THEORETICAL AND EMPIRICAL ASPECTS OF THE CREDIT MULTIPLIER, WITH SPECIAL REFERENCE TO MALAYSIA

by

Zeti Akhtar Aziz

A Graduation Exercise presented
to the University of Malaya in
part fulfilment towards the
Degree of Bachelor of
Economics with Honours
in Analytical Economics
1969/70

TABLE OF CONTENTS

LIST OF TABLES

LIST OF CHARTS

ACKNOWLEDGEMENTS

I am deeply grateful to Inche Mustafa Hasan, for his guidance and supervision which have contributed significantly to improving the quality of this exercise.

I am also grateful to Bank Negara Malaysia officials for their generous help in locating some of the material for use in this exercise.

Lastly, I would like to thank Miss Mimi Loh and Miss Rosalind Lim who have typed this graduation exercise in such a short time and close friends who have in one way or another, helped me. I would also like to record here my thanks to Inche Ahmad bin Osman for his assistance in cycostyling this exercise.

Any errors that remain must be attributed to me.

PREFACE

The revival of the interest in money supply as an important determinant of a nation's economic activity has shifted interests to quantities. Recently, Milton Friedman was said to have 'dragged' the Federal Reserve System 'into a quantitative view of monetary developments'. The famous Otto Eckstein is reported to have said that 'if it really is money supply that is to be regulated, there had better be agreement on the figures ... who would rest a policy on so weak a statistical reed.' It is implied from this that there has been some agreement amongst economists that quantities are important, but it also confirms the doubt, that there has been some disagreement as to what quantities to look at.

This exercise is an attempt to make a quantitative analysis of how money supply is determined in Malaysia. The exercise is divided into three parts. Part 1 deals with the theoretical aspects of the analysis. In this section, the actual quantities that shall be analysed are defined. An attempt is made to justify for having chosen such quantities. Justification was on the basis of that being most appropriate to take into account the institutional features existing in Malaysia. In other words, modifications were made to the conventional framework of the credit multiplier analysis so as to build a framework that is most appropriate for this country.

In the second part of this exercise an attempt is made to test empirically, the credit multiplier for Malaysia within the framework built in Part 1. The scope of the study includes an attempt to give some quantitative answers as to what actually - or, who actually determines money supply. That is, the behavior of commercial banks, the public and the Central Bank are assessed in an attempt to provide a quantitative answer as to the extent their behavior affects money supply.

In the last part of this exercise, a summary is made of the major conclusions derived from the statistical analysis in Part 2. The policy implications of some of these conclusions are briefly discussed and a note is made on further refinements that are possible.

However, it is felt that parts of this study have been handicapped by the lack of adequate data for the entire period under review. This is largely due to the fact that, after the formation of Malaysia in September 1963, certain banking data for West Malaysia was not available. Although data for the whole of Malaysia stretches as far back as 1959, it should be noted that banking laws that applied in West Malaysia at that time did not apply to East Malaysia until after the formation of Malaysia. But, wherever possible, an attempt has been made to support the conclusions made with reliable data.

PART 1

ASPECTS OF THE THEORY

CHAPTER I

THE CONCEPT OF THE CREDIT MULTIPLIER[1]

The purpose of this chapter is to present and define the concept of the credit multiplier as it is to be used in Part II where an attempt will be made to study the credit multiplier in Malaysia. In the case of terms that have more than one form of definition, because of usage by different writers, the form most appropriate to the Malaysian monetary system will be adopted. Where appropriate, special characteristics of the Malaysian Banking System will be taken into consideration.

1.1 The Concept Defined

The concept of the credit multiplier is used to describe the extent to which a banking system[2] may expand its earning assets and deposits given an increment in reserves.[3] It is important to point out that an increment in reserves is a necessary but not a sufficient condition for the expansion of bank deposit and hence money supply to the extent described by credit multiplier. Other factors such as changes in interest rates, relative prices and changes in other economic factors affect the credit expansion. This means that the credit multiplier is not symmetrical, since expansion to the limit as predicted by the credit multiplier is only an indication of what is possible, but, it may not necessarily be the case. Thus, the credit multiplier may be interpreted as how far the banking system may increase money supply and not what will actually be extended by the banking system based on a given increment in reserves.

1.2 Assumptions in the Analysis

To facilitate analysis it will be assumed that commercial banks are always able and willing to extend credit to get rid of their excess reserves. Excess reserves are the reserves that the commercial bank possess in excess of what is required by law and that which is necessary to meet depositors' demands.

---

[1] Also referred to as the Money Multiplier.

[2] The term 'banking system' refers only to commercial banks. The definition excludes the Central Bank.

[3] Generally such reserves consist of cash and deposits at the Central Bank only. However, the term 'reserves' is preferable to 'cash' since under certain circumstances assets other than cash may induce credit expansion. This is more fully discussed in footnote 4 and p. 5.

The assumption that commercial banks are always willing to get rid of their excess reserves is not always valid since there are times when commercial banks are hesitant to lend or invest even though they may possess excess reserves. This is especially so during unstable economic conditions or during a depression when prices are falling. Such conditions increase risk and fear of capital losses. Willingness to lend or invest, therefore, does not become a question of ability of the bank to do so. Certain principles such as the credit worthiness of the borrower or the uncertainty and risk involved in the loan, imposes a restraint on the lending and investing activities of the bank. In this analysis, it will also be assumed that there exists an unlimited demand for bank credit. This means that borrowers are readily available to absorb the credit that banks are prepared to extend. This assumption also may not be valid at all times, because demand for loans will vary according to the economic situation. In times of economic stability or prosperity when profit expectations are high, there will be an increase in the demand for credit. Further, during depressions when profit prospects fall, it is likely that the demand for commercial bank credit will fall.

1.3 Bank Lending and Money Supply

Based on these assumptions, the process whereby the commercial banks lend or invest leads to increases in money supply because financial assets are put at the disposal of the borrower. The commercial bank does this by creating in favour of the borrower a liability against itself that the borrower may use for his own purpose. Credit is usually given in exchange for assets of the borrower such as promissory notes or other evidence of collateral such as bonds. The effect on the balance sheet of the commercial bank then, is a simultaneous increase in assets and liabilities. What has actually happened is that, the assets of the borrower are monetised by the commercial bank when it gives its debt, that is, demand deposits in exchange for other debts. It is important to point out that these involve non-currency loans. When cash loans are made it only involves a change in the composition of the assets of the commercial banks, while the total assets and liabilities remain the same. This is because the cash is given in exchange for a debt of the borrower which only offsets the fall in the commercial banks assets due to the cash loan. Thus, by its lending and investing activities, the banking system may determine the quantity of deposits and thus determines the quantity of money.

1.4 The Framework of Analysis

The Multiplicand - As previously noted, a bank must possess excess reserves in order to be able to lend or invest. In our analytical framework, this excess reserves is described as the multiplicand. A banking system with excess reserves can expand its total deposits by a multiple of it. In other words, a banking system with excess reserves can expand its deposits until an amount which exhausts all possibility of credit expansion when it has absorbed all the excess reserves. This excess reserve usually consists of Central Bank notes, that the bank possesses in excess of the amount required by law, to keep in relation to the deposits and the amount necessary to meet cash demands of

depositors.[4] This implies that banks depend on the normal inclination of people to leave their money in the bank in the form of deposits and that a certain proportion held in till cash will accommodate normal customer request for cash. It also implies that bank landing leads to an increase in deposits, since a large part of money lent or invested is expected to return to the banks in the form of deposits.

Determinants of the Credit Multiplier - The extent to which the banking system can expand money supply is indicated by the credit multiplier. Theoretically, if all the money lent or invested by the banks would return in the form of deposits and if the whole amount was further lent or invested by banks, the whole process would go on indefinitely in which case the credit multiplier would approach infinity. However, there are certain factors that limit expansion. This then implies that the credit multiplier will not be infinity. Thus, the expansion of money supply by the banking system can be analysed in terms of the determinants of the credit multiplier. These determinants constitute two leakages which may be categorised according to factors affecting them, that is, the internal leakage which is a leakage determined by factors within the banking system and the external leakage which is determined by factors outside the banking system.

Generally, 'internal leakage' refers to the leakage of excess reserves into increased reserve holdings which occurs when the banking system expands their deposits. These reserves are a fraction of the deposit liabilities, that is, the commercial banks hold a certain fraction of the volume of deposits in the form of cash or liquid assets. This fraction is called the reserve ratio and it reflects the marginal propensity of the banking system to hold cash reserves and other specified liquid assets as the system allows, in relation to their deposits. Cash here refers to Central Bank money and deposits include demand, saving and time deposits of the commercial banks. The reserve ratio can be divided into legal reserve requirements and working reserves.

Legal reserves are defined by the banking laws the system is governed by. Such a law would require that the commercial bank maintains a reserve against its deposits. Legal reserves usually consist of deposits with the Central Bank. Money held in its own vaults would not count as legal reserves. However, such banking laws vary considerably from country to country. In some countries, part of the legal reserves may be kept in the form of currency in the banks' own vaults. Legal reserves which consist only of cash may also be described as primary reserves. This provision was originally made to insure availability of money for deposit redemption. However, it has now become more significant as a factor for limiting expansion of money supply by the credit multiplier. Legal reserves that permit other assets besides cash, is described as secondary reserves. As loans and investments

---

[4] In certain banking systems, assets other than cash or deposits with the Central Bank can satisfy the reserve requirement. Under special conditions, such a reserve has exactly the same effect on the ability of the banking system to lend, as a reserve in the form of cash or deposits at the Central Bank. Refer p. 5.

increase they bring about an increase in deposits. Since the reserves are expressed as a fraction of the deposits and as deposits increase, a given volume of reserves becomes less and less adequate to sustain the growing volume of deposits. In other words, the extension of bank loans and investment results in the creation of deposits and therefore in an increase in the amount of required reserve - thereby reducing the excess reserves. The higher the reserve ratio then, the smaller will be the maximum expansion in money supply.

In Malaysia, a special problem exists because branches of foreign banks constitute an important part of the banking system. These foreign banks usually hold funds abroad with their head offices and may meet increases in reserve requirements by borrowing from the head offices. Under such circumstances, the legal reserve requirement becomes less significant as a factor to limit the expansion of money supply by the banking system.

From Appendices B1 and B2 it may be observed that foreign banks constitute a large part of the Malaysian banking system in terms of number of banking offices. In the year 1968 the percentage of the number of domestic banks was still below 50% and that of domestic banking offices to be only 52%.

However, the actual significance of foreign banks in the Malaysian banking system in terms of deposits is shown in Table 1. In 1968, although the domestic banking offices comprised of nearly 50% of the total number of banking offices, the total deposit liabilities held by these banks only amounted to approximately one-third.

TABLE 1

DEPOSITS HELD WITH DOMESTIC AND FOREIGN BANKS

As at End of	Domestic Banks		Foreign Banks		Total
	($M)	(%)	($M)	(%)	($M)
1964	415.3	27.1	781.0	15.1	1,531.7
1965	515.1	29.5	857.6	49.2	1,744.4
1966	593.3	29.9	944.3	47.7	1,982.2
1967	741.8	33.0	998.2	44.5	2,244.2
1968	924.2	34.6	1,191.7	46.6	2,690.1

Source: Bank Negara Malaysia Annual Reports and Statement of Accounts, 1968.

Note: Foreign banks include those in Singapore and deposits comprised of demand, time and saving deposits.

In addition to legal reserve requirement, banks find it necessary to have working reserves over and above their legal requirements. Working reserves of the banking system consist of cash in the banks' own vaults and balances with other banks. From the point of view of the bank, it enables it to meet withdrawals of deposits. From the point of view of depositors, the reserves provide an assurance that the bank will be able to meet withdrawals on demand. Guided by experience, the bank will maintain such a proportion of the deposits in cash that will enable it to meet all demands.

Another factor that may affect the excess cash as the banking system expands its deposits is the liquidity ratio or the secondary reserve which consists of assets other than cash or deposits with the Central Bank which satisfy the reserve requirement. However, it must be emphasised that this is a special situation and that the liquidity ratio under which the banking system operates must be made up of assets obtainable only from the Central Bank. This special situation applies to the banking system in Malaysia. This means that as the banking system expands it has to acquire additional liquid assets. In its attempt to meet the liquidity restraint it must give up cash. It is because of this restraint that, when the banking system acquires or disposes of such assets, the cash of the system is increased or decreased by a similar amount. Thus, such assets are not like other earning assets whose acquisition or disposal by the banking system alters bank deposits instead of bank cash.

In this special case when the assets consist of government securities that is available only from the portfolio of the Central Bank, this secondary reserve requirement has exactly the same effect on the bank's capacity to lend as reserves in the form of deposits with the Central Bank. In our framework this special situation can be taken into account by incorporating the liquidity requirement into the reserve parameter. The reserve ratio would then represent the combined cash and liquidity requirement. However, this is only the case when assets are entirely only obtainable from the Central Bank. When the commercial banks acquire assets to satisfy the secondary reserve requirements directly from the borrower, then this has no immediate effect on the lending capacity of the banking system. In this case it only influences the form that the loans and investments take.

The term 'external leakage' on the other hand, refers to the currency leakage, that is, a withdrawal of currency from the banking system. The most important external leakage is the withdrawal of currency from the banking system by depositors. This leakage is represented by the currency ratio which reflects the marginal propensity of the general public to hold currency in relation to total Money Supply. The currency ratio is defined as the currency in circulation outside banks, taken as a proportion of money supply. However, it should be noted that there are two ways of presenting the currency ratio. It may

also be represented by the ratio of currency in circulation to deposits.[5] Nevertheless, as pointed out by S. McDonald,[6] the former is preferable in explaining an expansion or contraction of money supply. Since the ratio is determined by the preferences of the public, it is only logical to express this preference as a ratio of currency to the total liquid assets over which the public may use their immediate discretion as to the form in which they will be held. Hence, in our framework of analysis the currency ratio will be a function of money supply. The money supply will comprise of currency in circulation in the private sector[7] plus total deposits of the private sector which includes demand, time and saving deposits and deposits at Post Office Savings Bank.

At this juncture, it should be noted that it is not customary to include saving and time deposits at commercial banks and saving deposits at Post Office Savings Banks in the term money supply. Nevertheless, this is still an unresolved question. Although the Bank Negara Malaysia does not include saving and time deposits in the term money supply,[8] in the following analysis the term money supply will include currency in circulation in the private sector, plus demand, saving and time deposit and post office saving deposit of the private sector. In a study on the currency ratio in developing countries, J. Daniel Khazzoom attempts to justify this definition. He argues that the pattern of development of banking institutions of underdeveloped countries is not the same as that of developed countries. He points out that in most cases the choice confronting the individual is not between currency and demand deposits but between currency and saving or time deposits. He also adds that the inclusion of such deposits would make the series more consistent.

---

[5] This method was used by W.H. Steiner, Eli Shapero and Ezra Scloman in Money and Banking: An Introduction to the Financial System 3rd Ed. New York, H. Holt (1953), and by Thomas R. Saving and Boris P. Pesek in The Foundations of Money and Banking New York, Macmillan (1968).

[6] 'The Internal Drain and Credit Expansion' by Stephen McDonald, Journal of Finance, December 1953, pp.407-421.

[7] Private Sector includes private individuals, business enterprises, statutory authorities and local governments. Private Sector as defined here is similar to that defined by Bank Negara Malaysia.

[8] Bank Negara Malaysia describes saving and fixed (time) deposit as Quasi-money. The Monthly Statistical Bulletin defines 'money' as "the sum of money held in the private sector (including non-residents) and by official entities in the currency area, and Demand Deposit of the private sector (including official entities) with commercial banks in the States of Malaya. 'Quasi-money' comprises saving and fixed deposits of the private sector (including official entities) with commercial banks in the States of Malaya and deposits with the Post Office Savings Bank.

He argues that if there was a shift of preference from one kind of deposits to another which was not related to a change in the economic function of the funds involved, the exclusion of such deposits would make the results less meaningful. He then proceeds to show evidence of the relative significance of saving and time deposit as well as their generally high rate of growth in the countries included in his analysis.[9]

In the case of Malaysia, the relative significance of time and saving deposit may be observed in Appendix B3. The average ratio of saving and time deposit to money supply (defined as currency in circulation and demand deposits of the private sector) is over 70% for the period 1960-68. There is a tendency for the ratio to increase at an average annual rate of 8.58%. This indicates the increasing preference of the public to hold time or saving deposits to demand deposits or currency. Hence, in view of the magnitude of time and saving deposit it provides evidence for their inclusion in the concept of money supply.

Appendix B4 further substantiates this argument for the inclusion of saving and time deposit to money supply. It reveals that the average ratio of saving and time deposits to demand deposits exceeds 160% and that the average annual rate of growth of this ratio is 5.8%. The annual rate of growth of the alternative components of money supply can be seen in Appendix B5. Both the rate of growth of time and saving deposits are greater than the rate of growth of currency in circulation and that of demand deposits. Hence, its relative significance and generally high rate of growth further justify their inclusion in the term money supply.

Arguments of the same nature for the inclusion of time and saving deposits in the term money supply were put forward by G.K. Kandouche.[10] He points out that the results of the study made by Ahrensdorf and Kanesathasan[11] where money supply was defined as currency in circulation and demand deposits, the currency ratio tended to be exaggerated. This was because the exclusion of other deposits caused the currency ratio to be high and therefore the effects of the changes in the currency ratio on money supply were further exaggerated. Kardouche illustrates this by the fact that in Egypt for the period 1952-60 there was a significant shift from demand into saving and time deposit. It clearly showed that the exclusion of such deposits from the denominator of the currency ratio exaggerated it and thus its contribution to the change in money supply.

---

[9] The Currency Ratio in Developing Countries, J. Daniel Khazzoom, New York, F.A. Praeger (1966) pp.111-117.

[10] "The UAR in Development. A Study in Expansionary Finance," George K. Kardouche, New York, F.A. Praeger (1966).

[11] "Variations in the Money Multiplier and Their Implications For Central Banking", Joachim Ahrensdorf and S. Kanesathasan. IMF Staff Papers, November 1960.

However, there is still disagreement on the suitable definition of money supply. Several attempts have been made by economists to define money empirically. Milton Friedman and David Meiselman concluded from their study for the Commission on Money and Credit that, the definition of money supply that included currency, demand deposits and time deposits at commercial banks was the best definition. This conclusion was arrived at on the basis of two criteria used to present evidence on the definition of money, that best explained aggregate income. The two criteria were applied to three definitions of money supply: the narrow definition including currency and demand deposits only, the definition that includes currency, demand deposits and time deposits and lastly the broader concept that includes saving-type accounts at mutual saving banks, saving and loan associations and post offices. The two criteria used to select sets of the financial assets to be included in the term money supply were:

(1) the highest correlation of the sum of the financial assets with income;

(2) higher correlation of the sum of these than any other of the components separately.

The second criterion was included to ensure that the increase in the correlation was attributed to the inclusion of a component in the definition and not as a result of association between income alone and the particular component.

However, as noted by George G. Kaufmann, this procedure implicity assumed some preconceived ordering of the components and therefore did not represent a 'pure' empirical test.[12] Also, tests were carried out by R. Timberlake Jr. and J. Forston using the same components of money supply as Friedman and Meiselman but observing different periods. They came to the conclusion that there was little gained by including time deposits at commercial banks in the definition of money supply.[13]

In applying the Friedman-Meiselman tests to the Malaysian money supply it can be found that the broader definition of money supply that includes currency, demand deposits, time deposits and saving deposits at commercial banks and post office savings satisfied the two criteria best. All data used are end of the year figures. Income observations are gross national product at market price. The period included in the analysis is from 1960-68. The simple correlation coefficient between a change in income and a change in each money supply component are shown in the following page.

