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MONEY AND BANKING IN ECONOMIC DEVELOPMENT.

The University of Oklahoma, Ph.D., 1974
Economics, finance

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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

MONEY AND BANKING IN ECONOMIC DEVELOPMENT

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

BY

PHILIP PO-HIM WU

Norman, Oklahoma

1974

MONEY AND BANKING IN ECONOMIC DEVELOPMENT

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DISSERTATION COMMITTEE

To

My Wife

Amy

ACKNOWLEDGMENTS

I would like to express my sincere appreciation to Dr. Alexander J. Kondonassis, David Ross Boyd Professor, who generously provided encouragement, counseling, patience and support during the many months this dissertation was in preparation. I would also like to thank Dr. Chong Kiew Liew and Dr. John Kirker Stephens for their comments. A special debt is also owed to my parents. Without their support, this dissertation would never have come to fruition.

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CHAPTER I

INTRODUCTION

Since the appearance of the Wealth of Nations, economists have had a great deal to learn, and since the poverty of nations has become a major concern for the whole world, economists have even more to learn. Soon after the Second World War, economists began to be increasingly aware of the economic distance between nations. The war against poverty can no longer be neglected when

> . . . in the century following 1860 the share of world income of the quarter of the world's population living in the world's richest countries increased from 58 percent to 72 percent. . . .[1]

Unfortunately, the concern with the problem of underdevelopment still has not produced any significant narrowing of the gap between the rich and the poor countries in this Third Development Decade, i.e., 1971-1980. Economists have yet to agree either about the mainsprings of economic development or the constraints on it, despite nearly three decades of study and experience on the subject.

A superficial but very popular view at one time was that capital is a panacea to underdevelopment--if applied large enough, injections of capital alone will be sufficient

to induce economic development. This "capital is everything" approach assumes that increases in domestic capital stock are able to account for all the increases in a country's gross national product. That is, if historically each extra dollar of output was associated with three dollars of extra domestic investment, then $3X of further additional "capital" from abroad would somehow generate a further $X of gross national product.

This approach unfortunately does not take into consideration the absorptive capacity of the grant recipient country. For example, the availability of skilled labor capable of managing any additional modern capital equipment and the existence of effective demand for the output generated by the additional capital investment, etc., are neglected. The fact that the target rates of development set for fulfillment in the First Development Decade, i.e., 1951-1960, were not attained in many countries, despite huge amounts of international aid given to these countries, inevitably forced development economists to take a new look at their strategic tools again.

The concept of human capital was then evolved. During the mid-sixties, people began to realize that investment in human capital could produce as high an implicit return as investment in physical capital. It was thought that the true costs of education were a profitable investment for an individual, his family and the government. As Harberger puts it:

> The key . . . is to recognize that education is an investment. . . . Economic considerations influence not only the general nature of investments but also the detailed ways in which they are carried out. . . . a really serious effort to understand the economic consequences of different detailed types and classes of investment in education would help greatly to improve the contribution that education can make to economic progress.[2]

Notwithstanding the emphasis given to capital, physical and human, as a factor in economic development, it is disappointing that a very closely related area--the monetary and financial aspect of economic development--has not adequately been explored. This may be due to either one or both of the following reasons.

First, money is not assumed to be a limiting factor in economic development by many policy makers. This view has already been deeply rooted in western economic theories. In traditional economic theory, money is regarded as a passive variable, the supply of which is infinitely elastic. Money is relatively costless to produce, as it does not absorb any real resources in significant amounts. Thus, money can always be controlled to satisfy the requirements of the real variables of the economic system.[3]

Secondly, there are some analytical grounds for neglecting the financial aspect of development. According to Chandavarkar:

> . . . apart from the notorious intricacy of theory about it, the chief obstacle to insinuating money into secular growth models is that to do so one must make a dynamic assumption about the way it develops as an institution. . . .[4]

No matter what the traditional theory advocates and the fact that economic development depends ultimately on real factors should not preclude consideration that money and finance are important and relevant in the development process. Money matters to development, though not in the sense as food, energy or technology. It is this general issue that the present dissertation attempts to analyze.

Various attempts to establish a causal relationship between financial and economic development have not led to any definitive conclusions. For instance, Patrick came up with two terms that purport to describe the causation phenomenon, namely "supply leading" and "demand following."[5] The former describes the phenomenon that the creation of financial institutions and the supply of financial services are in advance of the demand for them, thereby leading the economy to develop. "Demand following" is the phenomenon in which the creation of financial institutions and their services is in response to the demand for them and it is development in the real sector that leads the financial sector to develop. Cameron has attempted to tackle this problem by a comparative-historical approach.[6] Unfortunately his study did not draw any positive conclusion on the causal relationship between finance and economic development. He found that in some countries, finance is "demand following" while in others, finance leads.

Since the causal problem has been studied extensively and the results have proved to be inconclusive, no attempt is made in this dissertation to follow up this topic. In fact, I concur with Chandavarkar's view that the causal links are not as important as the adoption of appropriate policies in developing the financial sector.[7] Thus, no matter what the causal relationship is, it is assumed that money matters and that we should know more about the financial sector, its development and measurement, during the process of economic development.

