the Bretton woods system. Even the sharp break of German unification, caused only a temporary disruption of this basic macroeconomic relationship, but no permanent instability of the demand for money. Issing concluded that the Bundesbank, in its conduct of monetary policy, has not succeeded over the past decades in defending price stability in an ideal way, but at least better than the great majority of other countries. It can rather be assumed that the Bundesbank's strong record in safeguarding the currency has itself facilitated and strengthens the strategy of monetary targeting. Developments in the money supply, interest rate, inflation and growth in the German economy since 1970 is as shown the graphs below:

GRAPH III.7



GRAPH III.8



In conclusion, the monetary authorities in the four countries above use a monetary aggregate as an intermediate target of policy and have established target ranges for the growth of the chosen aggregate or aggregates. The aggregates targeted vary from the very narrow (M0, the monetary base) in the United Kingdom to the very broad (M3) in Germany. With the exception of the United Kingdom, which has moved from targeting a very broad aggregate (M3) to a very narrow one, the monetary authorities in the three other countries have tended to de-emphasize narrow aggregates as targets during the 1980s in favor of broader ones. This change in focus to broader aggregates has been motivated primarily by the increased uncertainty concerning the link between narrower monetary aggregates and the ultimate objectives of policy, typically real gross national product and inflation, that has evolved during the 1980s.

Regardless of which variables are important for the formulation of monetary policy, short-term interest rates play a major role in the operating procedure in each country. First, short-term interest rates are a major influence on the demand for

money and therefore are very important in achieving the path desired for growth in the aggregates. Second, even if target ranges for growth in the monetary aggregates are regarded more as a guide than an objective, changes in short term interest rates have a direct impact on economic activity. Thus, changes in interest rates generated by the central bank will ultimately be transmitted to the economy, either dampening or quickening the pace of economic activity. In other words, given the increased uncertainty regarding the link between monetary aggregates and economic activity, short-term interest rates have at times been considered intermediate targets as well as operating instruments. While the monetary authorities in the four major industrial countries tend to moderate excessive fluctuations in short term interest rates, they do not aim at controlling interest rates inflexibly. On the contrary, the operating procedures in these countries generally allow short-term rates to be primarily market determined while at the same time, permit monetary authorities to influence the range within which these rates fluctuate. Given the prominent role played by interest rates in the short run implementation of monetary policy in these countries, it should not be surprising that changes in policy stances are typically signaled by changes in short term interest rates. These signals, however, cannot be identified with the same degree of precision in each country.

A summary of the official and key money market interest rates of the four major industrial countries mentioned above is illustrated in Table III.3 below:

Table III.3

Four Major Industrial Countries: Official and Key Money Market Interest rates

Country	Rate	Description
United Kingdom	Bank of England Dealing rates	The interest rates at which the Bank of England either rediscount bills of different maturities or lends to discount houses.
United States	Discount rate	The interest rate charged by the Federal Reserve on its short-term lending to Depository institutions
	Federal funds rate	The interest rate charged in the interbank Market where depository institutions with reserve deficiencies borrow from institutions with excess reserves.
France	rate on tender for Repo	The interest rate established for official repo, offered at the discretion of the Bank of France. This rate typically serves as the lower bound for short term market rates.
	Rate on 5-10 day Repo	The interest rate set by the Bank of France for 5-10 day repo available as emergency funding at the discretion of financial institutions, This rate is typically above short term market rates and generally serves as an upper bound.
Germany, Federal Republic of	Discount rate	The interest rate charged by the Bundesbank for rediscounting eligible assets of financial Institutions. This rate is typically the lower bound for short term market rates.
	Lombard rate	The interest rate charged by the Bundesbank for Collateralized short term loans to financial institutions designed to bridge temporary rserve shortages. This rate is typically higher than short term market interest rats and generally serves as an upper bound.