---

[12] "More on an Empirical Definition of Money", by George G. Kaufman, American Economic Review, March 1969.

[13] "Time Deposits in the Definition of Money", R.H.Timberlake Jr. and J. Forston, American Economic Review, March 1967.

The Correlation Coefficient of ΔGNP and:

(1)	ΔC	:	0.350
(2)	ΔDD	:	0.350
(3)	ΔTD	:	0.244
(4)	ΔSD	:	0.196

Where ΔC is a change in currency,
ΔDD is a change in demand deposits,
ΔTD is a change in time deposits,
ΔSD is a change in saving deposits.

[Source: Appendix B7.]

Differences among the correlation coefficients can be readily observed. However, it should be noted that a similar correlation exists between income and currency, and with income and demand deposits, and that this is also the highest correlation among the alternative components of money supply.

The individual components are then aggregated progressively according to the order given above. These alternative definitions are correlated to income of the same period. The resulting correlation coefficients are shown below that were computed from Appendix B8.

The Correlation Coefficient of ΔGNP and:

(1)	ΔMS_1	:	0.404
(2)	ΔMS_2	:	0.433
(3)	ΔMS_3	:	0.534

Where MS_1 is the narrow definition of money supply that includes currency and demand deposits,

MS_2 is the definition that includes currency, demand and time deposits of commercial banks only and,

lastly, MS_3 is the broader concept of money supply that includes saving deposits at the commercial banks and at the Post Office Savings Bank.

From the results it can be observed that the addition of time deposit to currency and demand deposits increase the correlation coefficient to 0.433. And the subsequent addition of saving deposits of commercial banks and Post Office Savings Banks further increases the correlation. This evidence suggests that the broader definition best explains income of the corresponding period since the correlation of this concept of money with income is greater than the coefficient of

any of the components alone, thus again confirming the justification for the inclusion of time and saving deposit in the concept of money supply.

Another point of importance to note is that only the deposits of the private sector with the commercial banks are to be considered. Any demand, time or saving deposit made by the central or state governments is to be subtracted from the total deposits for the analysis.

Having attempted to justify for such a definition of money supply the currency leakage may be found. This currency leakage is also known as the internal drain and is an important limitation on the capacity of the banking system to expand money supply on the basis of an increment in reserves. The extension of bank credit and investment results in deposits. When deposits increase the demand for currency also increases. In order to pay out to their customers the commercial bank can only do so by drawing on their reserve deposits at the Central Bank or by using their till money. The currency ratio thus measures the leakage of currency from the banking system as it expands money supply. A high currency ratio to total money supply restricts the capacity of the banking system to expand credit and investments in the same manner as the reserve requirement. However, unlike the reserve requirement, variations in the public's demand for currency cannot be regulated by policy action.

The definition of money supply in its broader context adds two other variables that determine the multiplier. Another factor that has the same effect on the expansion of money supply as the currency ratio is the leakage of currency from the banking system into post office saving deposits. This leakage may be represented by the 'post office saving deposit ratio' and reflects the marginal propensity of the general public to hold post office saving banks deposits in relation to other forms of money. Hence, the 'Post Office Saving Deposit ratio' shows the saving deposit as a proportion of money supply. As credit expansion takes place, this ratio indicates that part which becomes saving deposit at Post Office Savings Banks.

The definition of money supply also excludes any form of government deposits. If commercial banks accept such deposits from either the Central or State Governments then another variable is necessary to take into account this factor. Any primary deposit made by the government will increase the lending capacity of the commercial banks, although it does not constitute a part of money supply. Similarly, as in the case of other deposits at the commercial banks, part of the government deposits leak into the reserve requirements of the commercial banks. The behaviour of government deposits and its effect on credit expansion may be shown by incorporating the 'government deposits ratio' in the credit multiplier. The ratio is expressed in terms of government deposits as a function of money supply. It shows the portion of total government deposits at the commercial banks in relation to money supply.

Another important limitation on the growth of money supply in many countries with an open economy is the external drain. This describes the withdrawal of money from circulation that occurs when there is an overall balance of payments deficit. This means that credit expansion by the banking system for the purposes of trade may cause a drain of their reserves. However, for analytical purposes the external drain can be combined with the internal drain to provide one overall parameter representing a leakage of reserves from the banking system on account of external factors.

1.5 The Process of Credit Creation and Destruction

Credit expansion is generated when currency in circulation is transferred to the bank as deposits.[14] Such deposits which stem from a lodgement of currency are known as a primary deposit. The primary deposit increases both the banks assets and liabilities. However, this only results in the exchange of currency for deposit and the total money supply remains the same. But this now permits the bank to lend or invest. However, not all the cash may be used because the commercial bank must hold some reserves both to meet the legal requirements determined by the Central Bank and to satisfy its working reserves.[15] The remainder which is the excess reserve may be used to acquire various other income-earning assets.

Essentially, there are two alternative ways to utilise this excess reserve, that is to purchase an investment or to extend a loan. As a result of the loan or investment, the cash will then circulate in the private sector. However, when it is redeposited in a bank it becomes a derivative deposit. In other words, these deposits are derived from the loan which was made possible by the original cash deposit, the primary deposit. However, only part of the funds returns to the bank, the remainder of which is used as circulating currency or deposited at Post Office Savings Banks. The part of the loan that returns to the bank is the feedback.[16] The feedback may be in the form of private deposits or government deposit. This means that the loan

---

[14] Credit expansion could also result when there is a transfer of deposits from Post Office Savings Bank to Commercial Banks, or, when the government increases its deposits at the commercial banks.

[15] Part of the cash used to meet the legal requirement may be used to acquire other earning assets as the requirement permits, in which case, the commercial banks would have to give up cash. However, as noted earlier, such earning assets may have the same effect on the lending capacity of the bank under special circumstances.

[16] In the case of a single bank the feedback may be less than the amounts that return to the banking system as a result of loss of reserves to other banks. Boris P. Pesek and Thomas R. Saving op.cit. use the term only in this sense. However, the term feedback as it is used here is taken in the broader sense to mean feedback to the banking system which is the sum of all the feedback of the loan to all banks.

made is equal to the sum of the leakage and the feedback. Each bank will have a different feedback depending on the public's preference to hold cash or funds in the form of post office savings deposit. The feedback also depends to some extent on the kind of loan made.

The expansion process can thus be summarised as follows: The first step is the primary deposit which makes possible the loan by the commercial bank. The recipient of the loan then spends the proceeds of the loan. The second step will be when part of this loan is re-deposited in the bank, resulting in additional deposits. This amount is the feedback. At this point the bank has free reserves minus the required reserves and the working reserves necessary because of the increase in deposits. The subsequent steps may be constructed in the same way as the bank repeats the process by lending its new level of free reserves and again receives a feedback and so forth.

This is the manner in which loans lead to money creation. Of equal importance is the fact that when the loans are repaid, a portion of money supply is destroyed. Loans are usually repaid by cheques drawn on demand deposits. This will reduce the reserves of the bank from where the cheque was drawn on by the full amount of the loan repayment. This may cause the bank to have a deficiency in their reserves in which case they will have to sell their assets. If these assets are paid by cheques the same process will be started in other banks. Thus, just as multiple expansion of deposits is possible through the operation of the banking system, so is it possible to have multiple deposit contraction. Expansion is based on the creation of debt while contraction comes about when debts are extinguished, in which case total loans and investments of the banking system decline.

1.6 The Credit Multiplier Equation

The above account of credit expansion may be demonstrated mathematically by the credit multiplier. However, before presenting the multiplier that takes into consideration factors discussed earlier, the derivation of the conventional multiplier may be seen as follows. Beginning with the initial cash transfer, the initial primary deposit E permits the extension of loans or the purchase of investments to the amount $E(1-r)$ where r is the reserve requirement. And given the public's demand to hold currency as c, then (1-c) of the loan returns to the bank as a feedback for the next round. Therefore, in this step of the expansion process $E(1-r)(1-c)$ has returned to the bank in the form of additional deposits. As a result of this increase in deposits, the next step will be that loans of the amount · · times the increase in deposits will be made. And the new increase in deposits will be (1-c) times the increase in loan i.e. $E[(1-r)(1-c)]^2$. The subsequent steps may be constructed in the same way so that the addition to deposits from the nth step will be $E[(1-r)(1-c)]^{n-1}$. Thus, the total deposit expansion D, will be equal to $E + E(1-r)(1-c) + \ldots\ldots + E[(1-r)(1-c)]^{n-1}$, or may be summarised to:

$$D = \frac{1}{1 - (1-c)(1-r)} E \quad \text{considering n to be very large.}$$

Then $D = K.E$

where $K = \frac{1}{1 - [(1-c)(1-r)]}$, is called 'credit multiplier'.

This is similar to that derived in Appendix A1, as is found in most textbooks. The reserve ratio may be partitioned into the legal reserve requirement and the working reserve as previously described, in which case the multiplier will be expressed as follows:

$$K = \frac{1}{1 - [(1-c)\ 1 - (r_r + r_w)]}$$

where r_r is the legal reserve and r_w the working reserve.

The conventional multiplier becomes inadequate to explain credit expansion when the broader concept of money supply is used.[17] In addition, the fact that the Malaysian Government has deposits at the commercial banks, further complicates the issue. Hence, certain refinements have to be made to the multiplier to take into account these considerations.

Since we are concerned with the multiplier effects of an increment in reserves at the commercial banks only, deposits made at the Post Office Savings Bank by the private sector becomes similar to the currency leakage. In order that this factor is taken into account a separate variable is necessary to explain changes in the public's preference to hold saving deposits at the Post Office Savings Bank in relation to other forms of money. This variable termed the 'post office saving deposit ratio', is defined as a function of money supply, that is, $s = S/M$ where s is total post office saving deposit and M is total Money Supply.

The definition of money supply also requires that any deposits made by the Central or State Governments at the commercial banks should be subtracted from total deposits of the commercial banks.[18] However, it should be noted that any increase in government primary or derivative deposits has similar effects as deposits made by the private sector.

---

[17] The broader concept of money supply includes currency, demand, time and saving deposits at Post Office Saving Banks (MS_3).

[18] Although there is a tendency for government deposits at the commercial bank to fall in importance for the period under review, government deposits constitute an average of 10% of total deposits at the commercial banks.

For example, if the government makes a primary deposit at the commercial bank, the lending capacity of the bank will be a multiple of that increase. Similarly, part of a loan made by the commercial banks may return to the banks in the form of government deposits if the government is the recipient of money spent from a loan of a commercial bank.[19] It should be noted that, any increase in government deposits requires a proportional increase in required reserves. Therefore, in order to take into account the behaviour of government deposits at the commercial banks, 'the government deposit ratio' is necessary in the formulation of the multiplier. On account of the inclusion of the two ratios discussed above the credit multiplier will be as follows:

$$K = \frac{1}{c + s - g + r(1 - c - s + g)}$$ or alternatively expressed as $$\frac{1}{1 - (1-r)(1 - c - s + g)}$$.

where r = required reserve ratio[20]

c = currency ratio

s = post office saving deposit ratio

g = government deposit ratio

When all the reserves are absorbed in equilibrium, the total liquid assets equation becomes:

$$L = cM + sM + r(1 - c - s + g)\,M - gM$$

where L = total liquid assets

cM = currency leakage

sM = post office saving deposit leakage

$[r(1 - c - s + g)]\,M$ = reserve leakage

gM = government deposits at the commercial banks

(Refer Appendix A2 for method used to derive the above multiplier.)

---

[19] In fact, one of the methods by which the Central Bank may influence the commercial banks reserves in Malaysia is by regulating its receipts and payments into and out of commercial banks.

[20] In order to calculate the actual size of the multiplier the total reserves rather than the required reserves held by the bank has to be taken into account. The multiplier would then indicate the effect of the actual amount of reserves the banks hold on money supply. In the following analysis r will be taken to mean total reserves.

1.7 Extent and Limitations

Up to this point, it has been shown that the extent of the increase in deposits that banks can expect, given an increase in primary deposits (given the reserve ratio, the currency ratio, the post office savings deposit ratio and government deposit ratio) can be predicted by the credit multiplier. Theoretically, this would show the ability of the commercial banks to affect money supply. Essentially, the factors limiting creation of money by banks are obvious. Firstly, the quantity reserves available to support credit expansion. Exhaustion of such reserves will bring expansion to a halt. Secondly, the percentage reserve requirements against deposit liabilities that the banks must maintain. The smaller the amount of required reserve and working (excess) reserve ratio the larger is the aggregate expansion of loans and deposits. Hence, the amount of reserves held by the bank can become a significant factor in limiting deposit creation. Thirdly, the currency drain into circulation and into Post Office Savings Banks of bank reserves that accompanies an increase in deposits also limits the expansion of credit. Such withdrawals reduce the banks' reserve position and therefore reduces the potential basis on which further deposit expansion can take place. Similarly, in the case of the external drain where deposits are withdrawn to settle balances due to foreign countries in which case reserves, of the banking system are reduced. Lastly, it should be noted that any increase in government deposits increases the extent to which monetary expansion can take place.

From the mechanism just described, it is apparent that the lending activity of a banking system is somewhat different from that of a single bank. This distinction is made very clearly by J.A. Galbraith:

> 'The distinction between the banking system and the individual bank does not lie in the source of the loan, the distinction lies in the effect of the loans. An individual bank in making loans is likely to find its cash reserves reduced by more than its deposits increases; in the banking system an increase in loans is likely to increase deposits by more than it reduces reserves.'[21]

In other words, a single bank cannot increase its loans and investments and hence its deposits, by more than the amount of excess reserves. Therefore, an individual bank in a banking system cannot lend an amount equal to a multiple of its excess reserves. When the bank has lent an amount equal to its excess reserves, it has created the maximum amount of deposits possible. However, if the borrower does not withdraw the whole loan but retains part of the loan in the form of deposits in the same bank or, even if the recipient of a payment made by the borrower redeposits in the same bank, the bank's lending ability will be increased correspondingly.

---

[21] The Economics of Banking Operations. A Canadian Study, J.A. Galbraith (1963), (2 dimprsn.) Montreal, McGill University Press (1964), pp. 18-19.

However, in a banking system, when a customer draws a cheque on a newly received loan, the reserves of the bank will be reduced and reserves of other banks in the banking system will increase as a result of deposits made by those who have received payments from the borrower. Although the reserves of the banks which receive the cheques are increased, it may be less than the amount of the cheque as a result of the currency leakage. Nevertheless, this allows other banks to expand deposits by the increase in reserves but again, not to the amount of the newly acquired reserves as a result of the reserve leakage as deposits expand. As distinguished from a single bank then, the banking system can lend and invest and thus create deposits to the limit when no bank in the banking system has any excess reserves. Also, the banking system only loses reserves through the currency leakage or the post office savings deposit leakage whereas the single bank loses reserves to other banks in the system. This implies that there is a tendency for banks in the banking system to extend loans at the same rate. For, the bank that expands at a faster rate will lose more reserves than it acquires while those that expand slowly will lose income that may be earned. Hence, when this deposit creation process ceases, the banking system will have created deposits of an amount that is a multiple of the excess reserves - as indicated by the credit multiplier.

1.8 A Note on the Theoretical and Empirical Development of the Principles of the Credit Multiplier by Several Writers

This aspect of the credit multiplier in the theory of money supply is a relatively new discovered field of research. The general trend has been to treat the quantity of money as determined directly by the monetary authorities. Money supply was related to the reserve base by the multiplier as has been described above and shown by the expression:

$$K = \frac{1}{1 - (1-c)(1-r)}$$

However, in the simplest presentations of the credit multiplier found in earlier writings, excess cash was eliminated solely through the effects of banking expansion of deposits, while the currency ratio was neglected or assumed to be insignificant or constant. Even in the more comprehensive analysis by C.A. Phillips,[22] the only leakage recognised is the reserve leakage. This lack of emphasis of the currency leakage in banking literature was pointed out by Stephen McDonald in his article 'The Internal Drain and Credit Expansion'.[23] He illustrates this point with many examples of writings where the internal drain is only briefly mentioned or given less importance or even dismissed as an unimportant factor and therefore to be neglected. In his analysis, McDonald proceeded to show the importance of the internal drain and the

---

[22] "Bank Credit. A Study of the Principles and Factors Underlying Advances made by Banks to Borrowers", Chester Arthur Phillips (New Imprsn.), New York, MacMillan (1936).

[23] Op. cit., pp. 414-416.

necessity of incorporating it into the explanation of bank credit expansion and its importance for planning monetary policies.

Empirical studies carried out along these lines have confirmed this necessity.[24] The study made by Ahrensdorf and Kanesathasan was concerned with isolating the contribution made by each of the determinants of the credit multiplier including the currency ratio. From their investigations, the authors concluded that the assumption of short-run stability of this ratio was unwarranted and hence argued that the explicit inclusion of the ratio in the analytical framework would improve monetary analysis and would allow for the introduction of further refinements. The study implies that there is a possibility that the quantity of money is no longer under the control of the monetary authorities. Such a case would exist if money supply is varied without a change in the monetary base. This is possible if the determinants of the multiplier that are not under the monetary authorities have large variations.

Theoretical development of the credit multiplier has taken the form that allows for the currency leakage. These more sophisticated versions can be found in the works of Lief Johanson,[25] Proctor Thomson,[26] Richard Goode and Richard S. Thorn[27] and Steiner, Shapiro and Soloman,[28] to name a few. On the other hand, empirical work done along these lines includes that of Phillip Cagan[29] whose study was an attempt to explain long-run changes in the currency ratio in the United States. He concluded that income per capita explained most of the decline of the ratio from 1875-1919, while the interest earned on deposits explained most of the variation from 1919-1955, though the possible gain from tax evasion by currency transaction was also used to explain the changes.

Although Daniel Khazzoom agrees with P. Cagan that these factors do affect the currency ratio, he contends that the secular behaviour of the currency ratio reflects the effects of factors more fundamental than tax evasion or the return on deposits. He believes that institutional factors shape the behaviour of the ratio. His own empirical work is the study of the currency ratio of underdeveloped countries. He argues that the high currency ratio in underdeveloped

---

[24] Op. cit.

[25] "The Role of the Banking System in a Macro-economic Model," Lief Johanson, International Economic Papers 8, 1958, p. 94.

[26] "Variation on a Theme by Phillips", Proctor Thomson, American Economic Review, 26 December 1856.

[27] "Variable Reserve Requirements Against Commercial Bank Deposits", Richard Goode and Richard S. Thorne, IMF Staff Papers 7, April 1959.

[28] Op. cit.

[29] "The Demand for Currency Relative to the Total Money Supply", Phillip Cagan, Journal of Political Economy, August 1958.

countries then allows the Central Bank to expand its monetary liabilities without running the risk of a large multiple expansion of money supply. In view of the significance of this, he proceeded to explore the feasibility of using the ratio as a tool for economic policy.[30]

A major contribution to empirical research carried out along these lines was made by Milton Friedman and Anna Jacobson Schwartz.[31] The authors examined the factors that accounted for the changes in the stock of money at different periods in the history of money in the United States. They distinguished three proximate determinants of the monetary stock. Any changes in the monetary stock then, must arithmetically occur through these determinants, that is, high-powered money, H, the deposit reserve ratio D/R and the deposit currency ratio D/C. The formula used to connect them with the monetary stock was:

$$M = H \cdot \frac{D/R\ (1-D/C)}{D/R + D/C}$$ [32]

The authors found that high-powered money was a major factor accounting for the arithmetic changes in the stock of money. Changes in high-powered money were, however, produced by different forces at different times, that is, gold flows or changes in government fiduciary issues. Also, they found that the deposit currency ratio was of major importance especially during periods of financial difficulties. This was especially so in periods where the public lost confidence in the banks which led to attempts to convert deposits into currency which, hence, produced a sharp decline in the ratio of deposits to currency. This further leads to a multiple contraction of deposits. The ratio of deposits to reserves was found to be like the deposit currency ratio which was of major importance at times of financial difficulties, though it had played a more consistent minor role by generally rising during business expansion and falling during business contraction. Whenever the public had shown distrust of banks by seeking to lower the deposit currency ratio, banks were found to have resorted to strengthen their reserves. In so doing the banks further added to the downward pressure on the stock of money. It was also found that this ratio varied in response to changes in monetary policy. The entirety of their investigation however cover an extensive examination of changes in money supply and their causes, in the different periods of the history of money in the United States.