Therefore, it is the primary purpose of this study to explore the measurement of financial development and the assumed association between financial and economic development. Past efforts to measure financial development include the introduction of two ratios. They were proposed by U Tun Wai.[8] It will be our attempt to formulate a third ratio which we believe to be a more comprehensive and a better measurement of financial development. To explore the association between financial and economic development and to delve into the measurement of financial development a number of tests will be made.

To provide the necessary background, Chapter II gives a review of the literature concerning finance and economic development. The Keynesian Liquidity Preference theory and the Neoclassical theory are discussed in greater detail, followed by an exposition of McKinnon's New

View on money and development. McKinnon's model is regarded as more appropriate to the developing world than the Keynesian or Neoclassical models.

Chapter III points out some of the characteristics of the financial markets in less developed countries--characteristics which are often ignored by orthodox Western economic theories. The two financial ratios used by Wai will then be presented followed by the formulation of the third, new one.

Chapter IV presents the methodology and the results of the tests of the various hypotheses. Several case studies will also be presented in order to strengthen the argument that the new ratio is a better indicator of financial development than the others.

Finally, in Chapter V we present a summary and conclusions of this study.

CHAPTER II

REVIEW OF THE LITERATURE

As mentioned in the previous chapter, it is only recently that economists started to investigate the relationship between financial and economic development. Fragmentary propositions on the behavior of the financial sector with respect to development have appeared occasionally in the literature and most of them have been confined to theoretical or inferential propositions. This chapter gives a brief summary of the literature that is directly related to the topic under study.

Whittlesey

Charles R. Whittlesey distinguished three positions with respect to the relationship between the quantity of money and the rate of economic growth.[9] The first position, which is more or less the traditional quantity theory, states that an increase in the quantity of money is a sufficient condition for economic growth. The second position is that an increase in the quantity of money is a necessary, but not sufficient, condition for economic growth. Money in this case is a permissive rather than a causal factor for economic growth. Finally, there is the position that

the money supply adapts automatically to the growth process, i.e., money is passive. According to Whittlesey, these three positions are not mutually exclusive.

> The differences between these points of view are perhaps not as sharp as may seem to be implied. Those who say that the quantity of money has in fact adjusted to a rise in economic activity do not necessarily deny, and may specifically state, that restriction of the supply of money, if actually effected and carried far enough, would indeed restrain economic expansion.[10]

Whittlesey did not specify explicitly which position he holds concerning the role of money in economic growth.[11] However, from his sincere belief that monetary policy should take as one of its objectives the promotion of economic growth, we can infer that he belongs to the first position--namely, that money is a sufficient condition for growth.

Patrick

A somewhat similar approach to Whittlesey's in classifying the role of money in economic growth is given by Hugh T. Patrick.[12] In discussing the causal relationship between financial development and economic growth, he distinguishes between two phenomena, "demand-following" and "supply-leading."

> . . . "demand-following" is the phenomenon in which the creation of modern financial institutions, their financial assets and liabilities, and related financial services is in response to the demand for these services by investors and savers in the real economy. . . .
> . . . . . .
> . . . "supply-leading" phenomenon is the creation of financial institutions and the supply of their financial

> assets, liabilities, and related financial services in advance of demand for them, especially the demand of entrepreneurs in the modern, growth-inducing sectors. . . .[13]

The "demand-following" phenomenon corresponds closely to Whittlesey's second and third positions that money is permissive and passive in the growth process. On the other hand, the "supply-leading" phenomenon suggests that money, though it may not be a necessary condition, is quite sufficient for launching self-sustained economic growth. Patrick postulates that, in general, during the process of development, the "supply-leading" phenomenon may take place first and then gradually be replaced by "demand-following" finance. "Supply-leading" finance implies that the financial institutions, their assets, and services are created in advance of the demand for them. The availability of newly created "supply-leading" funds may encourage the entrepreneurs to "think big." At the same time

> . . . the banks would be in a position to supply not only credit and capital, but also entrepreneurial supervision and guidance, and to coordinate the production and financial planning of several related industries.[14]

As real growth occurs, the demand for money for transaction balances increases. Simultaneously, as real per capita income rises, the demand for money for precautionary and speculative purposes also increases. Thus, the "supply-leading" phenomenon will gradually fade away and it will be replaced by "demand-following" finance.

Patrick's postulate on the relationship between financial and economic development is among the best in the literature, as it synthesizes the two opposite views on the causation of finance and economic development. Unfortunately, he did not substantiate his hypothesis by empirical evidence or statistical analysis.

Cameron

A comparative-historical approach to the subject of banking and economic development was used by Rondo Cameron and his group in two extensively researched studies.[15] This approach is based on the premise that historical experience is relevant to the problems of the contemporary world and developing countries today can learn from the experience of the now-developed nations. In his earlier book, Cameron made a comparative study of the role of banking in economic development by looking at the first five European newcomers to industrialization--namely England, Scotland, France, Belgium and Germany--as well as two late-comers to industrialization--Japan and Russia. He concludes that there does not exist any universal banking system which is appropriate for all economies. Cameron's "structural-functional" theory of the role of banking in economic development suggests that the structural characteristics of a banking system--the laws, the regulations and customs that govern its behavior--are normally more important than, say, the

qualities of the bankers in determining the system's success in its role to development. He concluded that:

> . . . where banking was left most free to develop in response to the demand for its services, it produced the best results. Restrictions on freedom of entry almost always reduce the quantity and quality of financial services available to the economy, and thus hinder or distort economic growth. Competition in banking, on the other hand, acts as a spur to the mobilization of idle financial resources and to their efficient utilization in commerce and industry. . . .[16]

In his second book on banking and economic development, Cameron examined the role of banking in four European countries which either failed to or were slow in industrializing during the nineteenth century.[17] These countries are: Austria, Italy, Spain and Serbia. The result of this study seems to substantiate Cameron's earlier conclusion in his first book.