Source: IMF 1990

III.5 Monetary Policy and Financial liberalization in selected ASEAN countries

As the Asean region moved into a faster growth track in the last decade, the pressure to liberalize the financial sector has intensified. In several countries, growth in this sector could not keep pace with the real sector as the existing structure gave rise to distortions, particularly in allocating financial resources. In addition, with the unprecedented ease of international capital flows, the countries are no longer able to conduct policy independently, thereby exposing their financial sector to the volatile external developments. At the same time, the countries are increasingly urged to open up their financial markets to the much bigger, wider network and more experienced international institutions. All these factors point to one policy prescription - that the domestic financial sector must be made more competitive. To achieve this goal, the countries have implemented significant financial liberalization and reforms that inevitably affect the conduct of monetary policy. This section focuses on two countries, Indonesia and Thailand, and reviews briefly the change in their monetary framework as they implement financial reforms.

Indonesia's financial system has gone through the transition from one based on a high degree of official interventions to one where decisions about credit allocation are increasingly market-based. In addition, monetary management has also gone through the process of transition from relying on direct monetary instruments to indirect monetary instruments. Like in many other countries, financial reforms, the broadening and deepening of domestic money and capital markets, and the globalization of international markets have strong implications on the monetary management in Indonesia. The proliferation of new and more sophisticated financial

instruments and the development of non-bank financial institutions bear testimony to this development. As a result, the distinct function and role of commercial banks as financial intermediaries, especially in relation to the conduct of monetary policy has been weakened by the liberalization of the financial sector. Financial reforms do not only bring about innovations in financial instruments and financial institutions, they also alter the way in which monetary policy is conducted. Previously, control of commercial banks' credit was commonly used as the major instrument to transmit monetary policy, partly because interest rate was mostly regulated and credit expansion was controlled by credit ceilings. However, the significant development of financial system, which also includes commercial banks and non-bank financial institutions, together with increasing international capital flows, controlling domestic credit and thus money supply has become increasingly difficult.

The objective of monetary policy in Indonesia is to support the attainment of the national macroeconomics objectives, namely low inflation, sustainable balance of payments and adequate economic growth. In other words, monetary policy objective is to provide the necessary liquidity to facilitate adequate economic growth without causing internal as well as external imbalances in the economy. Indonesia's annual monetary program is based on money demand function that relates money to ultimate targets of output and inflation, as well as appropriate interest rates[46]. The program sets intermediate targets (M1 and M2), operational targets (M0), and factors affecting the monetary base (M0) and M2 that are consistent with the ultimate targets.

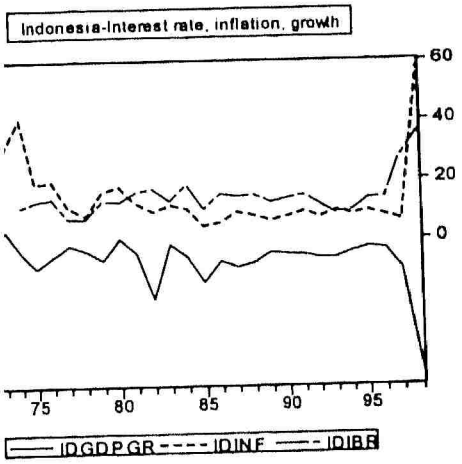
[46] Bank for International Settlements. 'Implementation and Tactics of monetary policy'. Conference papers vol.3, March 1997.

The transmission channel of monetary policy before financial reforms was money supply (M1 and M2) through credits while after the major financial reforms, reserve money has been used as transmission channel[47]. As far as monetary instruments are concerned, before the major financial reforms of 1974 to 1983, the Government conducted a direct monetary policy through the implementation of monetary instruments. These instruments comprised ceilings on bank credits, the determination of interest rates of state banks, and the provision of liquidity credits (subsidized interest rates) to priority sectors. After the major financial reforms, the Government discontinued the use of credit ceilings and interest rate controls and limited the use of liquidity credits. Instead, the authorities adopted indirect monetary instruments, namely open market operations, discount facilities and moral suasion. The reliance on open market operations however is limited by the unavailability of government debt instruments arising from the adherence of a balanced budget policy in Indonesia. Therefore, Bank Indonesia began to sell BI Certificates (SBI) and buy Money Market Securities. Currently, monetary operations relied on open market operations which are carried out daily on the basis of the prevailing monetary situation and guided by the monetary program which sets the targets for monetary aggregates over a certain time period consistent with the final objectives. This monetary technique makes Indonesia different in their monetary framework in that Indonesia continues to rely on a fix monetary program despite making progress in moving towards market-based conduct of monetary operations. This hampers the move towards relying on interest rate as the main operating procedures.