---

[30] Op. cit.

[31] A Monetary History of the United States, 1867-1960, Milton Friedman and Anna Jacobson Schwartz (2 dimprsn.), Princeton, N.J., Princeton University Press (1964).

[32] The multiplier is different from that discussed in the earlier parts of this chapter as a result of difference in the definition of the two ratios.

Other researchers such as Kardouche used a similar framework.[33] He studied factors that explained the rapid increase of money supply in Egypt. He related money supply to the economy's monetary reserve base and the reserve and currency ratios, to show how the behaviour of banks and the public affect money supply. He concluded that the main increase in money supply was due to the expansion of the monetary base, the contribution of the ratios being less important for the period 1952-65. Hence, expansion in money supply was attributed to the Treasury rather than the behaviour of the banks or public.

This survey indicates that recent developments in this area reflect the use of the framework in empirical studies. Differences, however, can be found in the definition of concepts such as money supply and the currency ratio and in the statistical techniques used in cases such as to show variability of ratio, or the method used to isolate the effects of factors that determine the multiplier to determine its contribution to the change in money supply.

Development of other refinements to the credit multiplier have allowed for other complications but these developments have been theoretical rather than empirical. The distinction of the effect of cash with the commercial banks that is deposited by the public and that what is issued by the Central Bank was already acknowledged by Proctor Thomson.[34] When the Central Bank prints money of amount E, then CE would enter currency in circulation while only E(1-c) would return to the banking system for expansion. The multiplier to describe the expansion of this increment in cash would be:

$$\frac{1-c}{1-(1-c)(1-r)}$$

This multiplier was also discussed by R. Goode and R.S. Thorn.[35] However, it was only generally mentioned that when the Central Bank expands its monetary liabilities the public determines the division between bank reserves and currency in circulation. Steiner, Shapiro and Soloman,[36] however, merely assumes that when a primary deposit is made, part of it will be withdrawn to meet increased cash needs and therefore derives this form of multiplier. Recently, J.A. Galbraith systematically classified the multipliers by type of transaction which includes that of excess cash (that does not result in deposits - an example of which is when there is a fall in the currency ratio), cash deposits subject to currency drain and cash deposits not subject to

---

[33] Op. cit., p. 4.

[34] Op. cit.

[35] Op. cit.

[36] Op. cit.

currency drain[37] (refer to Appendix C1 for the table presented by Galbraith). This gives a set of different multiplier.

Although we are concerned with the deposit multiplier and money supply in this study, it is important to mention the earning assets multiplier. This multiplier indicates the amount of earning assets the banking system will be able to acquire given an amount of excess cash. This gives a different set of multipliers from the deposit multipliers and may be seen clearly classified under the different kinds of transactions in Galbraith's table (see Appendices C1 and C2). The multipliers are also presented using the two forms of the currency ratio.

The multipliers described so far are in their most condensed forms. However, in recent writings, the determinants of the multiplier have been partitioned into various forms to allow for institutional features such as in the case of the internal leakage, into legal and non-legal requirements or variations for different categories of deposits. This kind of categorisation would further increase the variety of multipliers. Multipliers of this type can be found in the works of Boris P. Pesek and Thomas R. Saving[38] where time deposits are included in the multiplier analysis and Assar Linbeck[39] who went further to include the effect of non-bank financial intermediaries in expansion of money supply and hence on the multiplier. He also distinguishes between reserve ratio and liquidity ratio for the different deposits to give a different set of multipliers again. Similarly as J.A. Galbraith suggests, a comprehensive currency ratio could be partitioned into component parts to produce additional variety in the multiplier formulae. In fact, this was done by Kardouche in his study because of the fact that in Egypt the Central Bank accepted deposits from the private sector which were mainly from government sponsored institutions. Since these institutions did not behave like private businesses he used a private deposit ratio to solve the problem.

In his article J.A. Galbraith[40] claims that there is no one source in which can be found a complete treatment of the main varieties of the multiplier. He has attempted to present all the possible banking multipliers for the banking system classified according to the conditions for which they hold, some of which have already been referred to.

---

[37] "A Table of Banking System Multipliers", J.A. Galbraith, Canadian Journal of Economics, November 1968.

[38] Op. cit., pp. 194-5.

[39] Assar Linbeck: A Study in Monetary Analysis (1965), Almqvist and Wiksells, Stockholm, 1965, pp. 188-200.

[40] Op. cit.

Although the credit multiplier has been described as being mechanical by Harry G. Johnson,[41] he recognises that partitioning changes in the quantity of money among changes in the reserve and currency ratios and the monetary reserve base can give fruitful results. For it is in this way that monetary authorities can anticipate changes in money supply by the credit multiplier and hence the effectiveness of monetary policy can be enhanced.

---

41 "Monetary Theory and Policy", Harry G. Johnson, American Economic Review, December 1962, No. 52.

CHAPTER II

EFFECTS OF A CHANGE IN MONETARY LIABILITIES OF THE CENTRAL BANK AND THE MULTIPLIER DISTINGUISHED

Traditional theorists concerned with money supply under a system of fractional reserve banking believed that the quantity of money in an economy can be determined by monetary authorities, with the assumption that the Central Bank had complete control over its monetary liabilities. Keynes followed this convention and treated money supply as a direct policy variable:

> "Assuming that the Central Bank is also the note issuing authority, the aggregate reserve resources of the commercial banks will be under the control of the Central Bank provided the latter can control the aggregate of its note issue and its deposits."[1]

From this it is implied that the effect of a change in the monetary liabilities of the Central Bank on money supply is reasonably predictable since the reserves of the commercial banks is under its control. Keynes made no mention of the possibility that the commercial banks reserves may be affected by a change in the currency leakage, a variable that may not be determined by the Central Bank.

The purpose of this chapter is to separate and distinguish the effects of a change in the monetary liabilities of the Central Bank and that of the multiplier and to discuss possible factors that may account for their change. This will take into account the question as to whether the Central Bank has complete control over its monetary liabilities and the determinants of the multiplier. From this, the determinants of money supply can be classified as policy variables - those which come under the direct control of the Central Bank and behaviour variables, that which do not come directly under the control of the Central Bank. The above analysis will be made to take into account the basic features found in the monetary systems of developing countries. Special reference will be made to Malaysia.

2.1 Effects of Monetary Liabilities

The underlying assumption behind the credit multiplier framework of analysis is that the commercial banks hold Central Bank money as a given fraction of deposit liabilities and that the private sector

---

[1] 'A Treatise on Money', Vol. 1, John Maynard Keynes, London, MacMillan, 1953, p. 30.

outside the banking system holds in fixed proportions certain assets ranging from cash and deposits to other less liquid assets. However, before discussing the effects of changes in monetary liabilities the term used in this analysis has to be clearly defined.

2.1.1 Monetary Liabilities Defined

The monetary liabilities of the Central Bank consist solely of Central Bank Notes in actual circulation in the non-bank private sector and the commercial bank reserves which comprise of vault cash and reserves deposited at the Central Bank. It is also known as high-powered money since one dollar of such money held as bank reserves, permits the commercial banks under a fractional reserve banking system to increase deposit liabilities by several times the amount. However, it was noted in Chapter I that under certain special conditions, assets other than cash has exactly the same effect on the capacity of the bank to lend or invest. Hence, reserve requirements can be met by government securities or other paper that is available to the commercial banks only from the Central Bank. Commercial banks may be given the option of meeting part of, or all, of the requirement in cash or the government securities. However, this substitution is likely to take place since a return can be earned on such assets other than cash. In acquiring such assets the commercial banks have to give up cash, but the reserve position of the bank still remains unaltered.[2] Therefore, under such circumstances, as which exist in Malaysia, high-powered money would not only consist solely of bank notes but other items in its protfolio which can satisfy the reserve requirements of commercial banks.

2.1.2 The Creation of Monetary Liabilities

The ability of a Central Bank to create monetary liabilities depends on the monetary regulations it is governed by. These monetary regulations may vary from country to country. These may range from a self-regulatory currency system independent of governmental action where the volume is determined by total effective demand of the public to a currency system that is dictated by deficit financing by the government.

It can thus be observed that under a fiduciary standard, the amount of monetary liabilities is determined by governmental action. Although the monetary liabilities outstanding may be the net result of other factors, the government is empowered to decide the amount of fiduciary money to issue to the commercial banks and public. In contrast to this, under the specie standard the amount of money in any one country must be of the amount that is necessary for it to maintain international balance with other countries on the similar standard. The

---

[2] If, however, the government deposits its receipts from payment of such securities in the commercial banks then this would affect the reserves of the banks. Nevertheless, this factor can be dealt with by the 'government deposit ratio' discussed in Chapter I.

amount of monetary liabilities is then a dependent rather than an independent variable and is not subject to governmental action.

A change in monetary liabilities of the Central Bank may flow entirely into the commercial banks, in which case it would represent an increase in their reserves or entirely to the non-bank private sector, in which case it would represent an increase in currency in circulation or, it may flow into both commercial banks and the non-bank private sector. In each case, the multiplier effects which have been already discussed in Chapter I will be different.

In Malaysia, until June 1967, the situation was unique in the sense that the Central Bank was operating side by side with the Currency Board which was the sole authority for issuing currency. Although the Central Bank Ordinance of 1958 provided for the Central Bank to be the sole authority for issuing currency, it did not assume this function until June 12th, 1967. Prior to this, the Federation of Malaya shared a common currency with Sabah, Sarawak, Singapore and Brunei issued by the Board of Commissioners of Currency. The statutory regulations under which the Currency Board operated, required it to convert pound sterling into Malaysian dollars upon demand at a specified rate of exchange of 2s. 4d. to a dollar. It is important to point out that the Board had no discretionary authority over the note issue and hence over money supply. The amount of monetary liabilities of the Board depended primarily on the Balance of Payments position of the Currency Area. Foreign currency that was earned by trade could be converted into sterling and sold to the Currency Board for local currency. The assets of the Board then comprised of sterling and the liability of the Board comprised of local currency.

Therefore, the function of the Board was automatic. This means that there was a 100% of reserves against the currency. However, due to an annual appropriation of 1%, the funds were usually above 100%. The assets of the Board consisted mainly of funds held on deposit in London, Treasury Bills of the British Government and also sterling securities maturing within two years. The less liquid assets consisted mainly of sterling securities and securities of other Commonwealth Governments. This system of the Currency Board continued to function until 11th June 1967.

One important feature of the Board was the 1960 Agreement in which provision was made for the Board "to hold among its assets, publicly issued dollar securities of, or guaranteed by participating governments, up to a maximum of $300 million."[3] The provision of this fiduciary issue was that, the maximum amount that could be invested in the securities of the participating government was to be determined by the proportion of profits payable to the government in the year preceeding the date the purchase of the securities in question was made.

---

[3] Report of the Commissioners of Currency, Malaya and British Borneo, 1960, p. 3.

After 11th June 1967, the Central Bank became the sole authority for issuing currency. The par value of the Malaysian dollar was defined to be equivalent to 0.290299 grammes of fine gold. The legislative regulations under which the Central Bank issued currency provided for foreign exchange backing. The amount the Central Bank is required to maintain against its monetary liabilities is specified as, not less than the minimum percentage of reserves of external assets, which the Board would have been required to maintain against its monetary liabilities on the day it ceased to function. Under the 1960 Agreement the fiduciary issue of a maximum of $300 million was allowed. Based on this, the minimum external assets which the Currency Board was required to maintain against its currency in circulation was 80.59%. This then, became the percentage of external assets that the Central Bank is required to maintain against its monetary liabilities.

2.1.3 Central Bank Control Over Monetary Liabilities

In order to consider the ability of the Central Bank to control the size of its monetary liabilities, possible factors that affect not only the size of the monetary liabilities of the Central Bank but its ability to manipulate these factors, have to be taken into consideration. Having described the manner in which the Central Bank can create monetary liabilities, it is apparent that when there is no fiduciary issue and when the currency is fully backed by foreign exchange, the monetary authorities usually have little discretionary control over the size of the monetary liabilities. However, the amount may, to some extent, be varied by monetary and fiscal policies. However in the case of a monetary system that allows for a fiduciary issue, the Central Bank has some discretionary powers to increase its monetary liabilities by issuing securities. But this again depends on the terms of the fiduciary issue.

An examination of the Central Bank's balance sheet will show the factors affecting the monetary liabilities. These changes may arise out of changes in foreign assets, or monetary or fiscal policies. The different economic operations that affect the monetary liabilities of the Central Bank can be classified as internal or external factors. Having described the currency system that prevailed in Malaysia, it becomes apparent that the factors affecting the monetary liabilities of the Currency Board and that of the Central Bank are not entirely the same. Hence, factors that cause changes in the monetary liabilities of the Central Bank will first be considered taking into account special features of the currency system of Malaysia and secondly those factors that affect the monetary liabilities of the Currency Board. In each case, the question as to whether the Central Bank has any discretionary control over the factor and its effects on the monetary liabilities will be considered.

The first factor to be considered is government borrowing from the Central Bank to finance government spending. However, it is important to distinguish between two types of financing - that is, finance by bank

credit and reserve money finance. Finance by bank credit does not affect the monetary liabilities of the Central Bank and hence does not involve a potential of multiple expansion. However, finance by reserve money is identical to printing press finance in that, both increase the monetary liabilities of the Central Bank. Reserve-money finance, whether in payment for current government expenditures or for debt retirement, increases the reserves available to the commercial banks. As a result, the commercial banks may lend to the non-bank private sector by a multiple of the increase in reserve-money.

This type of finance is indicated in the Central Bank's Balance Sheet by the amount of government deposits less 'claims on the government' which refer to the Central Bank's holding of government as well as government-guaranteed securities. An increase in these claims that is not accompanied by a rise in government deposits is the amount of government spending financed by the Central Bank. Such financing will contribute an increase in the Central Bank monetary liabilities. However, excessive financing in this manner may have serious repercussions.

To prevent this, such financing in Malaysia is governed by strict regulations. The Central Bank of Malaysia Ordinance limits the total amount of such advances to a maximum of 12½ per cent of the estimated annual revenue of the government. In addition, such advances to the government to finance budget deficits must be repaid within three months of the end of the government's financial year. If the advances are not repaid within the time stated, the Central Bank will be restricted from making further advances to the government. However, this provision for borrowing has not been made use of by the government. The government's firm stand on this matter can be seen from what has been said by the Minister of Finance:

> "the government . . . does not intend the Central Bank to be used as a note-printing machine to gratify irresponsible demands for finance for development."[4]

In addition to government borrowing from the Central Bank, open-market operations can also affect the monetary liabilities of the Central Bank. In this way, the Central Bank can, by buying and selling securities to commercial banks or the public, affect the cash reserves of the commercial banks.[5] This is because cash is exchanged for the securities. When the payments have been made by the commercial banks to the Central Bank, their deposits at the Central Bank will be reduced.

---

[4] 'Speech Introducing the Second Reading of the Central Bank Bill' in the Federal Legislative Council, October 29th 1958 - Tun H.S. Lee.

[5] However, it is important to observe that, when the commercial banks acquire Treasury Bills and other Government securities included in the liquidity requirement, the reserve position of the commercial banks are not altered.

However, in Malaysia the amount of Treasury Bills and Government Securities the Central Bank can purchase or sell is limited by the provisions requiring it to maintain minimum percentages of foreign exchange reserves against its currency and deposit liabilities.[6] With this conservative attitude to the holding of Treasury Bills and Government Securities, the Central Bank has not increased its holding of Treasury Bills and Government Securities to a significant extent, in relation to its other assets.

However, the monetary liabilities available to the private sector may yet be regulated by the monetary authorities. Government deposits with the Central Bank for example, will reduce the amount of monetary liabilities of the Central Bank available to the banks and non-bank private sector. Similarly, a decrease in deposits with the commercial banks by the government will reduce its reserves. Hence, assuming that the government has both deposits with the Central Bank and commercial banks, the government (or the Central Bank which acts as a financial advisor to the government) can regulate the amount of monetary liabilities to the private sector by manipulating its deposits. For example, the government can deliberately influence the amount of monetary liabilities available to the private sector by regulating payments into and out of the commercial banks. In order to reduce the reserves of the commercial banks, the government could finance its current expenditure more from deposits of the commercial banks rather than from the Central Bank and credit its revenue receipts to the Central Bank rather than the commercial banks.

Another item on the Central Bank's balance sheet that shows how the Central Bank may influence the amount of monetary liabilities available to commercial banks is advances to commercial banks or 'claims on commercial banks.' An increase in these loans to the commercial banks from the Central Bank increases the commercial bank reserves, while conversely, a decrease in credit to the commercial banks causes a fall in their reserves.

Lastly, 'claims of the private sector' of the Central Bank also, to some extent, affect the amount of Central Bank monetary liabilities to the private sector. For example, loans by the Central Bank to specialised banks and other entities whose economic activities the government encourages will increase the monetary liabilities to the private sector. Similarly, when the Central Bank discounts bills it will cause a rise in its monetary liabilities available to the public.

From the above account, it can be seen that the monetary authorities do have some discretionary control over the size of monetary

---

[6] The Central Bank of Malaysia Ordinance requires the Central Bank to maintain a minimum of 80.59 per cent of its monetary liabilities and 35 per cent of its deposit liabilities in foreign exchange reserves.

liabilities by manipulating its assets and liabilities. In this manner, the Central Bank is able to influence the amount of bank reserves and the currency in circulation in the private sector. It should be noted that the factors that have already been discussed are internal factors or factors that have been initiated from within the system.

Proceeding with the external factors it can be seen that in an open economy the balance of payments position has a significant role in affecting bank reserves and money supply. An export surplus will lead to a rise in foreign assets and as exporters exchange these assets for the local currency, bank reserves will increase. On the other hand, when imports exceed exports, that is, there is a deficit in the balance of payments, there will be a contraction of note issue since the deficit is paid for by converting local currency into foreign assets.

Hence, we can see that different economic operations can contribute offsetting effects on the monetary liabilities of the Central Bank, either being expansionary or contractive in their effect. Inability of the Central Bank to manipulate the monetary liabilities may arise due to political or technical difficulties that exist in the country.

As previously noted, for the period 1959-1967 the Central Bank of Malaysia operated together with the Currency Board. The mechanism by which the Currency Board created its monetary liabilities was automatic since the currency was backed by a 100% of sterling reserves. Hence, it can be said that the predominant factor that influenced the monetary liabilities was the balance of payments position. Currency available to the private sector changed primarily according to the behaviour of this external factor. The Currency Board had no discretionary control. When the balance of payments had a surplus, that is, when the value of the exports and other capital inflows exceeded the value of the imports and other capital outflows, more foreign exchange was earned than was paid out. Foreign exchange that was earned in international trade could thus be converted into sterling and could be sold to the Currency Board for local currency. Conversely, a deficit in the balance of payments reduced the monetary liabilities of the Currency Board since the deficit was paid for by converting Malaysian dollars into sterling. Hence, in the case of the monetary system under the Currency Board the monetary liabilities changed primarily in response to changes in the external payment situation which depends entirely on the performance of exports of this country in the international market. In fact, in the case of Malaysia, the currency in circulation has been described as an indicator of economic growth since it increases only when there is an increase in output.