Although Cameron managed to touch on the quantitative aspect of financial structure, a major part of his study is descriptive and comparative. He proposed and investigated three indicators of financial structure, namely density, the relative size of the banking sector and the size and concentration of bank power. According to him, the density of financial institutions is significant, primarily in terms of their accessibility, but it also has an important bearing on the degree of competition in banking. Cameron used the number of bank offices per ten thousand people as a rough measure of density. The ratio of bank assets to national income was used as an indicator of the relative size of the

banking sector. Basing his research upon the countries studied, Cameron concluded that, basically, the countries with the highest ratios at the end of the period investigated were also the ones that experienced the most rapid spurts of industrialization.

Cameron's two studies were limited to only a few countries and the conclusion he arrived at, based on the indicators he used, were not supported by rigorous statistical tests. Nevertheless, the comparative-historical approach seems to be a useful methodology in the study of economic development.

Chandavarkar

A more policy-oriented view on the relationship between finance and development is stressed by an International Monetary Fund official, Anand Chandavarkar.[18] He takes a somewhat different approach from that of Whittlesey or Patrick. His basic position is that finance is relevant for development, but the ". . . causal links are not so much through the number and variety of financial institutions and instruments as in the adoption of appropriate policies [italics are the present author's]."[19] Official authorities and bankers in the less developed countries are trying to expand the availability of banking facilities to the neglected communities on the one hand, while on the other, there exists a restrictive attitude towards the pricing of both inputs and outputs of the banking industry.

Usually, there are "ceilings" on interest rates given to deposits as well as "floors" on loan rates--all of which are results of the semi-monopolistic nature of the banking industry. At the same time, the inefficient practice on the part of the banks, of insisting upon collateral on loans, restricts the availability of credit in many less developed countries. Hence, according to Chandavarkar, liberalization of the financial structure, exposure of deposits and loans to market forces of supply and demand, and the restoration of lending attitudes, techniques and procedures away from the traditional preoccupation with collateral are what we should be concerned with, rather than investigating whether financial intermediation is a "demand-following" or "supply-leading" phenomenon. In essence, Chandavarkar is more concerned about the relevant policy for achieving a viable financial atmosphere for economic development than the causal link underlying money and economic development.

U Tun Wai

Some pioneering work on unorganized money markets in less developed countries was done by U Tun Wai of the International Monetary Fund.[20] In addition to analyzing the nature of the unorganized money markets in the less developed countries, Wai also conducted in-depth field studies and estimated the interest rates in several unorganized Asian money markets. Wai found that most of the

loans from the unorganized money markets are for financing consumer expenditures which are unlikely to be able to stimulate economic growth. High rates of interest prevail in unorganized money markets because of the economic and social conditions, as well as supply and demand, in the less developed countries. The unorganized market is larger in size than the organized money market in many less developed countries and they do not have much connection between each other. Consequently, orthodox monetary policy, as an instrument for economic stability and growth, has very limited use. Authorities should, therefore, concentrate on narrowing the gap between the two markets; thereby widening the scope for monetary policy.

Wai used the ratio of deposit money to money supply and the ratio of the banking system's claims on the private sector to national income as indicators of the size of organized money markets in less developed countries. He computed:

(1) the deposit ratio for five developed and thirty-one developing countries, periodically between 1913 and 1953; and

(2) the claim ratio for fifteen developed and twenty-two developing countries in 1938 and from 1948 to 1953.

Wai's results broadly confirm that both ratios might be expected to be low in an underdeveloped country and high in

a developed one. However, Wai pointed out that the deposit ratio may be misleading in estimating the size of the money market:

> . . . For example, this ratio is almost as high in some of the Latin American countries as in the most highly developed countries. A possible explanation may be that while the money markets are fairly large in some Latin American countries, they may not be functioning as efficiently as in the more developed countries.[21]

Despite recognizing the importance of efficiency in a money market, Wai did not go any further in this direction. It is from here that we shall follow up and construct an efficiency measurement to see if it can be a better indicator of development than the deposit and claim ratios.

Kurosaki

According to Hideo Kurosaki, the financial market in the less developed countries is: (1) dominated by foreign banks; (2) has a dual interest rate structure; and (3) has a seasonal characteristic.[22] Before a less developed country starts to develop financially, foreign banks contribute to the modernization of finance by establishing organized money markets. However, as a country begins to develop, foreign banks may turn out to be a vice. Foreign banks are usually exchange banks that deal in the finance of trade and commerce. To the extent that many less developed countries are still primarily producers engaged in agriculture, the exchange banks' main line of business is to finance exports of primary products in foreign trade.

The kind of finance which the less developed countries urgently need at this stage, however, is finance for production and industry, instead of that of trade and commerce. Hence, a conflict of interest exists between the foreign banks and the developing countries. Moreover, as the organized money market can be broadened through expansion of the availability of banking services to rural areas, it may be unrealistic to expect the foreign banks to shoulder this responsibility. It simply does not pay off for them to spread into rural areas which seldom need the service of trade finance. It is not that less developed countries should eliminate foreign banks, but according to Kurosaki, national banks should play a more important role in improving the financial structure of these countries. Commercial banks, on the other hand, may be too young to fill the gap of the foreign banks.