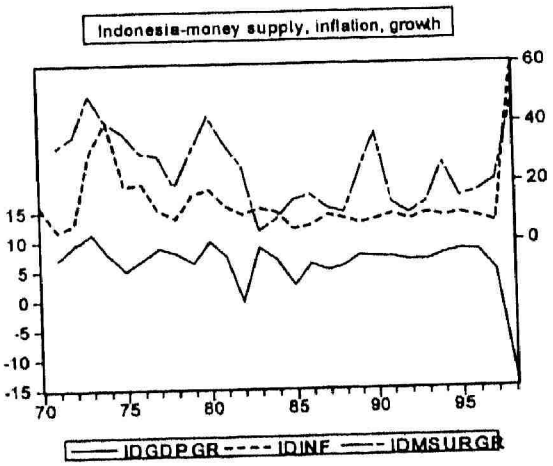
[47] Soekarni, Mulyana.Financial Reforms and Transmission Mechanism of monetary policy in the SEACEN countries, 1997.

evelopments of money supply, interest rate, inflation and growth in the in economy since 1970 is as shown in the graphs below:

GRAPH III.9



GRAPH III.10



In ***Thailand***, the overall objective of monetary policy is to achieve sustainable nic growth, with reasonable level of internal and external stability. Of ılar concern is price stability, which is defined as low and stable rate of ɔn. In the 1980s, the Bank of Thailand used money supply, bank credits and e money as intermediate targets. During this period, a relatively stable and table relationship between money variables and real variables was observed . helped maintain the effectiveness of monetary policy via the control of reserve y. In addition, structural adjustment measures were implemented to remove the ɛnt rigidities and set the stage for a sustainable long term growth. When the ɔmy had stabilized in late 1980s, the need to control reserve money in such a ɔus manner became less urgent. This, coupled with financial liberalization and

domestic financial reforms have to some extent destabilized the behavior of demand for money and make it less predictable. Accordingly, the quantitative targeting technique seemed to lose its efficacy[48]. The Bank of Thailand has therefore been focusing more on money market liquidity and short-term repurchase and inter-bank lending rates in a short horizon, while treating monetary aggregates as information variables. Other indicators are relied upon in assessing economic conditions such as the production and investment indices, capacity utilization, loan demand of prime customers, and money market conditions.

Until late 1980s, the Thai financial system was still heavily regulated. Monetary management was conducted largely through the use of direct control measures. Interest rate ceilings were imposed on loans and deposits of banks and finance companies. Selective credit policy was used to direct banks to lend a prescribed portion of deposits to the agricultural sector. Interest rates on loans to the priority sector were capped below the market rates. The direct approach to monetary control was changed drastically since 1989 with the drive towards financial liberalization. Most significantly, interest rate ceilings were gradually lifted until the interest rates became completely free in 1992. The selection credit policy in favor of the agriculture sector was relaxed to the extent that it has now become virtually non-binding. Since the use of direct control measures have been largely abandoned, relatively the Bank of Thailand continued to conduct its money market and credit operations through the repurchase market, loan window, refinancing and other credit facilities and foreign exchange transactions.