Although the Currency Board has no discretionary control over the amount of currency that flows into the country, the government and the Central Bank may affect the monetary liabilities of the Currency Board. For example, the government could move its sterling balances from banks in the country to banks in London in which case the reserves of the commercial banks in the country may be altered. Hence, in the case of the external factors affecting the size of the monetary liabilities, the monetary authorities have limited control over it.

However, internal factors such as the size of the government deposits with the Central Bank can affect the monetary liabilities available to the private sector. As noted earlier the government can, by moving its deposits between the Central Bank and commercial banks, regulate the amount of monetary liabilities available to the private sector. This technique, however, assumes that the government can regulate its payments and receipts into the banks and that these receipts and payments are of a relatively large magnitude.

It should be noted that although the Board was allowed a fiduciary issue of a maximum of $300 million it did not make use of this allowance. However, if the government had made use of this, it would be able to have more discretionary powers over the monetary liabilities of the Currency Board. The effect would be similar to that discussed earlier under factors affecting the monetary liabilities of the Central Bank since the fiduciary issue would be backed by publicly issued dollar securities of or guaranteed by the government. Hence, we can see that, to a limited extent, the monetary authorities in Malaysia may influence bank reserves and currency in circulation in the private sector.

2.1.4 The Effect of Changes in Monetary Liabilities on Money Supply

Given the currency ratio and the reserve ratio, an increase in Central Bank monetary liabilities will increase money supply to the extent as indicated by the multiplier. The exact magnitude of the increase will depend on the size of the required reserve ratio, the bank's excess reserve ratio and the public desired currency ratio. The potential change in money supply (ΔM) due to a change in currency stock (ΔE) can be expressed as follows:

$$\Delta M = \frac{1 + c}{c + r(1-c)} \Delta E$$

where c is the currency ratio,

and r the reserve ratio.

Thus, an increase in the stock of government money results in a multiple expansion of money supply and conversely a decrease in government money has opposite effects. It is important to note, that in the above expression, the change in government money does not represent an equal increase in bank reserves. Some part of the increase is used as currency in circulation. This implies that if the increase was simply added to the bank reserves, the net effect on money supply would be greater.

However, since changes in the monetary liabilities of the Central Bank is only one of the determinants of changes in money supply, its effects on money supply can be isolated from that of the multiplier. From this, the amount of money supply increased due to increases in monetary liabilities of the Central Bank may be known. (Refer to Appendix 1B for the methods that have been used to evaluate the effect of monetary liability increases on money supply.)

2.2 Effects of the Multiplier

The multiplier has already been defined in the previous chapter. However, it was explicitly assumed in the analysis that the multiplier was stable in the short-run. This assumption would be in conformity with the traditional theorist on money supply who assumed that money supply varied proportionately with the monetary liabilities of the Central Bank available to the private sector. In the following analysis, it can be shown that several factors affect the determinants of the multiplier which therefore causes them to vary. This in turn induces changes in the multiplier. A change in the multiplier would mean that money supply could change without a change in the monetary liabilities of the Central Bank.

An analysis of the possible factors that could affect the multiplier can be discussed in terms of factors affecting the determinants of the multiplier. This will include an examination of the causes of changes in these determinants and the direction of their effect. Institutional features of the Malaysian economy will be noted and other political and sociological factors will be used to explain changes in these determinants.

2.2.1 Factors Affecting the Determinants of the Multiplier

Depending on the significance of the factors affecting these determinants, the magnitude of their effect on money supply will be further magnified by the multiplier effect.

By definition, legal reserve requirements are fixed by law. As has been noted in Chapter I such laws vary according to different monetary systems. A legal reserve ratio that is not subject to change by monetary authorities is a less effective instrument of monetary policy. However, in many monetary systems the monetary authorities have the power to vary the legal reserve requirements. Such reserve requirements may be changed due to a variety of reasons. Legal reserve requirements can be used to offset increases in reserve money as a result of balance of payments surplus, a Central Bank financed deficit or any other economic operation that brings about an increase in reserve money. By imposing a high legal required reserve ratio, the monetary authorities can limit the inflationary effects of an increase in reserve money. Conversely, the existence of a high reserve ratio can reduce the effect of a fall in reserve money. This is because a large part of this reduction will be reflected in a decrease in required reserves rather than bank credit. The effect of this will be a smaller contraction of money supply than that whichwould have occurred with a lower reserve ratio. Hence, the reserve ratio may be fixed according to the desired effect it may induce. A high reserve ratio would have a greater stabilising effect than a lower reserve ratio since it reduces both secondary expansion and contraction that occurs on the basis of a change in reserve money.

On the other hand, it should be emphasized that a fixed or stable legal reserve requirement does not prevent variations in reserve requirements. In such a case, it would merely reduce the extent of the variation in money supply in that it reduces credit expansion. However, if the legal reserve requirement is 100%, no expansion of credit is possible. For example, a fiscal deficit financed by borrowing from the Central Bank would increase money supply by the amount the reserves increase but no credit expansion would occur if the legal reserve requirement was a 100%.

Hence, we can see that the monetary authorities may vary the legal reserve ratio to offset changes in reserve money or to limit credit expansion. Changes in reserve money may arise as noted from internal or external development, some of which, the Central Bank has no discretionary control over.

However, the question of the effectiveness of varying the legal reserve ratio or whether other accompanying policy action is necessary is another problem. This will be dealt with in Part III of this exercise. In any circumstances, however, the monetary authorities will be induced to change the legal reserve ratio according to whether they wish to increase the liquidity of the banks and stimulate them to expand credit or to reduce bank reserves in an effort to contract bank lending.

Therefore, we can conclude that changes in reserve requirements are made to compensate for changes in the volume of money that would otherwise lead to large fluctuations in the supply of bank credit and the quantity of money. However, this depends not only on the magnitude of the fluctuation but also on the country's general economic policy.

Changes in legal reserve requirements have less effect in underdeveloped countries than in more developed countries. This is because, not only do banks hold a large excess reserve, but also due to the fact that the currency drain tends to be large. These factors tend to limit credit expansion. The legal reserve requirement can have very insignificant effects on changes in money supply if the demand for funds are low or if there are few borrowers that meet the requirements of the banks or even, that the bank may see few attractive lending opportunities. This is especially so in underdeveloped countries where banks are reluctant to lend long-term credit or tend to be conservative towards agricultural credit. This results in commercial banks having large excess reserves. A reduction in legal reserve requirements then does not assure an expansion of bank credit and money supply.

Although the monetary authorities may not determine the amount of excess reserves held by the commercial banks, it does have influence on it, as has been noted earlier. Briefly, the factors that may affect excess reserves of commercial banks can be classified under: operations of the public, Central Bank (government) and the commercial banks themselves and also as a result of foreign activities.

In the case of operations by the public, the most significant factor is a change in the currency ratio. If the currency ratio falls, it means that the public wishes to hold a greater amount of other forms of money supply rather than currency. This would tend to increase bank reserves. Similarly, any transfer of funds, from demand to time deposit by the public would increase the bank's excess reserves if the legal reserve ratio for demand deposit was greater than that of time or savings deposits. However, if the legal reserve ratios were uniform for all categories of deposits then such transfers would have no effect on excess reserves.[7]

We have also seen that government operations such as, regulating deposits at the commercial banks and Central Bank, and reserve financing can also affect the excess reserves of the commercial banks.

Factors that affect the commercial bank's excess reserves classified under the 'operations of the Central Bank' include open market operations, changes in the rate of discounting bills, amount of advances to commercial banks and lastly, changes in the legal reserve ratio. The significance of the effect of these factors depend on how developed the financial market is and, how dependent the commercial bank is on the Central Bank.

Similarly, foreign operations that affect bank reserves include the balance of payments position, and other transactions such as, when a foreign Central Bank draws on the local Central Bank to make payments to domestic banks or members of the public. Lastly, the operations of the commercial banks themselves affect the amount of excess reserves. Most important is their attitude to lending and their tendency to lend only for certain projects or particular sectors.

In Chapter I, it was noted that in special circumstances, reserves in forms other than cash deposits with the Central Bank or cash held in the vaults of commercial banks can also serve the function of limiting credit expansion. The principal difference between the cash reserve requirement and the liquidity requirement is that the latter allows the commercial bank to earn interest on their required reserves. Also it is used as an instrument of selective credit control to influence the allocation of credit and to affect the composition of the liquid assets of the commercial banks. Hence, there is a tendency for commercial banks to substitute cash for securities included in the liquidity requirement since a return can be earned, unless there are inconveniences attached to such investment that causes the return to be unworthwhile. Factors affecting changes in the liquidity ratio and its composition for the period 1959-1968 for Malaysia will be discussed in Chapter III, Part II.

Thus, it can be seen that the monetary authorities can exert some influence over the total and excess reserves of the commercial banks.

---

[7] Also changes in 'post office savings ratio' would have similar effects as that of the currency ratio.

Although there are many independent factors affecting the size and composition of bank reserves, these factors can be neutralised or reinforced by monetary authorities to achieve the desirable level of excess reserves.

However, because of the large currency ratio that exists in developing countries there is a tendency for the legal reserve ratio to be less effective. This is especially so if the currency ratio tends to vary. There are several basic factors that determine the volume of currency in circulation in the non-bank private sector. In order to make a systematic analysis, these factors can be classified according to whether they are exogenously or endogenously induced. From this, a set of hypothesis of the behaviour of this ratio with respect to Malaysia can be discussed. In Part II, wherever statistical data permits, a statistical analysis will be carried out.

The volume of currency in circulation may be dictated by economic, political and social factors. These factors may either exert an upward or downward pressure on the currency ratio. In our analysis, endogenous variables refer to those variables that are determined within the banking system and exogenous variables to mean that which are not determined within the banking system. This distinction allows us to assess the effect the banking system has on the currency ratio.

In developing countries, the growth of banking facilities is a very significant factor in affecting the currency ratio. In view of its significance the endogenous variables will be dealt with first:

(a) The growth of the number of banking offices - We can expect an inverse relationship between the growth of banking offices and the currency ratio. If a bank is established in an area where no banks existed then it will allow the non-bank private sector to have a choice of holding different forms of money rather than currency. As the advantages of banking are realised, there will be a tendency for the public to hold a larger fraction of their money in the form of deposits.

(b) The location of banks - This factor tends to be important in developing countries. This is because of the tendency for banks to be concentrated in large towns. But, because more of the higher income groups live in towns, it is likely that the banks will find most of their customers in the towns. However, on the basis of this, one cannot conclude that a bank established in an area where banks did not exist will have a greater effect on the currency ratio as that which is established in a town where many banks already exist. This would only be the case if the number of banks in the towns had reached saturation point.

(c) Cost and conveniences of using cheques - This will affect the volume of demand deposits and hence the currency ratio.

For example, an increase in bank service changes on demand deposits may reduce the use of cheques and hence increase the use of currency. However, the conveniences received by using cheques as a means of payment also affects the ability of the commercial bank to attract deposits and hence affect money supply.

(d) The returns earned - Since time and saving deposits are included in money supply in our analysis, then interest paid on these deposits will affect their volume. A higher interest rate paid on deposits will increase their attractiveness and therefore encourage the growth of such deposits. This factor will cause the currency ratio to fall if the rate of growth of currency in circulation is smaller.

(e) Ownership and type of financing - Very frequently in developing countries certain minority groups predominate in the field of finance. Various situations may exist in different countries. For example, foreign banks may be well-established and hence give greater confidence to depositors and borrowers. On the other hand, due to the fact that such foreign banks tend to finance trade and commerce only, depositors may prefer domestic banks that may cater for their small credit needs. The development of such banks may exert a downward pressure on the currency ratio in that people prefer to deposit money at domestic rather than foreign banks. However, in developing countries the commercial banks may not reduce the currency ratio significantly due to the fact that commercial banks do not have a prominent role in long-term or large-scale projects. These are usually financed by finance houses or public bodies. Thus, although banking facilities have expanded and contributed to the decline of the currency ratio, the decline is not so significant due to the fact that the role of banks in finance is not so significant. This is confirmed by the fact that the commercial banks in West Malaysia have large excess reserves.[8]

Other principle factors affecting the currency ratio may be discussed as exogenous variables, that is, variables not determined by the banking system. Following are the variables and their specific possible effects:

(a) Per capita income - As the level of income (measured in terms of per capita income) changes, one would expect that the level of currency held by the public in relation to the total money supply would also change. As income per capita increases it is likely that the currency ratio will fall. This is usually the result of the increase in the holding of money

---

[8] Refer Part II.

in the form of deposits or other more sophisticated forms of money like credit cards. This hypothesis may be tested by simple coefficient of correlation.[9] The hypothesis that there is a negative correlation between income per capita and the trend of the currency ratio is tested for West Malaysia in Part II of this exercise. This means that the level of the currency ratio is inversely related to the level of income per capita. This hypothesis, however, assumes that a large sector of the economy is already monetised and that there are banking facilities available to provide the means of payment by cheques or the holding of money in the form of deposits. For, if a large section of the economy is not monetised, with a large section of the public in the low income group, this is likely to have different effects on the form in which money is held by the non-bank private sector.

(b) Income redistribution - This may exert an upward or downward pressure on the currency ratio depending on whether the redistribution is related with an increase or decrease in the inequality of income distribution. The underlying assumption here is that the higher income group tends to hold a smaller proportion of their money in the form of currency. In developing countries, although there are attempts to reduce income inequality there are elements which contribute to a widening in the disparity of income distribution. A decrease in the inequality of income distribution would result in an upward pressure on the currency ratio. This is because on the one hand, the very high income group which holds a small portion of their money in the form of currency would be reduced and the income of low income groups who hold a large portion of their money in the form of cash would be increased. Conversely, an increase in the inequality of income would result in a downward pressure on the currency ratio. Hence, if there is an increase income per capita that is accompanied by an increase in income disparity then the downward pressure on the currency ratio would further be reinforced. However, this can only be discussed hypothetically since measurement of the effect of income redistribution on the currency ratio is difficult.[10]

(c) Price level - In general, it is likely that the currency ratio will rise in inflationary periods. This is especially

---

[9] Test of the relation between income per capita and the currency ratio have been carried out by Phillip Cagan, op.cit., and Daniel J. Khazzoom, op.cit.

[10] However, by using Lorenze curves which can be derived from income tax statistics, the direction of redistribution of income may be assessed.

so in underdeveloped countries, where there will be a tendency to increase stocks of not only essential commodities but also precious commodities which are paid for by currency rather than cheques. However, inflation may have opposite effects on the currency ratio. If inflation has income redistributive effects in favour of higher income groups, then this will have a downward pressure on the currency ratio. This is because the average currency ratio tends to be higher for low income groups and lower for high income groups. The effect of inflation in increasing the income of the high income groups will hence result in a fall in the currency ratio. This hypothesis can be tested but the results need not necessarily be conclusive since there are other factors affecting the currency ratio.

(d) Monetisation - This can also be a significant factor in affecting the currency ratio especially in countries where a large section is still in the process of being monetised. In such areas banking facilities do not exist, therefore the monetisation would take the form of currency. In addition, sophisticated means of payments such as cheques would be limited not only because of lack of banking facilities but because its intrinsic value is not so obvious. The effect of monetisation then, can be said to have an upward pressure on the currency ratio. The actual effect would depend on the size of the non-monetised economy and the rate at which monetisation takes place. In developing countries there can be found less money in use since a large part of the subsistence sector produces for their own consumption, and payment for labour and rent in this sector is often in kind. However, as the community is made more aware of the existence of new technology and new commodities from the towns they need money for transaction purposes to acquire these commodities. This induces greater monetisation which takes the form of cash, thereby exerting an upward pressure on the currency ratio.

(e) Urbanisation This will exert a downward pressure on the currency ratio since it is usually accompanied by the development of banking facilities. Hence depending on the stage of monetisation, that is, from barter to the use of currency or from the use of currency to that of cheques, that takes place, urbanisation will exert opposite effects on the currency ratio.

(f) Evasion of tax payment - Another factor that may have a significant effect on the level of the currency ratio is the desire to conceal income receipts or certain payments.[11] Payments or receipts in cash are unrecorded as they do not pass through the banking system. This is common in developing countries

---

[11] Op. cit. In accounting for long-run changes in the currency ratio in the United States, Phillip Cagan used this as one of the reasons for explaining the changes in the currency ratio.

where currency is used instead of cheques in an attempt to evade taxation. The effect of this on the currency ratio will be to increase it since more cash is used in relation to other forms of money supply.

(g) Uncertainty - In times of uncertainty in a country, there will be a tendency for people to hold foreign currency rather than domestic currency. This is determined mainly by the confidence people have in the domestic currency and the political situation in the country. However, the people that behave in this manner are usually the high income group or business firms who are the community that hold deposits. The effect of the conversion of domestic funds to foreign currency then, would likely exert an upward trend on the currency ratio.

(h) Customs and habits - The customs and habits of a community will tend to affect the currency ratio. For example, the means of payment in kind, cash or cheques will affect the currency ratio. Also, the attitude to saving - either by hoarding or in banks has its effects depending on the significance and extent such saving takes place. In Malaysia, there are games like 'Tontine' where cash is pooled by a group of people at regular intervals and rotated to a participant at each interval. Hence, even when banking facilities are available there is a tendency to continue this custom. It should also be noted that this game is usually played by lower income groups who hold a large portion of their money in the form of cash.

Therefore, from the above account it can be seen that there are several possible factors that can determine not only the level and trend of the currency ratio but also the degree of variability of the ratio.

In the case of the other determinants of the credit multiplier, when the broader concept of money supply is used, factors affecting these determinants will also have to be considered. It is likely that the changes in the ratio of Post Office Savings deposits to money supply will be affected by the rate at which Post Office Saving facilities are increased and the rate of interest that is paid on these deposits. This ratio will be more significant if such banks are established in areas where no commercial banks exist since the choice for the public then, would not be between cash and deposits at the commercial banks, but cash and deposits at the Post Office Savings Banks.

The size of government deposits at the commercial banks in relation to total money supply depends entirely on the policy of the Central and State Governments. Such deposits may be varied at their discretion.

2.2.2 The Effect of Changes in the Determinants of the Credit Multiplier

In the preceding analysis, it has been shown that the determinants of the multiplier may change under changing circumstances. This is especially so in developing countries where there are many major changes in the economy due to economic development.

The effect of such changes will cause the multiplier to vary, hence, changing the potential effect of an increment in reserves on money supply. For example, a fall in the currency ratio will induce a greater multiplier effect on a given increment in reserves. Similarly, in the case of changes in the other determinants of the credit multiplier. However, a fall in the 'government deposit ratio' will have opposite effects.

The conclusion arrived from this is, that changes in the determinants of the credit multiplier may induce changes in money supply without any increment in reserves. The changes in money supply attributable to changes in the determinants of the multiplier may be further distinguished. (Refer for methods that have been used in Appendices A3 and A4.)

However, the effect of a change in the determinants of the credit multiplier depends on the actual value of each of the determinants. A given percentage change in one determinant may have a greater effect on the credit multiplier than an equal percentage change in another determinant because of the difference in the value of the two determinants. The higher the value of the determinant the greater its percentage effect will be on the multiplier. Hence, one would expect that changes in the multiplier will be closer to the changes of the larger variables.