It is well known that organized and unorganized money markets co-exist in the less developed countries. Interest rates charged by money lenders in the unorganized markets are usually much higher than that in the organized markets. Thus a dual interest rate structure exists in the financial market of the less developed countries.

Most of the less developed countries are producers of agricultural products. During harvest season, more money is needed to pay off the temporary workers who help in the field or extra credit is needed for getting the primary

products ready for export. Thus, activities in the financial markets may be more dynamic in the harvest season; and it is only natural that the financial markets in less developed countries have a seasonal characteristic.

Adelman and Morris

Adelman and Morris approached the problem of measuring economic development through integrated econometric models of socioeconomic and political change in developing countries.[23] Two variables for indicating the degree of improvement in financial institutions were used--the change in the degree of industrialization and the extent of dualism. These variables were vaguely defined as:

> The first variable, the indicator of the change in the degree of industrialization reflects the positive impact on financial organization of the increases in the demand for credit that characteristically accompany the expansion of the industrial sector.
>
> The inclusion of the indicator of the degree of dualism, the second variable in the financial equation, depicts the parallel importance for improving financial institutions of expansions in the demand for credit caused by the generalization of growth outside the urban-industrial complex.[24]

In another model, the level of effectiveness of financial institutions and the degree of improvement in financial institutions were used as financial indicators.[25] The former index includes two statistical measures of the flow of internal savings through a country's financial system and a judgmental classification variable. The gross domestic savings rate and the ratio of the sum of time and demand

deposits, plus money to gross national income, were used for the above statistical measures.

Adelman and Morris recognized the importance of considering both the borrowing and lending part of finance. However, they failed to show explicitly how their indicators on financial development were constructed. The vaguely defined "judgmental classification variable" seems to be highly subjective. Nevertheless, their results reveal that each indicator--the level of effectiveness and the degree of improvement of financial institutions--alone can explain about sixty percent of the difference in the rate of growth of real per capita gross national product.

Wallich

Wallich attempts to relate economic growth to a variety of monetary variables in his study, "Money and Growth, A Cross-Section Analysis."[26] The variables that are of interest to us include:

(1) The asset structure of the monetary system which is measured by the claims on the public sector as a ratio of total assets of the monetary system--combining central bank and commercial banks and stated gross of foreign liabilities.

This variable reflects the policies of the government that may influence growth. Assuming that full employment can be maintained by an appropriate monetary policy and an appropriate level of government expenditures' budget, given

a fixed amount of expenditure a government can contribute to growth by running a surplus or at least by abstaining from borrowing. If such surplus or balanced budget policy is carried out long enough, a low level of public debt holdings within the monetary system may result. Moreover, in developing countries, a banking system whose principal assets are composed of claims on the public sector may not be viewed with confidence. It may be regarded as inflation-prone or may be easily frozen by political turmoil and, hence, tend to retard growth. Wallich hypothesized that holdings of government securities are negatively related to growth.

(2) The degree of intermediation given by the liabilities of the monetary system in relation to income is a variable which is broadly regarded as a proxy for the degree of financial development; and

(3) the rate of monetary growth and its variability.

To test the hypothesis that holdings of government securities are negatively related to growth, Wallich regressed the annual growth rate of gross national product on

(i) claims on the public sector as a ratio of total assets of the monetary system, and

(ii) per capita gross national product and annual population growth rate.

The result broadly confirms his hypotheses, implying that the governments in the countries under study tend to finance expenditures from borrowing instead of from taxes.

To analyze the relationship between intermediation and growth, Wallich regressed the annual growth rate on

(i) total money supply (the broad definition of money) as a ratio of gross national product,

(ii) per capita gross national product, and

(iii) rate of growth of the population.

As expected, the result shows that the degree of intermediation is positively related to growth.

Instead of regressing economic growth rate on the rate of growth of money, Wallich added in a "squared term" on the money growth rate. His results reveal that the rate of growth of money supply is nonlinearly related to growth.

The significance of this empirical analysis seems to be doubtful. As Wallich recognized the problem explicitly, pooling developed and less developed countries together in the regression analyses, will highly increase the significance of the result. His justification for doing so--that an economy is an economy is an economy--is only arbitrary and we may anticipate the significance of his results might be reduced if only the less developed countries were included.

Goldsmith

One of the pioneering works in the area of financial and economic development is Goldsmith's lengthy and thought-provoking book.[27] This may be the only existing study on the topic which is both theoretical as well as empirical. The model he develops consists of twenty-five ratios, of which the financial interrelations' ratio is the most important. Goldsmith used the financial interrelations' ratio--the value of all financial instruments outstanding, divided by the value of national wealth--as the main single characteristic of the level of a country's financial development.