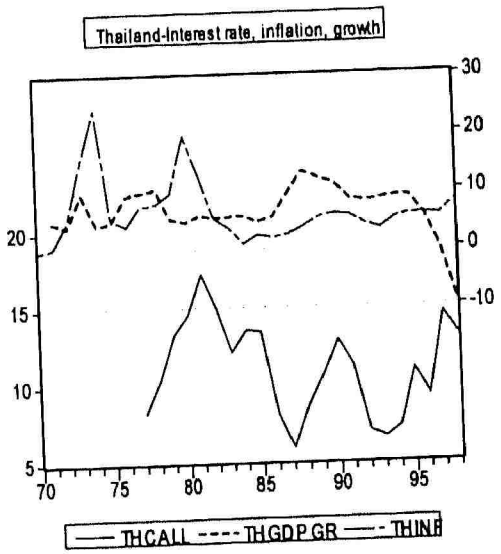
[48] Op. cit.

A study on the inter-bank rate and domestic credit shock on the real economic activity of Thailand revealed that the responses of the economic activity variables to the inter-bank rate shock seemed to be more distinctive after liberalization in 1990. The adjustments of domestic credit and price seemed to be more sensitive to shock after liberalization. Accordingly, the response of real variables to the domestic credit shock was more significant after financial liberalization. However, the study concluded that interest rate policy seemed to be more efficient than credit policy, especially after financial liberalization.

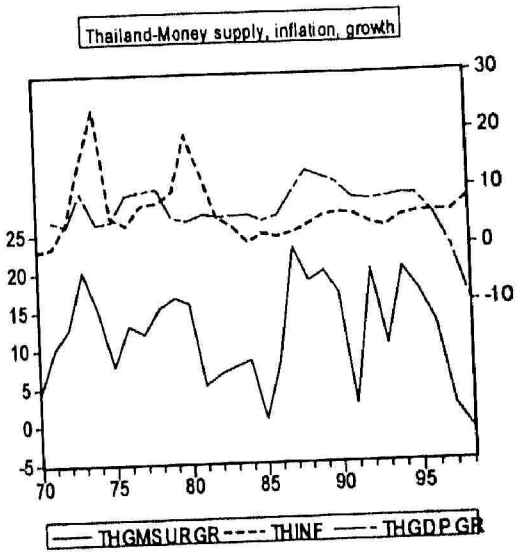
Although monetary policy management has so far proved adequate in influencing domestic financial conditions, new instruments for monetary control was said to be needed in order to cope with the huge and volatile movement of foreign capital. As a result, Bank of Thailand, has widened its range of market-based monetary policy instruments so as to improve the effectiveness of monetary management. In this regard, starting with the foreign exchange swaps, new methods of monetary operations have been used effectively, so as to influence the liquidity of the money market. Bank of Thailand bonds with maturity ranging from 1 month to 2 years have been auctioned every Friday since August 1995. This approach provides the Bank of Thailand with an additional channel to absorb liquidity at its own initiative and provides an essential operational framework that will help develop the securities market. Nonetheless, although the interest rate in Thailand has been identified as a major channel of monetary transmission, domestic interest rates are largely influenced by foreign interest rates. Moreover, the wealth effects seemed to exert a stronger impact on household saving behavior, and seemed to be a major consideration in the conduct of monetary policy.

Developments in money supply, interest rates, inflation and growth in the Thai economy since 1970 is as shown in the graphs below:

GRAPH III.11



GRAPH III.12



III.6 Empirical Findings on the effect of financial liberalization on Money, Income, Prices and Interest Rates

The issue of the influence of money on price changes and changes in the level of output has attracted much interest and debate among economists and policymakers over the past decades. This simple relationship which is akin to the quantity theory of money equation has formed as the basis for many a study on macroeconomic analysis and research, and the establishment and findings of such relationship are useful and provide important information for policymakers. Since the link between money and other economic variables differ from one country to another, the common interest is to determine findings that over the long run, control of the growth of money would have an effect on the rate of economic growth and inflation. Confirmation over this relationship would facilitate and assist policymakers, in a way, in determining the sustainable growth path of the country via appropriate conduct of monetary policy. No doubt the finding is only a statistical one and not to be taken at face value and definitely is subject to all the statistical problems, but it would nevertheless guide policymakers in the process of policy formulation. It is of the same interest that this paper is actually an attempt to investigate whether there is a stable and systematic relationship between money and income or prices in Malaysia in the light of financial liberalization such that money becomes a useful indicator to forecast economic activity. The findings would therefore give some affirmation as to the role of monetary policy in Malaysia in influencing the level of output in the economy.