2.3 Effects Distinguished

It is very important to distinguish the effects of a change in Central Bank monetary liabilities and a change in the value of the multiplier on the money supply.[12] If we assume the Central Bank has discretionary control over its monetary liabilities it does not mean that it can determine money supply unless a constant multiplier is assumed. However, in the above analysis, it has been shown that there are many possibilities which can induce the multiplier to vary to produce changes in money supply without a change in the Central Bank monetary liabilities. But, it should be noted that certain determinants of the multiplier come directly under the control of the Central Bank while the others are relatively independent of Central Bank control.

---

[12] Op. cit., Joachim Ahrensdorf and S. Kanesathasan have attempted to separate the effects of changes in Central Bank monetary liabilities and the effects of changes in the credit multiplier for the countries in their survey. They found that in all the countries in their survey, the average percentage change in money due to a change in the multiplier was smaller than the change in that which resulted from variations in the Central Bank Monetary Liabilities. However, in most countries, this relation was not true for all the years in their analysis. Similar test for West Malaysia can be found in Part II of this exercise.

2.3.1 Policy and Behaviour Variables

On the basis of what has been discussed, it is apparent that changes in money supply may be determined by policy variables - those that are the result of direct action of the monetary authorities and behavioural variables - those that are not under the control of the Central Bank, which include the behaviour of the commercial banks and that of the non-bank private sector. Hence, changes in Central Bank monetary liabilities required reserve and liquidity ratios and the 'government deposit ratio' are regarded as policy variables whereas changes in the excess reserve ratio, the currency ratio and the post office savings deposit ratio will be regarded as behavioural variables. However, these behavioural variables may, to some extent, be influenced by policy action.

2.3.2 Monetary Effects of the Strength of These Variables

For monetary policy to be effective it must take into account the behaviour of the private sector. For it should be noted that if the strength of the behavioural variables exceed that of the policy variables, not only will there be offsetting effects but changes in money supply may not move in the desired direction. For example, behavioural variables can have an expansionary effect whereas the policy variables, a contractionary effect. However, the variables may also move in the same direction in which case the effects are reinforced.

From this it is implied that money supply may not be directly controlled. It may only be influenced by the monetary authorities. Hence, with the strength of the behavioural variables evaluated the monetary authorities may use it as a basis of policy formulation either by reinforcing or offsetting the effects of the behavioural variables to produce the desired effect on money supply.

CHAPTER III

STATISTICAL ANALYSIS OF THE CREDIT MULTIPLIER

The intention of this section is to attempt a statistical examination of the concept discussed in Part I. This is to evaluate the significance of the credit multiplier in the Malaysian monetary system and to trace the reasons for changes in the credit multiplier.

3.1 The Determinants of the Credit Multiplier

Before computing the Credit Multiplier it is appropriate to examine the behaviour of the variables that determine the multiplier. This will give a clearer indication of the significance of the various variables and hence provide some empirical evidence of the factors that lead to changes in money supply.

3.1.1 The Currency Ratio

PART 2

ASPECTS OF STATISTICAL MEASUREMENT

The currency ratio cannot be determined by policy action. However, by affecting the other determinants of the money supply, the monetary authority may influence the effects that may result due to changes in the currency ratio. This then implies the significance and importance of the currency ratio in the analysis, since it may be used as a basis for policy formulation. A detailed examination of the currency ratio for Malaysia may be made by an analysis of its level, trend, rate of change and variability in an attempt to access its importance in affecting money supply. As noted in Part I there are a large number of possible factors that cause changes in the currency ratio. An attempt will also be made to test whether these factors can be used to explain changes in the currency ratio in Malaysia wherever statistical data permits. However, it should be noted that changes in the currency ratio does not lead to a proportional change in the multiplier. The change in the currency ratio would have no effect on money supply if the other determinants of the multiplier moved in the opposite direction. Hence the effect of the currency ratio depends on its relative change in contrast to the other variables that determine the multiplier.

The currency ratio that is referred to in the analytical framework outlined in Part I is a function of money supply defined in the broader sense (that is, MS_3). The currency ratio, therefore, can be expressed as:

$$c_1 = \frac{C}{MS_3}$$

CHAPTER III

STATISTICAL ANALYSIS OF THE CREDIT MULTIPLIER

The intention of this section is to attempt a statistical examination of the concept discussed in Part I. This is to evaluate the significance of the credit multiplier in the Malaysian monetary system and to trace the reasons for changes in the credit multiplier.

3.1 The Determinants of the Credit Multiplier

Before computing the Credit Multiplier it is appropriate to examine the behaviour of the variables that determine the multiplier. This will give a clearer indication of the significance of the various variables and hence provide some empirical evidence of the factors that lead to changes in money supply.

3.1.1 The Currency Ratio

The currency ratio cannot be determined by policy action. However, by affecting the other determinants of the money supply, the monetary authorities may offset any destabilising effects that may result due to changes in the currency ratio. This then implies the significance and importance of the currency ratio in the analysis, since it may be used as a basis for policy formulation. A detailed examination of the currency ratio for Malaysia may be made by an analysis of its level, trend, rate of change and variability in an attempt to access its importance in affecting money supply. As noted in Part I there are a large number of possible factors that cause changes in the currency ratio. An attempt will also be made to test whether these factors can be used to explain changes in the currency ratio in Malaysia wherever statistical data permits. However, it should be noted that changes in the currency ratio does not lead to a proportional change in the multiplier. The change in the currency ratio would have no effect on money supply if the other determinants of the multiplier moved in the opposite direction. Hence the effect of the currency ratio depends on its relative change in contrast to the other variables that determine the multiplier.

The currency ratio that is referred to in the analytical framework outlined in Part I is a function of money supply defined in the broader sense (that is, MS_3). The currency ratio, therefore, can be expressed as:

$$c_1 = \frac{C}{MS_3}$$

If the narrow definition of money supply is used the currency ratio may then be expressed as:

$$c_2 = \frac{C}{MS_1}$$

It was previously argued that the former was a better definition, however, it should be noted that each definition may be used to reveal different conclusions. The ratio used then, should depend on the specific purpose it is meant to serve. When the ratio is to be used to show the preference of the public for currency in relation to the deposits then the appropriate currency ratio would be that which takes into account other deposits in the term money supply. This is especially the case in developing countries where demand deposits are not so significant. Hence, in terms of the effect of changes in the currency ratio on the credit multiplier, the amount of currency that goes into time and saving deposits is as important as that which goes into demand deposits. From a policy point of view, this would give a clearer indication of the demand for money. However, c_2 would be more appropriate to show the increase in the use of cheques.

For the purpose of this study the first definition will be used. But in order to study the behaviour of the ratio, both ratios will be observed and compared. The period chosen for the study is 1959-1968. Most of the data used are end of the year data. This means that seasonal variations in the demand for currency is not taken into account. It should be noted that Malaysia was formed in September, 1963 and that the banking laws that applied to West Malaysia did not apply to East Malaysia until 1965. Therefore, in computing the currency ratio for the calculation of the multiplier West Malaysia's figures will be used. However, for the purpose of tracing the behaviour of the currency ratio, such a relatively short period would not provide the basis for any definite conclusions. After 1963, currency data for West Malaysia only is not available, hence date for the whole of Malaysia will be used over the period 1959 - 1968 to analyse the behaviour of the ratio. The currency ratio for Malaysia may be seen in Table 2.

An examination of the year to year variation indicate that c_1 is a smooth series in that it has declined consistently. c_2 has also declined steadily except for the year 1963 when it increased. In order to test the variability of the trend of the ratio the 'efficiency test' can be used.[1] The results of the efficiency test

---

[1] This method was used by Daniel J. Khazzoom op.cit. He noted that this was a better test of variability rather than the coefficient of variation that was used by J. Ahrensdorf and S. Kanesathasan on the grounds that it did not show whether a series was smooth or erratic. The coefficient of variation shows the degree of dispersion. However, a series may be dispersed but not variable in the sense of being erratic. This case exists in the currency ratio for Malaysia. The "efficiency test" indicates a smooth series but the coefficient of variation is 16%. As a measure of dispersion, the coefficient of variation would give the correct measure but as a measure of variability it is wrong since the series is far from being erratic.

TABLE 2

ALTERNATIVE CURRENCY RATIOS FOR MALAYSIA
1959-1958

End of Period	$c_1 = \frac{C}{MS_3}$	$c_2 = \frac{C}{MS_1}$
1959	0.4123	0.5972
1960	0.3790	0.58.56
1961	0.3615	0.5796
1962	0.3548	0.57.50
1963	0.3416	0.5909
1964	0.3357	0.5667
1965	0.3238	0.5648
1966	0.3118	0.5551
1967	0.2563	0.5132
1968	0.2368	0.4812

Source: Computed from Appendix B12.

for c_1 was -89.82%. This measure relates the net change in the level of the currency ratio to the total path travelled during the period considered. The value may range between - 100% to 100%. The more the currency ratio moves in the same direction the closer will be the result to 100%. It is not necessary for the series to move in a straight line for the index to be 100%. However, it is necessary that the consecutive movement moves in the same direction since the series is based on magnitude of change in the ratio. From the efficiency test for series c_1 and c_2 it is found that the series c_1, which incorporates saving and time deposits has a smaller variability than c_2 which has an 'efficiency' index of -78.93%. Since it has been argued that series c_1 would be a better indication of the demand for currency in Malaysia, the conclusion drawn from the above analysis is that c_1 would cause smaller variations in the credit multiplier than that would have been the case if the series c_2 was used.

The average rate of change of c_1 was also found to be greater than that of c_2. The average rate of c_1 was 5.85 as compared to 2.34 for c_2. This confirms D.J. Khazzoom's point that in developing countries the fall in the currency ratio is less a reflection of the convenience of using cheques as a means of payment.[2] The fall in the currency ratio is greater when time and saving deposits are taken into account indicat-

[2] Op. cit., p. 79.

ing that demand deposit are not so important as the time and saving deposits at the commercial banks and saving deposits at the Post Office Savings Bank combined. The behaviour of both the currency ratios are illustrated in Chart 1.

In Malaysia, it can be said that the endogenous factors outlined in Chapter II play a more significant role in affecting the currency ratio. Firstly, the number of banking offices in the country have almost trebled over the period 1959 - 1968. (See Appendix B1.) This increase has taken both in the form of foreign as well as domestic banks. It is likely that domestic banks will cater more for the lower and middle income groups more than foreign banks which were originally established to finance trade and commerce.

"For the period 1965 - 1967 the annual rate of growth of deposits held by domestic banks was 21%. As a result of the higher rate of growth of deposits held with domestic banks than that of deposits held with foreign banks, deposits held with domestic banks as a proportion of total deposits increased from 33% to 34.6% in 1968. By comparison, deposits held with domestic banks were only 27.1% of total deposits at the end of 1964. The success of domestic banks in attracting a large proportionate increase in deposits was to some extent due to their establishing more branches than the other banks during the past few years."[3]

The ability of the banks to attract deposits does not only depend on the kind of ownership of the banks but also on the type of finance the commercial banks deal with. A study made of the classification of loans and advances by commercial banks of Malaysia indicate that the main purposes for which the loans are borrowed are for general commerce, manufacturing and professional and private individuals (See Appendix B9). These borrowers are likely to have bank accounts and therefore the currency leakage is likely to be less significant. With increases in commercial bank finance to the agricultural sector the currency leakage is likely to be affected by seasonal influence and perhaps become more significant.

By observing the table in Appendix B10 it can be seen that new banking offices were established in both areas where many banks had already been established and in areas where few banks existed. In both cases it increases the availability of banking facilities to the public and provides an outlet for holding money in forms other than cash and can be said to be one of the most important factors affecting the currency ratio.

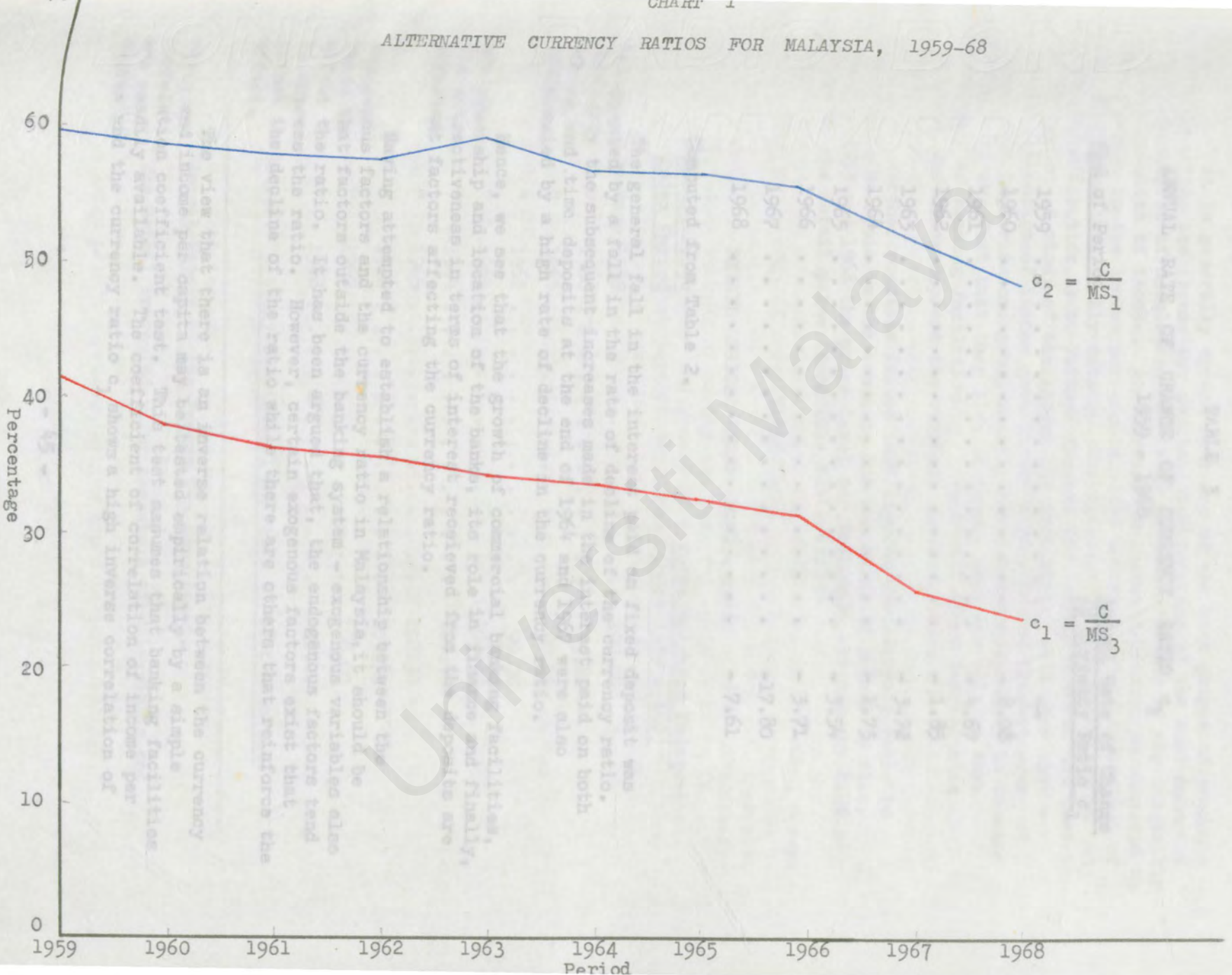
However, the rate of interest paid on fixed (time) and saving deposits at the commercial banks affect the banks' ability to attract deposits. From the table in Appendix B11 it can be seen that since November 1964 increases have been made of the interest rate paid for both fixed and saving deposits. The effect of this is a large increase in the growth

---

[3] Bank Negara Malaysia, Annual Report and Statement of Accounts, 1968.

CHART 1

ALTERNATIVE CURRENCY RATIOS FOR MALAYSIA, 1959-68



rates of the deposits. This contributes to some extent, the increase in the rate of decline of the currency ratio as can be seen in Table 3. This is because the cost of holding currency has now increased.

TABLE 3

ANNUAL RATE OF CHANGE OF CURRENCY RATIO c_1
1959 - 1968

End of Period	Annual Rate of Change of Currency Ratio c_1
1959	--
1960	- 8.08
1961	- 4.67
1962	- 1.85
1963	- 3.72
1964	- 1.73
1965	- 3.54
1966	- 3.71
1967	-17.80
1968	- 7.61

Computed from Table 2.

The general fall in the interest paid on fixed deposit was accompanied by a fall in the rate of decline of the currency ratio. Similarly the subsequent increases made in the interest paid on both saving and time deposits at the end of 1964 and 1967 were also accompanied by a high rate of decline in the currency ratio.

Hence, we see that the growth of commercial banking facilities, the ownership and location of the banks, its role in finance and finally, its attractiveness in terms of interest receieved from the deposits are important factors affecting the currency ratio.

Having attempted to establish a relationship between the endogenous factors and the currency ratio in Malaysia, it should be noted that factors outside the banking system - exogenous variables also affect the ratio. It has been argued that, the endogenous factors tend to depress the ratio. However, certain exogenous factors exist that offset the decline of the ratio while there are others that reinforce the effect.

The view that there is an inverse relation between the currency ratio and income per capita may be tested empirically by a simple correlation coefficient test. This test assumes that banking facilities are readily available. The coefficient of correlation of income per capita and the currency ratio c_1 shows a high inverse correlation of

- 0.895 for Malaysia. A one year lag reveals an even higher inverse correlation of - 0.933. As income increases, a greater part of the income may now be saved in the form of time, saving and demand deposits.

It is generally agreed that one of the best gauges of economic development is the income per capita. However, one of the most apparent characteristics of developing countries is the existence of the inequality of distribution of income. An increase in income therefor, as measured by an increase in the income per capita, would not give a true indication of the situation that really exists. The effect of great inequality in income distribution, is to further depress the ratio. This is the case in Malaysia. A study of the income tax statistics[4] will show that a larger percentage of income goes to the higher income bracket over time. The higher income group usually has a lower propensity to consume and due to the fact that they live in towns, they are able to take advantage of banking facilities. This will cause increases in deposits and hence depress the currency ratio further.

Another possible factor that induces the currency ratio to decline in Malaysia is the tendency for the level of prices to rise. Between 1959 and 1968 the price level for West Malaysia[5] rose by 8.2%. shown by the retail price index (See Table 4).

TABLE 4

RETAIL PRICE INDEX 1959 - 1968

Retail Price Index Period	Total Weighted Index (Base 1959 = 100)
Average 1959	100.00
" 1960	99.80
" 1961	99.60
" 1962	99.70
" 1963	102.80
" 1964	102.40
" 1965	102.30
" 1966	103.70
" 1967	108.00
" 1968	108.20

Source: Monthly Statistical Bulletin of West Malaysia.

---

[4] Annual Report of the Income Tax Department.

[5] The Retail Price Index for the whole of Malaysia is not available.

A correlation test confirms the significant relationship that exists between the currency ratio c_1 and the price level. The simple correlation coefficient - 0.9419 indicates strong inverse relationship. It was noted in Chapter II that price increases could have two possible effects on the currency ratio. The above result substantiates the hypothesis that price rises decrease the currency ratio rather than increase it. This is because there is a tendency for price increases in Malaysia to increase the income of the higher income group which leads to greater inequality of income distribution. This leads to a reduction in the money balance of the lower income group that holds their money in the form of currency. On the other hand, the increase in income of the higher income group further exerts a downward pressure on the currency ratio since the increase is likely to take the form of deposits rather than cash.