> The level and movement of the financial interrelations ratio . . . reflect the extent to which the groups of economic units that habitually account for the bulk of capital expenditures or occasionally incur current expenditures in excess of income--business enterprises, home owners, and government--need to resort to external financing through borrowing or through issuance of equity securities, or are able to finance their expenditures internally out of their own saving. . . .[28]

In the empirical investigation, Goldsmith first selected thirty-five countries and made a cross-section analysis of their financial interrelations' ratio in 1963 by correlating the ratio with per capita real GNP. His result

> . . . permits us to draw both positive and negative conclusions on the relationship between the financial interrelations ratio and the stage of economic development as far as it is reflected in GNP per head at purchasing power equivalents. . . .[29]

Goldsmith's first conclusion, which is positive, is that at the present time developed countries do indeed have a higher financial interrelations' ratio than do developing countries. Unfortunately, the second conclusion suggested that the association between the financial interrelations' ratio and per capita real GNP, though present, is only a loose and irregular one.

Goldsmith then computed the trend of the financial interrelations' ratio in four developed countries--Great Britain, United States, Germany and Japan--from 1860 to 1963. He concluded that

> . . . even in the long run there is no close correlation between the rate of growth of real national product and of financial interrelations' ratio, although again some positive association between the two magnitudes cannot be denied.[30]

Despite the ambiguous empirical results concerning the correlation between the rate of growth of real GNP and the financial interrelations' ratio, Goldsmith asserts that:

> The financial superstructure, in the form of both primary and secondary securities, accelerates economic growth and improves economic performance to the extent that it facilitates the migration of funds to the best user, i.e. to the place in the economic system where the funds will yield the highest social return.[31]

A major criticism of Goldsmith's cross-section analysis is that he did not have a comprehensive sample of the developing countries in his sample. Of the thirty-five countries he covered, only fifteen were developing

countries. If we isolate the developing countries and use a larger sample, the result may reveal a clearer picture. With regard to the trend analysis, both the United States and Japan did show a remarkable increasing trend in the period studied. The irregular movement in the British and German financial interrelations' ratio may be accounted for by historical events. Again, if we analyze the financial interrelations' ratio of developing countries after the Second World War, we may encounter more significant results.

Gurley

John G. Gurley may be among the first economists to relate financial structure to economic development. In his Rehovoth Conference paper presented in Jerusalem in 1965 he analyzed the relationship between gross national product per capita and the financial ratio which he defined as the ratio of total financial assets to GNP.[32] His cross-section study on seventy countries, between 1953 and 1961, showed that, in general, time and savings deposits tend to grow relative to GNP as per capita GNP rises. The deposits Gurley used were time and savings deposits in commercial banks, postal savings banks and other intermediaries. He also showed that, in general, countries will follow a rising financial path which increases at a decreasing rate in the process of development. However, ". . . the paths may be quite different for different countries, depending

on the resources allocated to the alternative techniques for mobilizing the economic surplus."[33] Thus, a centrally planned economy, for example, may have a lower financial ratio than that of a much poorer country that is just starting out on a financial path with a higher initial financial ratio.

Gurley's paper does provide a theoretical framework on the study of financial structure and development. He was over-concerned with quasi-money and overlooked the fact that demand deposits occupy a major portion in the money supply also. His proposition that different countries may follow different financial paths, may account for the imperfect correlation between financial ratio and development.

John M. Keynes

The ideas of Keynes played an important part in shaping contemporary theories of economics. Our survey of the literature would not be complete without incorporating relevant parts of the economic theory of Keynes.

Let us start with the phenomena affecting the shape of the liquidity curve. As a point of departure, we can take the motives underlying the desire to hold money. Keynes stated that there are three reasons why people want to hold money: the transactions motive, the precautionary motive and the speculative motive.[34] We shall deal with each of these motives one by one.

There are two major factors affecting the demand for money for transaction purposes in less developed

countries. On the one hand, there is no reason to assume that the role played by the transaction motive should be different in less developed than developed countries. Money is what money does. On the other hand, the magnitude of the money demanded for transaction purposes may be different between the two groups of countries. In less developed countries, due to the high degree of imperfections in the money markets, it seems that more money may be required for a given amount of transactions. The notion that any promissory note other than cash is not "money" still prevails in many underdeveloped monetized areas. Thus, transactions are mainly carried out on a cash basis, rather than through any credit instruments. Hence, for a given amount of transactions, more money may be demanded in less developed countries than developed countries. Contrarily, the existence of a relatively large nonmonetized sector in less developed economies may counteract this tendency. Many transactions in the nonmonetized sector of the economy do not involve money and, consequently, the transaction demand for money may not even exist in this case. For this reason, there are two directly opposite forces acting on the transaction demands for money in less developed countries and it is hard to say which one is stronger.

With respect to the precautionary demand for money, it is not an overstatement to say that its magnitude is negligible in developing countries. This is due to one or several of the following reasons.

First, underdeveloped countries are, by definition, poor countries.[35] Many people in underdeveloped countries are living in a bare subsistence condition. It is hard for these people to set aside any resources for the rainy days after they have fed, clothed and sheltered themselves. Hoarding, therefore, is virtually nonexistent. In many instances, it is not due to the unwillingness to save on the part of the people, but simply, it is due to the inability to put aside any monetary asset for precautionary purposes.

Secondly, in the nonmonetized sector of the less developed countries it is useless to save in monetary terms. Individual economic units, namely the household or family, have always been self-sufficient and it is very difficult for the people to see that saving for precautionary motives is good for them. Even if they save (hoard) up bank notes or coins occasionally, they may never be able to circulate the currency, since their day-to-day transactions are often in terms of barter exchange. Money may not be a widely accepted legal tender in this case also.