Becketti and Morris[49] investigate the money-output relationship for the United States following previous research such as by Sims (1972, 1980) who introduced the debatable Granger test, and by Friedman and Kuttner who found that money does not make a statistically significant contribution to forecast real growth especially in the 1980s onwards. Based on Becketti and Morris' research, they found that previous studies suggested that money's predictive power has disappeared especially when data from the 1980s were included. This period seemed to be a significant contributory factor to the loss in the usefulness of money variable because during the late 1970s and early 1980s, the Fed changed its operating procedure by emphasizing on short-term interest rates. However, excluding data during these periods, Becketti and Morris found that the Granger test on their regressions were significant at the 2 percent level which implied that money still forecasts economic activity. They also undertook a Chow test to find evidence whether the relationship between real growth and other macroeconomic variables, including money, was the same in the 1980s and 1990s as it was in the 1960s and 1970s. In particular, the Chow test was used to see whether the coefficients in the Granger test regression changed after 1982. If the coefficients are significantly different after 1982, then the relationship between real growth and the explanatory variables in the regression is different after 1982. Their results showed that none of the tests were significant at the conventional 5 percent level.

Another study on money growth and real output growth (McCandless and Werbert, 1995)[50] concluded that in the long run, there is no correlation between the growth rates of money and real output. This holds across all definitions of money but

[49] Becketti, Sean and Morris, Charles. 'Does money still forecast Economic Activity?' Federal Reserve Bank of Kansas City Economic Review, Fourth Quarter 1992.
[50] Mc Candless Jr, George T. and Webert, Warren E.. 'Some Monetary Facts'. Federal Reserve Bank of Minneapolis Quarterly Review, Summer 1995.

not for a sub-sample of OECD countries where the correlation was found to be positive. From this review, it was also found that several studies[51] on the relationship between money growth and real output growth showed mixed and ambiguous results.

Similar to the study by Becketti and Morris, Friedman and Kuttner's findings also showed that over the passage of time, in particular, the experience since 1980 has altered familiar empirical relationships previously taken to support a central role for money in the monetary policy process. The paper seeks to establish whether fluctuations in money or interest rates are useful for predicting subsequent fluctuations in income or prices. Although it was not explicitly indicated that the effect of the underlying weakness of the empirical relationships connecting money to income or prices could be attributable to financial liberalization and innovations, the authors did indicate that the economic behavior has changed. That the events of the 1980s have proved so subversive to what had almost come to be standard ways of thinking about monetary policy (that there was widespread agreement that fluctuations in money did contain at least potentially useful information about future income and price movements) no longer holds when empirical investigation based on sample periods include the 1980s, not just in the United States but in many other countries as well. In fact, the environment that central banks operate in has changed, including the Federal Reserve System in the United States, which have also altered or abandoned the ways in which they had previously relied on money to make policy. The paper's finding is that the positive results for the monetary aggregates that are familiar from earlier time periods do not hold up when the sample is extended to include data from the 1980s. A further result is that the difference between the

[51] Kormendi and Meguire, 1985, Dwyer and Hafer, 1988 and Poirier, 1991 in Becketti and Morris.

commercial paper rate and the Treasury bill rate does contain incremental information about real income (but not prices). Furthermore, the paper's focus on long run relationship to test for cointegration of movements of money and income also revealed that the relationships that would have to hold in order to warrant using money as the central focus of monetary policy disappear when the analysis includes data from the 1980s.