So far we have dealt with exogenous factors that are likely to exert a downward pressure on the currency ratio. However, in Malaysia there are certain factors that reduce the rate of decline of the currency ratio. As a result of economic development it is likely that as the monetised sector increases, it will exert a downward pressure on the currency ratio since it is expected that people who move from barter to the use of money will have a tendency to use notes and coins rather than cheques. As economic development is intensified in the rural areas, the demand for goods and services that are only obtainable through the market will increase. As a result, the demand for money will increase. Lastly, it can be noted that customs and habits also affect the currency ratio. Different methods of saving and hoarding which exist in the Malaysian economy restrict the growth of deposits to a certain extent. Also, it can be said that payment may often be made in cash rather than cheques in an attempt to evade taxation. Such customs and habits will reduce the rate of decline of the currency ratio. However, due to insufficient data this may not be tested empirically.

From the above account certain distinct features of the currency ratio may be noted:

(a) That there is a tendency for both the ratio c_1 and c_2 to decline.

(b) That the average rate of decline of c_1 was more pronounced than c_2 indicating that deposit increases take the form of saving and time deposits rather than demand deposits.

(c) That the decline of c_1 is more smooth (or less variable) than c_2. This implies that the effect of c_1 on the multiplier is more stable.

(d) That the effect of the decline in the currency ratio implies an increase in the credit multiplier (assuming the other determinants are constant). This means that the ability of the Central Bank to create monetary liabilities (or high-powered money) without a large credit expansion taking place is being reduced.

(e) The above analysis indicates that the endogenous factors are significant in influencing the behaviour of the currency ratio. However, although certain exogenous factors reinforce the effect the endogenous factors have on the currency ratio, there exist other exogenous factors that offset the decline of the ratio.

However, the most important conclusion from the above analysis is that, since it is c_1 rather than c_2 that is important in determining the multiplier effect resulting from variations in the ratio, the smaller variations in c_1 indicate that the effects are not likely to be serious. However, this largely depends on the fact that in Malaysia the required reserves have been uniform for all the deposits.[6] It should be noted that any differences made in the required reserves for the different deposits may cause the multiplier effect of changes in c_1 to be greater than that of the more variable c_2. If, for example lower reserves were required for time and saving deposits, as compared to that required for demand deposits at the commercial banks, then a fall in the currency ratio due to increased savings and time deposits will mean a greater amount of excess reserves would be available than if the deposit increase had taken the form of demand deposits. The policy implication of this conclusion is important and will be discussed in Part III.

3.1.2 The Reserve Ratio

The total reserve ratio in Malaysia consists of a combination of:

(a) the statutory reserve requirement that has varied from 3½% to 4% over the period under review. This consists of cash reserves held with the Central Bank;

(b) the liquidity ratio which has varied between 20% - 25% over the period under review. However, modifications to the composition of the assets allowed in the requirement have been made without changes in the actual ratio. Liquid assets that are permitted to be included in the ratio for the different periods are listed in Appendix D;

(c) the excess reserves consist of that which the bank has in excess of what is required by law. This refers to reserves that are in excess of the statutory reserve and the liquidity reserve.

For an analysis of the effects of changes in required reserves on the total reserve ratio it is useful to divide the total ratio into its sub-components.

---

[6] After October 1968, the minimum reserve (liquidity) requirements were no longer uniform for all the deposits. See the following section.

$$rt = rs + rl + re$$

where rs = statutory reserve ratio,

rl = required liquidity ratio,

re = excess reserve ratio,

rt = total reserves.

The total reserves held by the bank depends on the behaviour of the commercial banks which is influenced by:

(a) that what is required by the banking laws to keep. This sets the minimum amount that the banks must hold;

(b) the ability of the commercial banks to acquire the reserves;

(c) the credit policy of the commercial banks.

In Malaysia, the required reserve ratio has an insignificant role in limiting credit creation. Changes made in both the reserve and the liquidity ratio has no effect on limiting the lending ability of the commercial banks. This is because of the tendency of banks to hold large amounts of excess reserves. This means that there is a zero marginal rate of lending and investing with respect to reserve changes. Under such circumstances, the supply of credit is likely to respond more to outside forces - particularly the demand for credit by eligible borrowers. The policy implication of changes in reserve requirements is thus clear. Commercial banks ignore reserve changes in either direction and supplies credit in accordance with demand. Hence, the reserve requirement as an instrument for limiting credit creation is not made use of in Malaysia.

When the Central Bank of Malaysia was established in 1959, the Central Bank Ordinance contained provisions empowering the Central Bank to require commercial banks to maintain with it, a proportion of their total deposit liabilities as statutory reserves. This statutory reserve ratio has been varied twice for the period 1959 - 1968. On both occasions the change was minor and of little monetary significance. In the year the Central Bank was established the commercial banks agreed to maintain a statutory reserve of 4% of their deposit liabilities. The measure was not used as a means of limiting credit creation but to increase the reserves available to the Central Bank. This was to increase its ability to act as lender of last resort to the banking system, since the Central Bank had not at that time, powers to issue currency. In early 1965, the statutory reserve ratio was reduced to 3.5%. During this time the authority of the Central Bank was extended to all parts of Malaysia. Again, this was not done with the purpose of encouraging credit creation but with the aim of assisting the commercial banks in the whole of Malaysia to comply with the statutory requirement. Since then there has been no changes in the statutory reserve requirement.

The liquidity ratio, on the other hand was first introduced in October 1959 to control the credit creation of the commercial banks since some commercial banks operated with very low reserves although certain commercial banks maintained very high reserves. When the ratio was first introduced, all commercial banks in West Malaysia agreed to maintain a minimum of 20% of their deposit liabilities in liquid assets. In January 1962, the liquidity ratio was raised to 25%, so as to check increased rates of advances relative to bank deposits. In addition to the items included in the prior liquidity ratio, longer term government securities with maturities of more than three months were permitted in the computation of the liquidity ratio up to a maximum of 5 % of the total deposit liabilities. This change was an effort by the Central Bank to encourage commercial banks to hold a greater amount of government securities in their portfolio. It should be noted that as a result of this change, the liquidity ratio of the banking system as a whole was 40% in 1962. However, if government securities with maturities longer than three months were excluded, then, the average liquidity ratio would have been 36%. It should be noted that at this time certain foreign liquid assets were included in the computation of the liquidity ratio.

Malaysia was formed in the year 1963; however the statutory and liquidity requirements did not supply to the Singapore, Sabah and Sarawak until February 1965, when the ratio was reduced to 20%. This was done to minimise difficulties of compliance by commercial banks which were required to maintain such a ratio for the first time. The basis for computing the ratio was also changed in this year. Only Malaysian[7] liquid assets were permitted in the computation of the liquidity ratio. This new minimum ratio of 20% comprised of local liquid assets and Government securities with maturities longer than three months, subject to the former being not less than 10% of deposit liabilities. In June the same year, the composition of the 20% ratio was further modified to include housing loans to individuals and approved housing institutions but this was subject to a maximum of 10% of saving deposits. The commercial banks in Malaysia as a whole were given up to September 30th, 1965 to comply to this new requirement. Between this period and when the new ratio was introduced the banks could observe either the new 20% ratio or the former 25% ratio. It should be noted that banks in Singapore also observed this requirement and that for banks operating in both countries the computation of the requirement was based on their overall position. As a result of this new requirement there was a marked change in the asset structure of the commercial banks. The commercial banks' holding of local liquid assets especially that of Treasury Bills increased and net foreign assets of the banks decreased. This can be illustrated by the fact that investments in Malaysian securities including Treasury Bills rose by 70% from $182 m at the end of 1965 to $310 m at the end of 1966.

Since February 1965, there has been no change in the basic liquidity ratio of 20%, however, the composition of eligible assets for the inclusion in the requirement has been further changed. With effect from July 1965, only Malaysian assets were allowed. (Malaysia now

---

[7] Malaysia at this time included Singapore.

excludes Singapore). Hence, the position of banks in Malaysia only, were considered. It was also required, that among the eligible assets to be included in the ratio, cash in hand and with the Central Bank, net balances with other banks in Malaysia and Malaysian Treasury Bills should constitute at least 10% of the deposit liabilities.

The liquidity requirement was further modified in November 1968, when saving deposit liabilities were exempted from complying with the 20% liquidity ratio. However, the commercial banks were required to invest up to a minimum of 50% of their saving deposit liabilities in longer term securities and housing loans to individuals and approved housing institutions. This change was an effort to channel more funds from saving deposit liabilities into investments in government securities and housing loans. This was because the monetary authorities felt that saving deposits at the commercial banks were relatively stable and therefore, could be used for longer term investments.

The reaction of the commercial banks to changes in the reserve requirement may be observed in Table 5. From 1959 - 1968 the required reserve ratio varied between 23.5% to 29%. The table shows that when the required reserve was increased in 1962, it was accompanied by a fall in the excess reserve ratio. Since then, the ratio has remained relatively stable. As one might expect, the immediate effect of a fall in the required reserve ratio, is an increase in the excess reserve ratio. This may then induce banks to increase their lending and investing activities, since they are now operating with a larger excess reserve than is necessary to maintain. As total deposits increase then, the total reserve ratio is likely to fall, accompanied by a corresponding fall in the excess reserve ratio. However, due to the fact that the reserve requirements were only established in 1959 and that, data for the year 1965 - 1966 are not available, a more refined analysis is not possible.

We can however, conclude from Table 5, that the fall in the total reserve ratio is a result of a fall in the excess reserve ratio rather than a result of a fall in the required reserve ratio. Chart 2 portrays the total reserve ratio and its two components. However, the level of the excess reserve ratio will also depend on the relative distribution between demand deposits, time and saving deposits at the commercial banks. A rise in the ratio of time and saving deposits to demand deposits will tend to lower the excess reserve ratio since it is likely that lower excess reserves are necessary for time and saving deposits, because they are not so frequently drawn upon as in the case of demand deposits. Thus the high rate of growth of time and saving deposits at the commercial banks, has probably also led to a reduction in the excess reserve ratio. Another reason that may be given to account for the decline of excess reserves is that, commercial banks now have greater reliance on the Central Bank as lender of the last resort.

3.1.3. The 'Post Office Saving Deposit Ratio'

This ratio is determined by the non-bank public and it has the same effect on money supply as the currency ratio. Given total

TABLE 5

TOTAL, REQUIRED AND EXCESS RESERVES RATIO
FOR COMMERCIAL BANKS, 1959 - 1968
(PER CENT)

Year	Total Reserve Ratio	Required Reserve Ratio	Excess Reserve Ratio
1959	51.95	24.0	27.95
1960	48.37	24.0	24.37
1961	41.86	24.0	17.86
1962	43.61	29.0	14.61
1963	42.17	29.0	13.17
1964	42.10	29.0	13.10
1965	-	23.9	-
1966	-	23.5	-
1967	38.70	23.5	15.20
1968	42.70	24.9	17.80

Source: Computed from data from Bank Negara Annual Reports and Monthly Statistical Bulletin for the States of Malaya.

Note: The total reserve ratios are based on monthly averages for the period 1959 - 1964. For the year 1967, data is based on a monthly average after July and 1968 is based on average of quarterly data. The required reserve ratio is based on a monthly average of the required ratio during the year. The required ratio includes the statutory reserve requirement as well as the liquidity requirement.

money supply, the public will determine the ratio of deposits at the Post Office Savings Bank to total money supply. The behaviour of the ratio of post office saving deposits to total money supply may be observed in Table 6 and Chart 3.

It can be seen from Table 6 that the ratio is declining. The reason for this was probably due to the fact that commercial banking facilities are growing at a faster rate than the post office savings banking facilities. As a result of this, deposits at the commercial banks have grown at a faster rate than that of saving deposits at the Post Office Savings Banks.

Another reason for the relatively slower rate of growth of Post Office Savings Banks' deposit is, that such banks are usually found in smaller towns and cater for lower income groups. Because of this, the average balance per account was small. By 1968 "in West Malaysia, deposit

CHART 2

TOTAL, REQUIRED AND EXCESS RESERVE RATIOS FOR COMMERCIAL BANKS, 1959-68 (PER CENT)

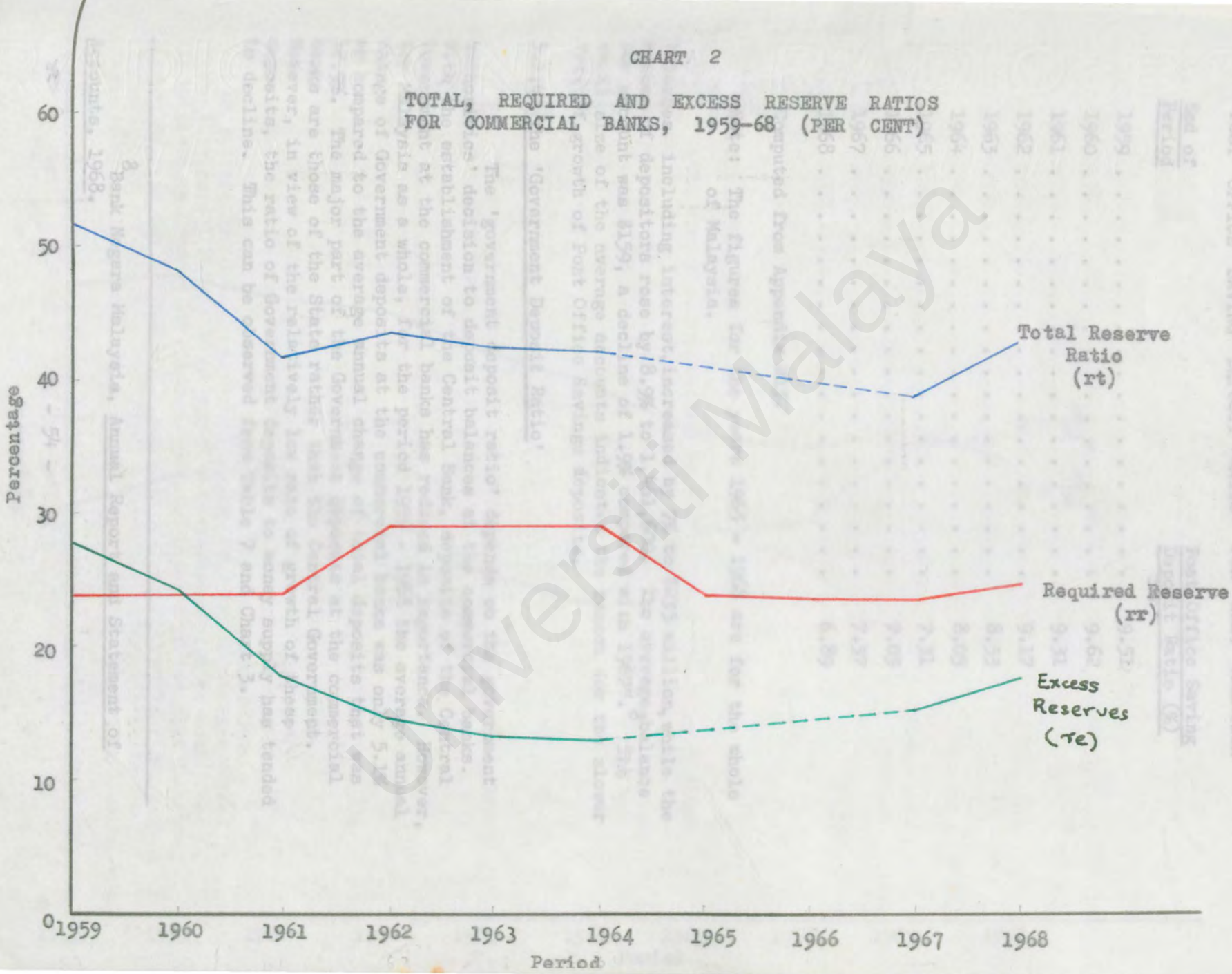


TABLE 6

'POST OFFICE SAVING DEPOSIT RATIO' FOR WEST MALAYSIA

End of Period	Post Office Saving Deposit Ratio (%)
1959	9.51
1960	9.62
1961	9.31
1962	9.17
1963	8.53
1964	8.05
1965	7.31
1966	7.05
1967	7.37
1968	6.89

Computed from Appendix B13.

Note: The figures for the years 1965 - 1968 are for the whole of Malaysia.

balances including interest, increased by 7% to $233 million, while the number of depositors rose by 8.9% to 1,461,600. The average balance per account was $159, a decline of 1.9% compared with 1967".[8] The small size of the average accounts indicates the reason for the slower rate of growth of Post Office Savings deposits.

3.1.4 The 'Government Deposit Ratio'

The 'government deposit ratio' depends on the government authorities' decision to deposit balances at the commercial banks. With the establishment of the Central Bank, deposits of the Central Government at the commercial banks has reduced in importance. However, for Malaysia as a whole, for the period 1959 - 1968 the average annual change of Government deposits at the commercial banks was only 5.1% as compared to the average annual change of total deposits that was 12.9%. The major part of the Government deposits at the commercial banks are those of the State rather than the Central Government. However, in view of the relatively low rate of growth of these deposits, the ratio of Government deposits to money supply has tended to decline. This can be observed from Table 7 and Chart 3.

---

[8] Bank Negara Malaysia, Annual Report and Statement of Accounts, 1968.

CHART 3

THE 'POST OFFICE SAVING DEPOSIT RATIO AND THE GOVERNMENT DEPOSIT RATIO'

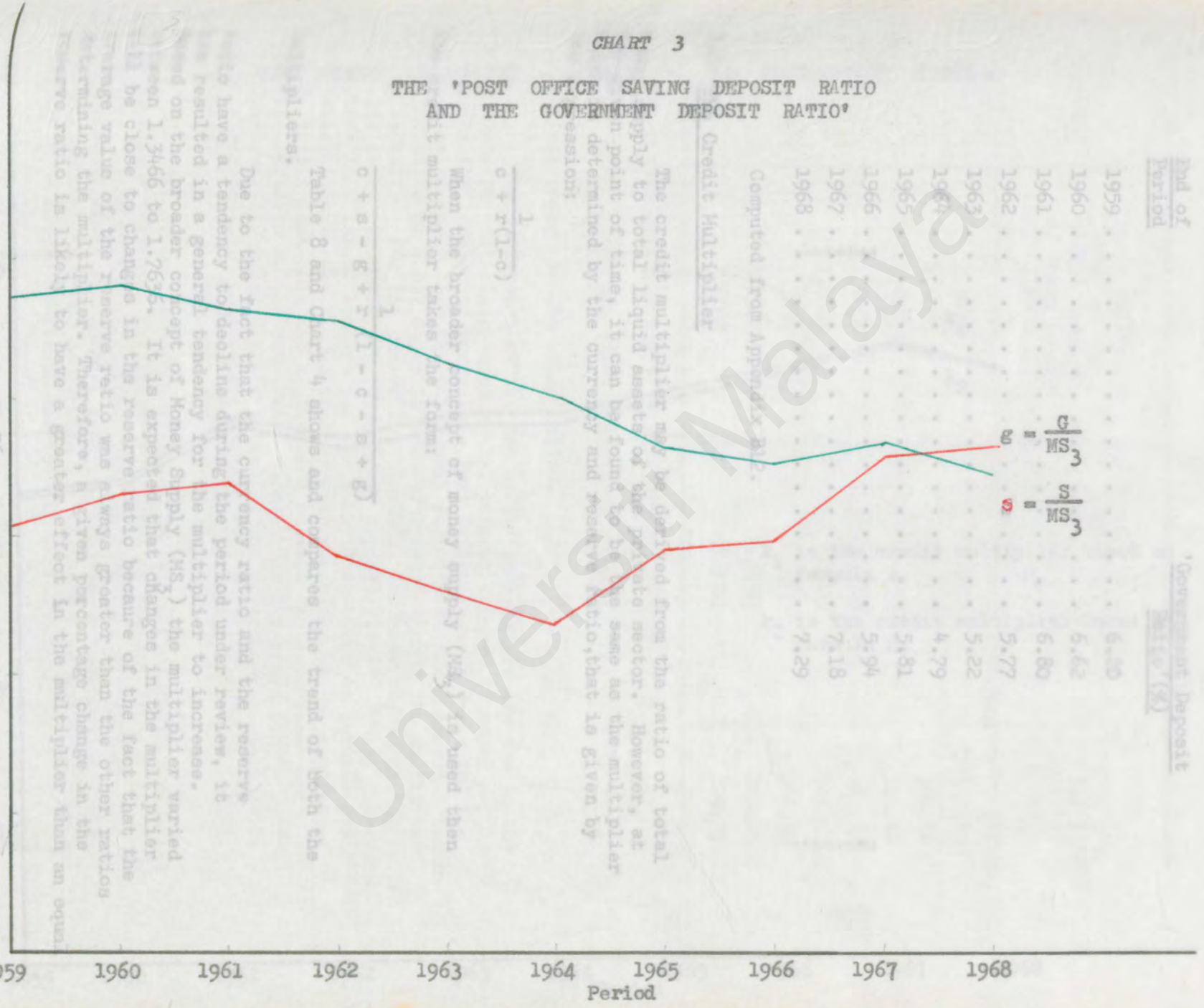


TABLE 7

'THE GOVERNMENT DEPOSIT RATIO'

End of Period	'Government Deposit Ratio'(%)
1959	6.20
1960	6.62
1961	6.80
1962	5.77
1963	5.22
1964	4.79
1965	5.81
1966	5.94
1967	7.18
1968	7.29

Computed from Appendix B12.