Thirdly, financial instability is another factor affecting the precautionary demand for money. Many less developed countries have experienced some kind of inflation in the past decade. In the eyes of many individuals in these countries, the legal tender issued by their local monetary authorities often does not guarantee a future

command over the same resources that they can obtain today. To put this in simpler terminology, a dollar today will not be worth a dollar tomorrow. The incentive to save may be further aggravated by instances of individual confiscation or general recall or revaluation of money. Past experiences of this kind of unhappy event can remain very deeply seated in the minds of many people and they tend to affect future expectations.

Finally, saving is an act of willingness to part with present consumption for future consumption. In some less developed countries, social or religious custom may not allow individuals to perform this act. For example, the idea of eat, drink and be merry now, rather than never, may hamper the precautionary demand for money to some extent.

As for the speculative demand for money, all of the above four factors on precautionary demand apply. In addition, due to the underdevelopment of organized money markets, opportunities for potential speculators are limited.[36]

In sum, Keynes proposed a theory underlying the demand for liquidity that is more relevant to the developed countries. With some modification, we can see that given a rate of interest, the demand for liquidity will be much lower in a developing than in a developed country. Thus, the liquidity preference curve tends to lie further to the left (with the interest rate at the vertical axis) in the case of a less developed country.

The Neoclassicists

This school of thought in regard to the role of money in a growing economy has raised a number of questions including the following: (1) To what extent can monetary policies and institutional arrangements affect the time profiles of an economy's capital-labor ratio, the real wage and the rent of capital? (2) Can variations in the rate of growth of money affect the time profiles, and steady state solutions of the real variables? and (3) Is there an optimum growth of the various types of money?

In attempting to answer the above questions, the neoclassicists construct monetary growth models--models that were built on a well developed economy which is fully employed and have a rather sophisticated financial sector. For example, Stein wrote:

> Monetary policy can affect the time profile of the capital intensity, as well as its steady state solution . . . if it can shift either the consumption function or the net production function. . . . The neoclassical monetary growth model considers how these shifts can occur within a fully employed economy [italics are the present author's].[37]

Since the neoclassical monetary growth theory is mainly concerned with developed economies, it may not be directly applicable to the less developed countries. Nevertheless, it is briefly discussed here in the interests of completeness of our review. It is very difficult to discuss all the approaches to the problem of money and economic growth taken by the neoclassicists. Only a few representative

models will be briefly presented below. No attempt will be made to go into the mechanics of these models.

James Tobin may be regarded as one of the earliest writers to include money in economic growth models. In 1955 he constructed a macro model combining both the aggregate production function and the monetary sector.[38] Unfortunately this model did not draw much attention until ten years later with the appearance of his second article on money and growth.[39] According to Wan,

> . . . Tobin cast his theory in terms of balanced growth models. The essence of his approach is that saving in a monetary economy may take the form of either physical capital or an expansion of the real balance of "outside money." For this reason, the balanced growth capital/labor ratio (and therefore the output per worker, the wage and rent rates, etc.) depends upon the "portfolio balance," viz., the decision of the public to hold a particular portion of wealth in money assets and a particular portion in physical assets.[40]

Thus, in terms of policy, monetary policy can affect the balanced growth capital/labor ratio if the planned savings ratio (or portfolio balance) is affected by the rate of monetary expansion.

One of the outcomes of Tobin's model is that, ceteris paribus, a monetary economy has a lower balanced growth capital/labor ratio than a barter economy. Levhari and Patinkin were able to show that this paradoxical result was due to an omission of two major functions of money in Tobin's model.

> . . . In the first case, the services rendered by money balances should appear in the individual's utility

> function and hence in his (imputed) disposable income; whereas in the second they should reflect themselves in the production function. Neither of these approaches, however, is reflected in the preceding (Tobin's) model. . . .[41]

In recent years, another type of growth model has evolved--the Keynes-Wicksell money growth model.[42]

> Because they contain independent savings and investment functions and explain inflation in the steady state in terms of Wicksell's cumulative process, they have come to be called Keynes-Wicksell models. . . . these Keynes-Wicksell models imply that money is not neutral, although the direction of the effect of an increase in the rate of growth of the money supply on the steady-state values of the capital-labor ratio, the rate of return on capital, etc. cannot be determined theoretically.[43]

Undoubtedly, the Keynes-Wicksell and Tobin monetary growth models are breakthroughs in growth economics. Because these models are more relevant to the developed countries, we turn our attention now to one which is more useful as an explanation of the less developed countries.

Shaw and McKinnon--The New View[44]

Realizing the inadequacy of the neoclassical model in treating money in less developed countries, McKinnon and Shaw proposed alternative models to deal with the problem. Their two books on finance and development came out at approximately the same time in 1973.[45] We shall put more emphasis on McKinnon's model because it is easier to use in terms of exposition. The approaches the two authors took in analyzing the fragmented, less developed economies are quite different, and yet the conclusion and policy prescription they arrived

at are very similar. In the case of Shaw, financial deepening--the accumulation of financial assets at a pace faster than the accumulation of nonfinancial wealth--is the key for monetary liberalization. His Debt Intermediation View calls for policies to ". . . induce more rapid growth in real money balances that the public desires to hold and to use as a means of payment. . . ."[46]

The major argument of McKinnon's New View is that money and capital are complementary to each other, instead of substitutes--in less developed countries. This breakthrough from the orthodox neoclassical theory provides at least one illuminating solution to the problem of underdevelopment.