Estrella and Mishkin [52] also showed similar results for the United States. Their empirical results showed that in the United States since 1979, there is a lack of stability in the money relationships. Their findings revealed that the monetary aggregates fall considerably short of even the requirements of being an information variables. More controversial is their results that the German's case is similar to those for the United States, which is hardly more favorable for the use of M3 as information variable and do not exhibit any obvious significance in the period since 1979. However, they concluded that monetary aggregates, monetary base and M2 in particular currently could not be used in a straightforward way for monetary policy purposes. They argued that whatever their informational content may have been in earlier time periods, they do not seem to provide adequate an consistent information at present in the United States. The inability of monetary aggregates to perform well as straight forward information variables in recent periods has the implication that they cannot be used to signal the stance of monetary policy, an important requirement if money growth targets are to be used as part of a strategy to increase the transparency of monetary policy to the public and the markets.

[52] Estrella, Arturo and Mishkin, Frederic S. 'Is there a role for monetary aggregates in the conduct of monetary policy?', Journal of Monetary Economics, Volume 40, 1997.

In a recent paper on money, interest rate and income in the Singapore economy[53], it examined the effect that money supply has on economic activity in the country given that monetary policy in Singapore centers on the management of the exchange rate which implicitly assumes that money supply is essentially endogenous and hence changes in money supply have a limited impact on economic activity both in real and nominal terms. This proposition was empirically tested due to the effect of changes on economic behavior including the degree of wage and price flexibility, the elasticity of aggregate demand to interest rates and the stability of the money demand relationships. The findings in the paper confirmed that money (as measured by M2) and interest rates actually have predictive content for future movements in real GDP beyond that already contained in past values of GDP itself, although this relationship established itself only after a lag of about three to seven quarters. In addition, the findings do not provide evidence for the non-neutrality of monetary aggregates in Singapore which suggest the possible use of information in monetary and interest rate variables in predicting future movements in real GDP. The paper also provides a summary of some of the widely quoted empirical studies, which examined the causality between monetary aggregates and economic activity and highlights their differences in methodology. The summary is reproduced as attached in Table III.4.

[53] "Money, Interest rate and Income in the Singapore economy", Monetary Authority of Singapore, July 1999.

Table III.4	Selective Summary of Recent Empirical Studies				
	Friedman & Kuttner (1992)	Bernanke & Blinder (1992)	Feldstein & Stock (1992)	Tallman & Chandra (1996)	Tallman & Chandra (1997)
i) Methodology					
Frequency	Q	M	Q	Q	Q
Data	US,1960 - 90	US,1959 - 89	US,1959 - 92	Aust,1976-95	Aust,1977-96
Different Sample Period	/	/	/	N	N
Single Equation (# of Lags)	4	6	3	4	/
Var (# of lags)	4	6	-	4	4
Variance Decomposition (Horizon)	4,8	24	-	6,12	-
Cointegration	/		/		
Other Tests?	N	N	/	/	/
ii) Dependent Variables					
Nominal GDP	/		/		
Real GDP	/	/	/	/	/
Price Level	/				
Capacity Utilisation		/			
Consumption		/			
Durable Goods Orders		/			
Employment		/			
Housing Starts		/			
Personal Income		/			
Retail Sales		/			
Unemployment Rate		/			
iii) Independent variable					
Monetary Base	/		/	/	/
M1	/	/	/		
M2	/	/	/		
M3				/	/
Broad Money				/	/
Credit	/			/	/
Federal Funds Rate		/	/		
Commercial Paper Rate	/				
US Treasury Bill Rate	/	/		/	/
US Treasury Bond Rate		/			
Spread (Bill & Paper)	/				
Spread (Bonds & Funds)		/			
Spread (Bonds & Paper)		/	/		
Term Structure		/	/		
Exchange Rate				/	/
Government Expenditure	/				
Price Level	/	/	/	/	/
iv) Results					
Does money have information content?	Y	Y	Y	N	N
Notes: Y - yes, N - No, Q - quarter, M - monthly					

Source: Monetary Authority of Singapore, Occasional paper no.15, July 1999.