3.2 The Credit Multiplier

The credit multiplier may be derived from the ratio of total money supply to total liquid assets of the private sector. However, at any given point of time, it can be found to be the same as the multiplier which is determined by the currency and reserve ratio, that is given by the expression:

$$\frac{1}{c + r(1-c)}$$

When the broader concept of money supply (MS_3) is used then the credit multiplier takes the form:

$$\frac{1}{c + s - g + r\,(1 - c - s + g)}$$

Table 8 and Chart 4 shows and compares the trend of both the multipliers.

Due to the fact that the currency ratio and the reserve ratio have a tendency to decline during the period under review, it has resulted in a general tendency for the multiplier to increase. Based on the broader concept of Money Supply (MS_3) the multiplier varied between 1.3466 to 1.7636. It is expected that changes in the multiplier will be close to changes in the reserve ratio becaure of the fact that the average value of the reserve ratio was always greater than the other ratios determining the multiplier. Therefore, a given percentage change in the reserve ratio is likely to have a greater effect in the multiplier than an equal

CHART 4

THE CREDIT MULTIPLIER - BASED ON TWO ALTERNATIVE FORMULAS

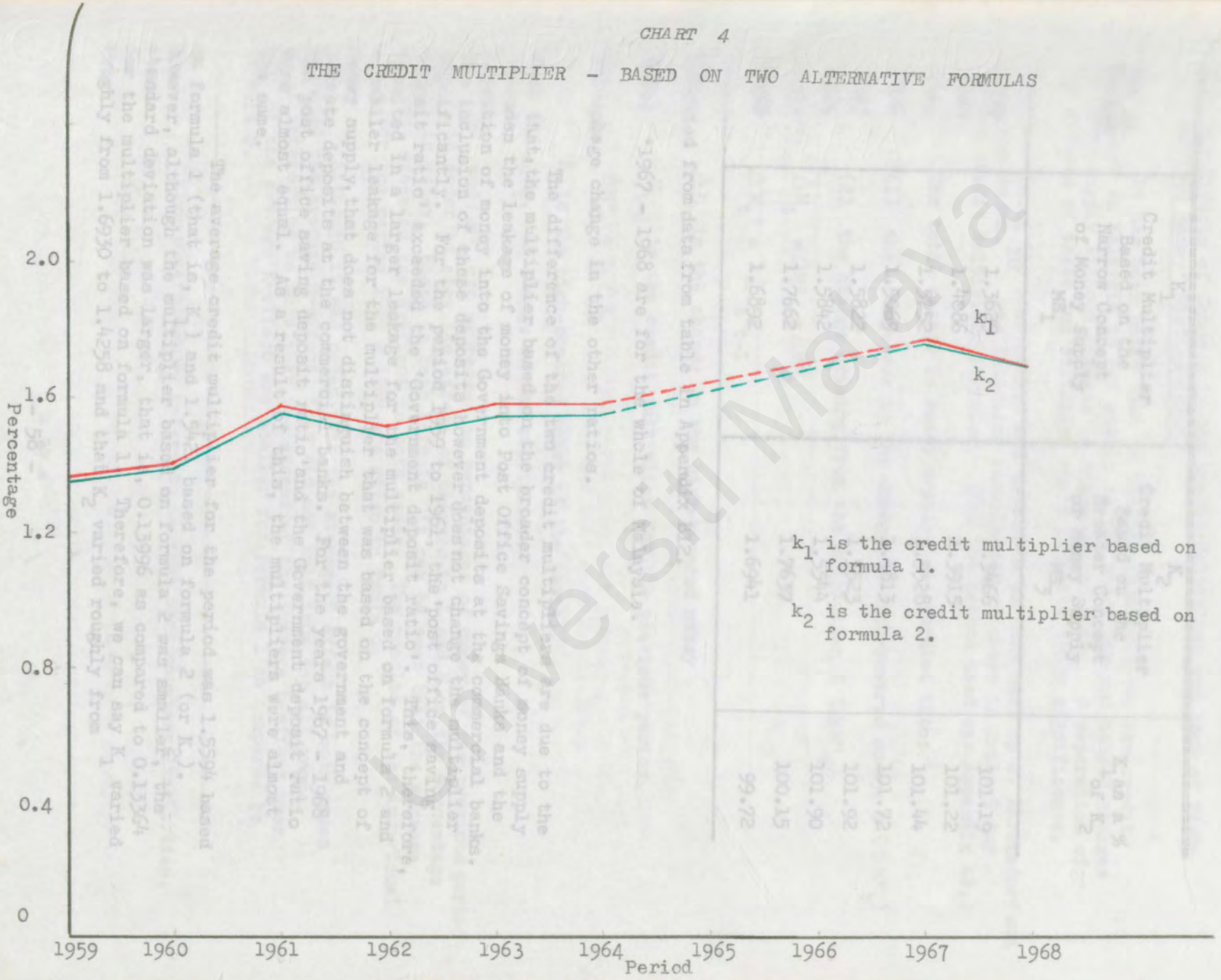


TABLE 8

THE CREDIT MULTIPLIER OF WEST MALAYSIA

End of Period	K_1 Credit Multiplier Based on the Narrow Concept of Money Supply MS_1	K_2 Credit Multiplier Based on the Broader Concept of Money Supply MS_3	K_1 as a % of K_2
1959	1.3629	1.3466	101.19
1960	1.4086	1.3915	101.22
1961	1.5752	1.5528	101.44
1962	1.5069	1.4813	101.72
1963	1.5822	1.5523	101.92
1964	1.5842	1.5544	101.90
*1967	1.7662	1.7637	100.15
*1968	1.6892	1.6941	99.72

Computed from data from table in Appendix B12.

Note: *1967 - 1968 are for the whole of Malaysia.

percentage change in the other ratios.

The difference of the two credit multipliers are due to the fact that, the multiplier based on the broader concept of money supply includes the leakage of money into Post Office Savings Banks and the injection of money into the Government deposits at the commercial banks. The inclusion of these deposits however does not change the multiplier significantly. For the period 1959 to 1961, the 'post office saving deposit ratio' exceeded the 'Government deposit ratio'. This, therefore, resulted in a larger leakage for the multiplier based on formula 2 and a smaller leakage for the multiplier that was based on the concept of money supply, that does not distinguish between the government and private deposits at the commercial banks. For the years 1967 - 1968 the 'post office saving deposit ratio' and the Government deposit ratio were almost equal. As a result of this, the multipliers were almost the same.

The average credit multiplier for the period was 1.5594 based on formula 1 (that is, K_1) and 1.5421 based on formula 2 (or K_2). However, although the multiplier based on formula 2 was smaller, the standard deviation was larger, that is, 0.13996 as compared to 0.13364 for the multiplier based on formula 1. Therefore, we can say K_1 varied roughly from 1.6930 to 1.4258 and that K_2 varied roughly from

1.6821 to 1.4201. This implies that given the total liquid assets in the system, the total money supply might have varied without any change in the reserves because of changes in the multiplier.

3.3 The Effects of Changes in the Credit Multiplier and that of High-Powered Money[9] Distinguished

It has been noted that in the previous section, the credit multiplier in Malaysia is not stable in the short run and caused changes in money supply without changes in high-powered money. A separation of the effects of these two variables would indicate their significance.

Using the same method and notations as that used by J. Ahrensdorf and S. Kanesathasan,[10] the following results are as shown in Table 9 for the two credit multiplier formulas. (For the method used see Appendix A2.)

The total change in money supply is separated into:

(1) the change due to the change in high-powered money, $L\ (\Delta M'_t)$

(2) the change arising from the multiplier, $K\ (\Delta M''_t)$

that is, $\Delta M_t = \Delta M'_t + \Delta M''_t$

where $\Delta M_t' = {}'\Delta L_t K_{t-1}$

where ΔL_t is the change in the high-powered money

and K_{t-1} is the credit multiplier for the previous period.

and $\Delta M''_t = L_t \Delta K_t$

where L_t is the high-powered money of the period,

and ΔK_t, the change in the multiplier.

Then $\Delta M'_t$ and $\Delta M''_t$ are expressed as percentages of money of the previous period M_{t-1} in order to show the effect of changes in L and K on the percentage change in money. Based on both formula it can be seen that the average L-effect exceeded the K-effect in both cases. The results of the individual years for the period 1959 - 1964 are given in Table 9.

Although it was noted that the average L effect in both cases exceeded the average K-effect, this did not hold true for all years. It is interesting to note that the excess of the average L-effect over that of the average K-effect was smaller for formula 1 as compared to formula 2.

---

[9] High-powered money refers to Central Bank monetary liabilities.

[10] Op. cit.,

TABLE 9

PERCENTAGE CHANGES IN MONEY ATTRIBUTABLE TO CHANGES IN HIGH-POWERED MONEY AND TO CHANGES IN THE CREDIT MULTIPLIER 1959 - 1964

End of Period	Based on Formula 1		Based on Formula 2	
	$\frac{\Delta M'_t}{M_{t-1}}$	$\frac{\Delta M''_t}{M_{t-1}}$	$\frac{\Delta M'_t}{M_{t-1}}$	$\frac{\Delta M''_t}{M_{t-1}}$
1959	-	-	-	-
1960	5.407	3.537	5.160	3.507
1961	- 5.146	11.219	- 5.418	10.963
1962	9.528	- 4.749	10.843	- 5.104
1963	3.317	5.163	3.419	4.957
1964	8.888	0.138	8.823	0.147
Average	6.646	4.960	6.732	4.935

Computed from data in Appendix B12.

The conclusion derived from this analysis shows that, the monetary effects of changes in the multiplier will be less significant when changes in high-powered money are relatively large, and more important when changes in high-powered money are comparatively small. This can be seen for the years 1961 and 1963 when the K-effect exceeded the L-effect. In 1961, there was a fall in high-powered money and it was compensated by a large K-effect. Similarly, in 1963 the relatively small increase in L was followed by a more significant K-effect.

3.4 Contribution of Changes in the Determinants to Changes in Money Supply Analysed

Based on the first formula (see Table 10), that for the period 1959 - 1964, high-powered money contributed 58.18% of the increase in money supply, the currency ratio 13.67%, while the reserve ratio contributed 24.43%. As noted in the previous section, the effect of a change in high-powered money on total money supply overshadowed the effects of all the other determinants.

However, the year to year analysis of the contributions of changes in these determinants on changes in money supply showed sharp fluctuations. This was especially true for the effect of changes in high-powered money and the reserve ratio. However, the contribution of changes in the currency ratio tended to be relatively more stable,

although its contribution to changes in money supply annually has declined in significance. An interesting point to note is the close relationship that exists between the contribution of high-powered money and the reserve ratio. The fall in high-powered money in 1961, led to it having a contractionary effect on money supply. However, this was offset by a large fall in the reserve ratio which hence, had a tremendous effect on its contribution (147.02%) to the change in money supply. However, it should be noted that for the year 1961, the contribution of the currency ratio was also the highest for the period under review. This means that when high-powered money fell, both the public and the commercial banks reduced their holding of money in the form of high-powered money, thus reducing the leakage and increasing the multiplier effect on money supply. (As can be seen in Table 9, the K-effect exceeded the L-effect in 1961.) However,

TABLE 10

CONTRIBUTIONS OF DETERMINANTS TO CHANGES IN MONEY SUPPLY 1959 - 1968 (DECEMBER) BASED ON FORMULA 1

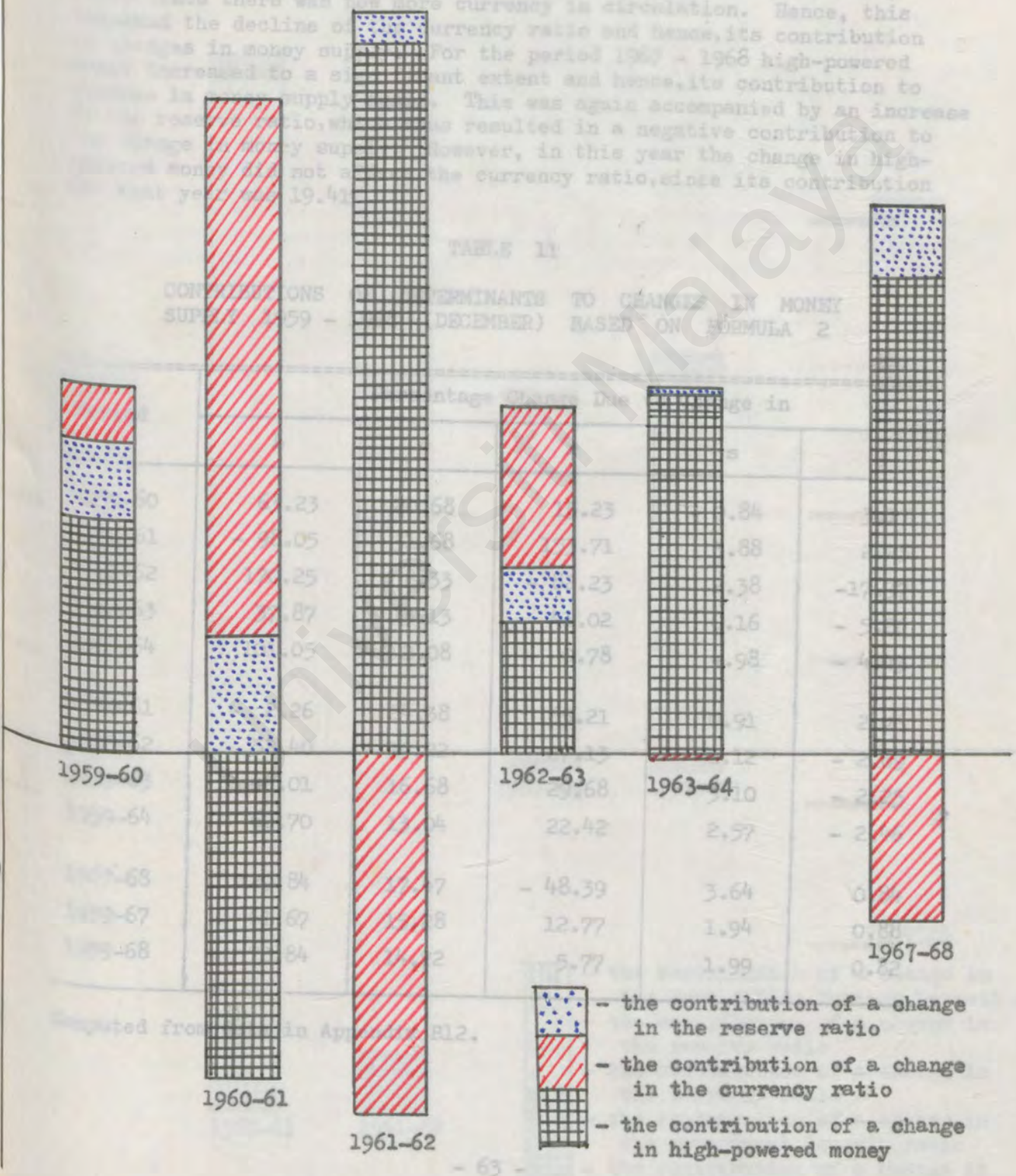
Period	Percentage Change Due to Change in		
	L	c	r
1959-60	64.33	21.80	15.35
1960-61	- 89.69	32.42	147.02
1961-62	195.41	8.29	- 98.11
1962-63	37.28	14.36	43.93
1963-64	98.56	2.31	- 0.82
1959-61	1.91	25.46	64.53
1959-62	48.86	21.06	99.45
1959-63	45.41	17.46	31.13
1959-64	58.18	13.67	24.43
1967-68	131.63	19.41	- 46.53
1959-67	64.86	16.14	12.82
1959-68	75.70	15.53	5.79

Computed from data from Appendix B12.

when there were large increases in high-powered money, as can be seen by its high contribution to the changes in money supply, the reserve ratio had a contractionary effect on money supply. This can be seen to exist for the years 1962 and 1964 when high-powered money increased.

CHART 5

CONTRIBUTION OF DETERMINANTS TO CHANGES IN MONEY SUPPLY BASED ON FORMULA 1



This increase resulted in an increase in commercial bank reserves, thus increasing the reserve ratio which meant increasing the leakage and hence reducing the multiplier effect. (Again, the insignificant K-effect money supply may be seen in Table 9). However, it should also be noted that, for 1962 and 1964, the effect of the fall in the currency ratio on money supply was less significant as compared with the other years in the period. This implies that, the increase in high-powered money also reduced the rate of decline of the currency ratio, since there was now more currency in circulation. Hence, this lessened the decline of the currency ratio and hence, its contribution to changes in money supply. For the period 1967 - 1968 high-powered money increased to a significant extent and hence, its contribution to changes in money supply again. This was again accompanied by an increase in the reserve ratio, which thus resulted in a negative contribution to the change in money supply. However, in this year the change in high-powered money did not affect the currency ratio, since its contribution for that year was 19.41%.