In the New View, some of the neoclassical relationships are retained. They are:

(1) the monetary authority controls the deposit rate and the rate of expansion of nominal cash balances, $\dot{M}$, thereby determining the real return of holding money;

(2) individuals do form expectations about future price movement which largely affect the amount of actual cash balance holdings; and

(3) the price level is to be determined by the supply and demand of nominal money.

In addition, the New View introduces the following assumptions:

(a) There is no, or very little, outside finance. All economic units are self-financed.

That is, the firms do not borrow from or lend to the households and vice versa. This assumption, though generally valid in many underdeveloped rural areas, is introduced for simplicity.

(b) Indivisibilities of investment exist due to the size of the firm or household and they play a very important role in capital accumulation.

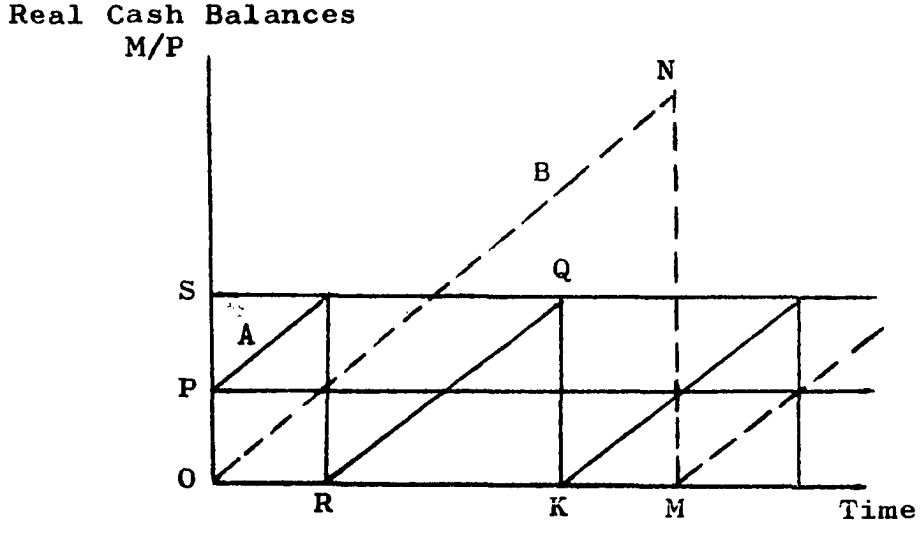
(c) The government does not participate directly in capital accumulation.

That is, deficit or surplus finance is excluded. Revenues are collected only for current government consumption.

Now suppose an individual wants to purchase physical capital that he cannot produce by himself. Being confined to self-finance by assumption (a) what he can do is to accumulate his own physical output so that he can sell the inventory to acquire the desired physical capital. Another possibility is to accumulate cash balances. Which alternative he chooses depends on the real returns of holding money and the inventory. If his output is perishable agricultural products, then he may have to convert his inventory to a cash balance periodically before he saves enough to buy the desired capital.

Assumption (b) implies that a substantial amount of purchasing power is concentrated at the point of the

investment. That is, at the moment when the individual buys the physical capital (we can look upon the physical capital as, say, a piece of equipment). Hence, the average time lag between income and expenditure will be longer for investment than for consumption, and the average cash holding will also be higher. More precisely, ". . . if the desired rate of capital accumulation (and hence private saving) increases at any given level of income, the average ratio of real cash balances to income will also increase."[47] We can illustrate this by the diagram below:



Consider, two individual economic units A and B. Let us assume that they receive the same income continuously through time. They will build up cash balances as they receive their steady stream of income and their disbursements are shown by the vertical drops. These vertical drops indicate the indivisibilities of the disbursements and their sum should be equal for both units, because they

receive the same income periodically. The propensity to save is indicated by the spacing and size of the vertical drops. For example, A will accumulate its income during time period RK, and then spend it. The amount spent is QK. Similarly, B will accumulate its income during OM and spend MN at point M. Clearly, A has a smaller propensity to save due to its short time lag between income and disbursement, or the smaller disbursement, QK. On the other hand, B, an investment minded unit has a higher propensity to save, or a larger average cash balance. Average cash balance is given by OP for A and by OS for B. Hence, average cash balance is positively related to the propensity to save under our New View.

Under the New View, the money demand equation is:

$$\frac{M}{P} = H(Y, \frac{I}{Y}, d-\dot{P}^*) \qquad (6)$$

where M/P = the real cash balance;

Y = the real income;

i = the real rate of interest, i.e., the real rate of return on physical capital and financial assets other than money; and

r = the real return on money which is equal to the interest rate paid on bank deposits, d, discounted by the expected rate of inflation, $\dot{P}^*$.

and

$$\frac{\partial H}{\partial Y} > 0, \quad \frac{\partial H}{\partial (I/Y)} > 0, \quad \frac{\partial H}{P(d - P^*)} > 0.$$

In particular, if we assume that there is an average return on capital, $\bar{r}$, measuring the mean of the different returns on capital, with a given dispersion and replacing I/Y by $\bar{r}$, we have:

$$\frac{M}{P} = H(Y, \bar{r}, d - \dot{P}^*)$$

and

$$\frac{\partial H}{\partial Y} > 0, \quad \frac{\partial H}{\partial \bar{r}} > 0, \quad \frac{\partial H}{\partial (d - P^*)} > 0.$$

Given an exogeneous change in $\bar{r}$ (for example, a green revolution), individual economic units will increase their desire to invest because of the higher $\bar{r}$. That is, the propensity to invest will increase. People will build up larger cash balances before they make their lump sum disbursement which will result in an increase in the demand for money.