TABLE 11

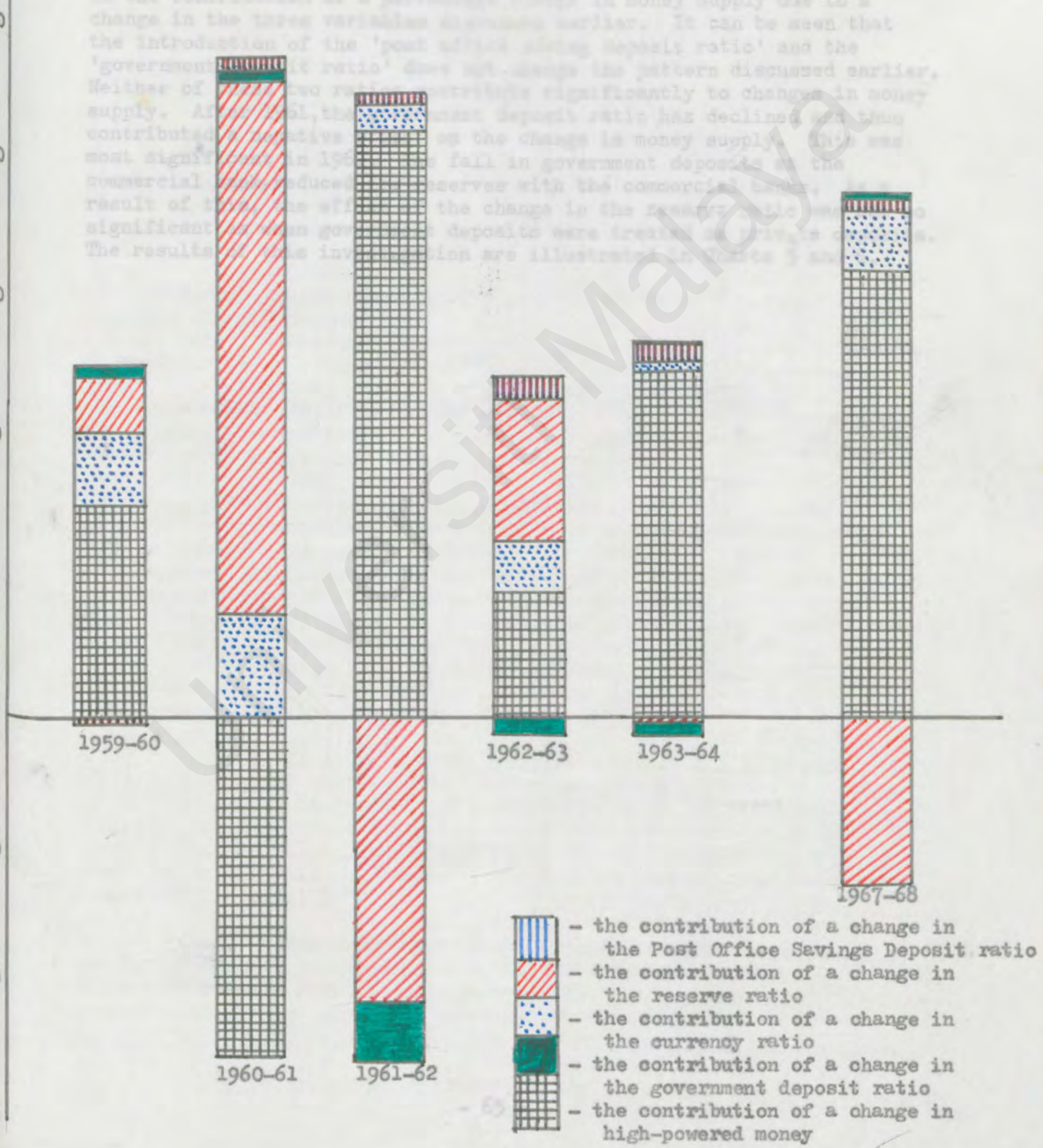
CONTRIBUTIONS OF DETERMINANTS TO CHANGES IN MONEY SUPPLY 1959 - 1968 (DECEMBER) BASED ON FORMULA 2

Period	Percentage Change Due to Change in				
	L	c	r	s	g
1959-60	63.23	20.68	15.23	- 0.84	3.17
1960-61	- 98.05	31.68	153.71	3.88	2.25
1961-62	170.25	8.33	- 82.23	2.38	-17.37
1962-63	37.87	13.13	41.02	6.16	- 5.26
1963-64	101.05	2.08	- 0.78	4.98	- 4.43
1959-61	- 2.26	24.38	65.21	0.91	2.76
1959-62	52.40	19.22	27.13	1.12	- 2.69
1959-63	48.01	16.68	29.68	3.10	- 2.25
1959-64	60.70	13.04	22.42	2.57	- 2.46
1967-68	129.84	17.47	- 48.39	3.64	0.84
1959-67	61.67	15.28	12.77	1.94	0.88
1959-68	72.84	14.72	5.77	1.99	0.82

Computed from data in Appendix B12.

CHART 6

CONTRIBUTION OF DETERMINANTS TO CHANGES IN MONEY SUPPLY BASED ON FORMULA 2



However, we can conclude from the above analysis that there exists a significant relation between high-powered money and the variables that determine the multiplier. What becomes important to investigate, is the causes for changes in high-powered money and their likely effects on the different variables that determine the multiplier.

From formula 2, it can be seen that the same pattern persists in the contribution of a percentage change in money supply due to a change in the three variables discussed earlier. It can be seen that the introduction of the 'post office saving deposit ratio' and the 'government deposit ratio' does not change the pattern discussed earlier. Neither of these two ratios contribute significantly to changes in money supply. After 1961, the government deposit ratio has declined and thus contributed a negative effect on the change in money supply. This was most significant in 1962. The fall in government deposits at the commercial bank, reduced its reserves with the commercial banks. As a result of this, the effect of the change in the reserve ratio was not so significant as when government deposits were treated as private deposits. The results of this investigation are illustrated in Charts 5 and 6.

PART 3

ASPECTS OF POLICY IMPLICATION AND CONCLUSIONS

CHAPTER IV

THE POLICY IMPLICATIONS AND CONCLUSION DERIVED FROM THE ANALYSIS

The world's renewed interest in money supply as an important determinant of a country's economic activity can be seen in a statement made in a recent issue of 'The Economist'. "The Federal Reserve System, the Central Bank, which actually controls monetary policy has kicked and screamed and cursed at Milton Friedman as it has been dragged into a quantitative view of monetary developments."[1]

'The Economist' noted that gradually the decisions have come to depend more and more on quantitative estimates and targets. The 'Chicago School' under Milton Friedman has led the way in this field. The Economist, however, despaired that although almost everyone agreed that quantities are important, it was quite impossible to know what quantities to look at. In Britain, it pointed out that, the concept of "domestic credit expansion" has caused more confusion than anything else. The article went further to illustrate a profusion of numbers of quantities to look at and the problems it provided.

The purpose of this study is to make available some basic quantitative information on the extent to which the credit multiplier and the multiplicand determine the quantity of money. This is to provide some indications as to how the behaviour of the commercial banks and the public on the one hand, and how the government on the other affects money supply. In the first part of this exercise, the framework of analysis was built based on the particular institutional features that exist in this country. An attempt was made to justify the definitions chosen on the basis of their appropriateness to describe the situation that exists in this country.

In Part II a statistical analysis based on the framework built in Part I was carried out. Although the analysis was to a certain extent handicapped by the lack of adequate data, it was shown from the analysis that there were sharp fluctuations in the contribution in changes of money supply due to changes in the variables outlined in the framework of analysis. Whenever possible, the period under review has comprised the period 1959-1968.

Before discussing some of the implications of the analysis the distinct conclusions drawn from the analysis can be summarised as follows. Firstly, the findings indicate that in most years the change in money supply came about due to an increase in high-powered money.

---

[1] The Economist, 6 September, 1969.

However, the contribution of changes in high-powered money was subject to extreme fluctuations. There were years in which its contribution to the change in money supply exceed 100% and in others when it was negative. Secondly, there was a distinct relationship between the contributions of changes in high-powered money and the contribution of changes in the reserve ratio on money supply. In the years where high-powered money had a sharp increase, it was accompanied by a negative contribution by the reserve ratio. This implies that the increase in high-powered money largely flowed into commercial banks rather than into the non-bank private sector. As a result of this, the commercial banks had large excess reserves which reduced its contribution to the change in money supply. Conversely, in the years in which the contribution of the change in high-powered money was negative, the contribution of the change in the reserve ratio became very significant. This was because the fall in high-powered money came about due to a reduction in the commercial banks' reserves rather than currency in circulation. This also confirms the argument that total reserves is more closely related to excess reserves rather than required reserves. The quantitative implications of these conclusions provide an avenue for further refinements in the analysis. For instance, a detailed quantitative analysis could be made of the relation that exists between the commercial banks' reserves and Balance of Payments deficit and surplus and Budget deficit or surplus. Another point that may be further investigated is how far the commercial banks adjust their lending and investing activities to their change in reserves.

Further, refinement could also proceed in accounting for the factors that affect high-powered money. It has already been noted in Part I that when the Malaysian currency system was under the Currency Board, high-powered money changed entirely in response to the Balance of Payments position. Although the monetary authorities of the country were allowed a fiduciary issue, this provision was never made use of. Even after July 1967, when the Central Bank was empowered to issue notes, the amount of high-powered money still changed in response to the Balance of Payments position. This was not only due to the fact that 80.59% of the monetary liabilities of the Central Bank had to be backed by external reserves but, due to the conservative attitude of the Central Bank of Malaysia in keeping a 100% external reserves against its monetary liabilities. Thus it can be said that, no serious attempt has been made to deliberately regulate the monetary liabilities of the Central Bank.

Another important conclusion that can be drawn from the statistical analysis in Part II is that, although the contribution of changes in the currency ratio have not been significant for most of the years under review, its contribution to the changes in money supply have been relatively stable. Also, although there is no distinct relationship that exists between changes in the percentage contribution of high-powered money on money supply and that of the contribution of a percentage change in the currency ratio as in the case of the reserve ratio. However, it can be seen that there does exist a slight relationship between the two variables. To some extent, a fall in high-powered money brings about a decline in the currency holding of the public and hence a decline in the currency ratio. This, then, increases its contribution to the change in money supply through the multiplier effect. And, in the years

of an increase in high-powered money indicated by a high positive contribution to the change in money supply, increased currency holding will reduce the rate of decline of the currency ratio and therefore its contribution to changes in money supply. Another fact to note is that the contribution of the currency ratio tends to be positive for all the years, indicating a steady decline in the ratio. An implication for further analysis arising from this, is that, the variable may be observed from monthly average data. This would take into account seasonal fluctuations that exist and provide the monetary authorities with some basis to assess the behavior of the non-bank private sector and their reaction to monetary policy and other general economic developments.

In the statistical analysis in Part II, it was also found that the contribution of changes in the 'Post Office Savings deposit ratio' and the 'government deposit ratio' was insignificant, not only due to the fact that their changes were small but the relative size of both the ratios were also small. Finally, it can be seen that the credit multiplier has not been very significant in determining the money supply. High-powered money - or the multiplicand played a more important role. However, it should be noted that for some years, the multiplier effect was more significant. The analysis has also shown that the multiplier tends to move closely with the reserve ratio, which is the largest variable.

From the above conclusions, it can be seen that the money supply of this country has been relatively stable. However, it should be noted that monetary and credit policy has an important role to play in affecting the level of domestic demand and in ensuring that the level of demand for money is sufficient to support the desired level of economic activity. In a developing country, monetary and credit policy becomes even more important, since it cannot concern itself merely with the regulation of credit and hence, money supply, but also, it should become an active instrument in promoting economic development.

Amongst the objectives of the Central Bank of Malaysia are - to promote monetary stability and a sound financial structure; and to influence the credit situation to the advantage of the country. It can be seen from these objectives that monetary policy in Malaysia has been promotional rather than regulatory.[2]

It has been found in this study that the average multiplier effect of a change in high-powered money is 1.54 times the change in the high-powered money. This means that an increase in high-powered money due to a Balance of Payments surplus or due to a Budget deficit financed by the Central Bank, is not likely to cause a great expansion in money supply. This is because the commercial banks have a tendency to keep large excess reserves and that the currency ratio is still relatively large. However, it should be noted that there is a tendency for these

---

[2] Regulatory and Promotional Monetary Policy is discussed at some length by R.M. Parnaik in 'Monetary Policy and Economic Development in India', S. Chand & Co., New Delhi (1965).

variables to decline and therefore, for the multiplier to increase. This means that future increases in high-powered money is likely to have greater expansionary effects. Hence, not only must the Central Bank attempt to affect the pattern of the commercial banks' investments but also the extent to which they expand credit.

As noted earlier, the Statutory Reserve Requirement is not important from a monetary policy point of view. Similarly, the liquidity requirement is not used as an instrument of regulating the creation of credit. However, it should be noted that the liquidity requirement has been used to influence the composition of the commercial banks' liquid assets. Even the recent move to abandon the uniform liquidity requirement in October 1968, was not an attempt to affect credit expansion but to influence the investment patterns of the commercial banks. The Central Bank of Malaysia is equipped with several other provisions in the Banking Ordinance to affect the pattern of bank financing. This kind of credit control is concerned with the allocation of available credit and the purposes for which it is used rather than the total supply of credit. It can be regarded as a good substitute for general quantitative credit controls. In this way, the Central Bank can prevent a too rapid increase in advances being made especially for speculative purposes. This is necessary not only for the safety of the depositors, but also for the interest of the economy - that the loans for speculative purposes should be curbed.

It has been noted earlier that commercial banks should play a substantial role in the development of the country either by investing directly in government securities or in other productive investments, so as to channel savings to productive ends. The emergence of economic planning and the establishment of growth targets for the various sectors of the economy, has further emphasized the importance of credit policy, not only in ensuring the desirable level of monetary demand for achieving the envisaged level of consumption and investment, but also for economic development. Although the Central Bank of Malaysia lacks some of the traditional instruments possessed by other Central Banks to influence the volume of credit by commercial banks, the Central Bank has to some extent influenced the pattern of commercial bank investment.

However, from the statistical analysis made in Part II of this exercise it has been shown that there has been in the past, sharp fluctuations in the contribution of changes in high-powered money on money supply. Since the Central Bank has now become the sole currency issuing authority, it is in a better position to smooth off some of these fluctuations that may be exerted from time to time by external factors. This is very necessary, since the Malaysian economy still depends to a great extent on external trade. With the ability of the Central Bank to coordinate the volume of high-powered money and the credit policy of the commercial banks, the ability of the Central Bank in achieving monetary stability in Malaysia may be enhanced.

BIBLIOGRAPHY

Books

1. Chandler, L.V.: Central Banking and Economic Development, Bombay University Press, Fort, Bombay - 1 (1962).

2. Day, A.C.L.: Outline of Monetary Economics (2nd Imprsn.), Oxford, Clarendon Press (1958).

3. Duesenberry, James S.: Money and Credit: Impact and Control, Prentice-Hall Inc., Englewood Cliffs, New Jersey (1964).

4. Dye, Howard S., Moore, John R., Holly, J. Fred: Economics: Principles, Problems and Perspectives, Allyn and Bacon Inc., Boston, U.S.A. (1966).

5. Einzig, Paul: How Money is Managed. The Ends and Means of Monetary Policy, Penguin Books Ltd., Great Britain (1959).

6. Friedman, M. and Schwartz, J.A.: A Monetary History of the United States, 1967-1969, Princeton University Press for the National Bureau of Economic Research (1963).

7. Friedman, M. and Schwartz, J.A.: The Great Contraction, 1929-1933, Princeton University, Princeton, New Jersey.

8. Galbraith, J.A.: The Economics of Banking Operations, A Canadian Study (2nd Imprsn.), Montreal, McGill University Press (1964).

9. Horvitz, Paul M.: Monetary Policy and the Financial System, Prentice-Hall Inc., Englewood Cliffs, New Jersey (1963).

10. Kardouche, K. George: The U.A.R. in Development. A Study of Expansionary Finance, New York, F.A. Praeger (1966).

11. Keynes, John Maynard: A Treatise on Money, Vol. 1, London, MacMillan (1953).

12. Khazzoom, J. Daniel: The Currency Ratio in Developing Countries, New York, F.A. Praeger (1966).

13. Linbeck, Assar: A Study in Monetary Analysis, Almqvist and Viksells, Stockholm (1965).

14. Musgrave, Richard A.: The Theory of Public Finance: A Study in Public Economy, McGraw-Hill Book Company Inc., Kogakusha Company Ltd., Tokyo (1959).

15. Patnaik, K.M.: Monetary Policy and Economic Development in India, S. Chand & Co., New Delhi (1965).

16. Pesek, Boris P. and Saving, R. Thomas: The Foundations of Money and Banking, New York, MacMillan (1968).

17. Phillips, Chester A.: A Study of the Principles and Factors Underlying Advances Made by Banks to Borrowers (New Imprsn.), New York, MacMillan (1936).

18. Pritchard, Lealand: Money and Banking, The Riverside Press, Cambridge, Massachusetts, U.S.A. (1958).

19. Robinson, Sir Denis H.: Essays in Monetary Theory, Staples Press Ltd., London (1956).

20. Smith, Lawrence: Money, Credit and Public Policy, Boston, Houghton Mifflin (1959).

21. Steiner, W.H., Shapiro, Eli, and Solomon, Ezra: Money and Banking. An Introduction to the Financial System, New York, MacMillan (1968).

22. Thomas, Rollin George: Our Modern Banking and Monetary System, 3rd Ed., Englewood Cliffs, New Jersey, Prentice-Hall (1957).

Articles

1. Ahrensdorf, J. and Kanesathasan, S., "Variations in the Money Multiplier and Their Implications", IMF Staff Papers, 1960 November.

2. Betz, George, "A Note on the Money Supply in Singapore (1957-1966)", Malayan Economic Review, November 1967.

3. Cagan, Phillip, "The First Fifty Years of the National Banking System - A Historical Appraisal". From Banking and Monetary Studies, edited by Deane Carson, Richard D. Irwin Inc., Homewood, Illinois, 1963.

4. Cagan, Phillip, "The Demand For Money Relative to the Total Money Supply", Journal of Political Economy, August 1958.

5. Degani, Amina H., "The Monetary System of Malaysia and Singapore - An Analytical Description". From The Monetary System of Singapore and Malaysia - Implications of the Split Currency.

6. Galbraith, J.A., "A Table of Banking System Multipliers", Canadian Journal of Economics, November 1968.

7. Horwich, George, "Effective Reserves, Credit and Causality in the Banking System of The Thirties." From Banking and Monetary Studies, edited by Deane Carson, Richard D. Irwin Inc., Homewood, Illinois, 1963.

8. Jacoby, Neil, "The Structure and Use of Variable Bank Reserve Requirements". From Banking and Monetary Studies, edited by Deane Carson, Richard D. Irwin Inc., Homewood, Illinois, 1963.

9. Johansen, Lief, "The Role of the Banking System in a Macro-Economic Model", International Economic Papers 8, 1958.

10. Johnson, Harry G., "Monetary Theory and Policy", American Economic Review, 52, June 1962.

11. Kaufman, George G., "More on an Empirical Definition of Money", American Economic Review, March 1969.

12. McDonald, Stephen L., "The Internal Drain and Credit Expansion", Journal of Finance, December 1963.

13. Dr. Rais Saniman, "Bank Negara and Monetary Policy". Paper based on two lectures given at the University of Malaya, December 1968.

14. Thomas, Proctor, "Variations in a Theme by Phillips", American Economic Review, 1956, No. 46.

15. Timberlake Jr., R.H. and Forston, "Time Deposits in the Definition of Money", American Economic Review, March 1967, No. 57.

Government Publications

1. Report of the Commissioners of Currency, Malaya and British Borneo, 1960, p. 3.

2. Speech Introducing the Second Reading of the Central Bank Bill in the Legislative Council, October 29, 1958, by Tun H.S. Lee.

3. The Central Bank of Malaya Ordinance.

4. Monthly Statistical Bulletin for West Malaysia (various issues).

5. Monthly Statistical Bulletin of the States of Malaya.

6. Bank Negara Quarterly Economic Bulletin (various issues).

7. Bank Negara Malaysia, Annual Report and Statement of Accounts (various issues).

8. Bank Negara Malaysia, 10th Anniversary - Commemorative Issue, January 26, 1959 - January 26, 1969.

Periodicals

1. The Economist, September 6, 1969.

2. The Irish Banking Review, December 1961.