The mechanics of this alternative model are quite different from that of the neoclassical model. Money, instead of being a substitute for physical capital, as in the neoclassical model, is a complementary asset under the New View. A rise in the average rate of return to physical capital increases the propensity to save (i.e., the I/Y ratio), which in turn increases the desired real cash balances. Conversely, a rise in the real return of holding money will induce people to use money as a store of value,

to a greater extent. Self-financed investment will thus rise to follow. People who used to keep large and unproductive inventories will use money as a store of value. A small farmer who has the habit of keeping unduly large rice inventories (part of which may become rotten or eaten by rats), or a factory owner who used to purposely "over-invest" in plant capacity will now start to use money as a store of value. Real resources, instead of being channelled to nonproductive, fixed or working capital is now freed for use in more efficient production. Thus, with a rise in the real return of money, there will also be a rise in the aggregate output when the low productivity capital is employed more efficiently.

What then is the implication to monetary policy behind this New View? With the supposition of a green revolution, the real return on capital will increase, followed by a rise in the propensity to save or invest. The demand for real money balances will also increase for a given level of income. Under the New View, the monetary authority would let the supply of money increase, thereby, avoiding deflation. Under the orthodox view, however, government should contract the nominal supply of money so as to stop the inflationary pressure due to the rise in investment.

If there is no green revolution, the only course of action left is to increase the real rate of return on money--i.e., higher real rates of interest--by an increase

in nominal interest rates or price deflation. So we can see that when the imperfections of money markets in less developed countries are taken into consideration, the New View calls for increases in real rates of interest so as to induce higher rates of capital accumulation, which is quite contrary to the orthodox views.

By way of summary, most of the literature concerning finance and development is confined to two main issues. The first issue is that of the role of finance in economic development. Depending on which position one takes, money can be an active, permissive or passive factor in economic development. Parallel to this is the causal relationship between finance and economic development. Financial development may be "demand following" or "supply leading," or a mixture of both. Different countries may follow different financial paths and according to Gurley, a universally optimal path may not even exist. Despite Cameron's extensive country-by-country studies, and Goldsmith's thought provoking empirical work, the issue of the role of finance in development is still quite ambiguous. Chandavarkar, on the contrary, argued that the causality of finance and economic development is not as important as adopting the appropriate policies to stimulate finance and economic development in the contemporary world. This leads us to the second issue which concerns the mechanics or process of

economic development vis-a-vis financial liberalization. According to Shaw, financial deepening is a path to financial liberalization. He calls for policies to induce higher growth in real balances so as to accumulate financial assets at a rate faster than that of nonfinancial wealth. As with the desire to hold money, the Keynesian Liquidity Preference Theory is centered around developed economies which requires considerable amendment before it can be applied to less developed countries. Similarly, the neoclassicists, neglecting the distinct characteristics of the financial markets in developing countries, treat money and physical capital as substitutes which often render their policy prescription inflationary. McKinnon incorporated the imperfection of the less developed financial markets and came up with the New View which regards money and physical capital as compliments in the asset holder's portfolio. His theory is more relevant to the lagging less developed economies than that of the Keynesian or Neoclassical models.

CHAPTER III

MONEY AND BANKING IN ECONOMIC DEVELOPMENT

Following our brief review of the literature on finance and economic development, we will now come to examine in a more detailed fashion the main characteristic features of the financial sector of less developed countries. This will be followed by the proposal of a number of hypotheses concerning banking in economic development and the formulation of financial indicators.

Characteristics of Financial Markets in Less Developed Countries

Existence of Nonmonetized Sector

In a developed country, the economy is usually fully monetized. Transactions are carried out in terms of a legal tender. This is not the case in the less developed countries where there is still a large proportion of transactions done through the medium of barter exchange. Since most less developed countries have a relatively big agricultural sector, many of their economic units--especially households--do not even have contact with the monetary exchange economy. Families who are mainly engaged in farming

are always trying to be self-sufficient. This is more true in the old colonial countries where the main economic activity is the export of a few primary products. It is in these industries that monetization prevails. For that part of the economy which is not related to the production of primary products, monetization seems to be remote. Even in the areas where the primary export crops are produced, monetization may not be fully achieved. Farmers may borrow their farming equipment and daily necessities from their landlords and repay in kind during the harvest seasons. Hence, even in a monetary exchange economy, circulation of money is often confined to the elite--the landlords, exporters, etc.

Organized Money Market

A less developed economy is "lagging" or "fragmented." Fragmented in the sense that firms and households are so isolated, whether in terms of physical distance or communication, that they face different sets of effective prices for land, capital and labor. The case of capital is especially clear, due to the fact that two distinctly different markets--the organized and unorganized money markets--coexist in the same economy. We shall deal with the organized market first.

Among the different types of financial institutions in the organized money market, the central bank is the nucleus. It is a national monument which everyone looks

up to and upon which all financial activities in the organized money market depend. Traditionally, the main function of a central bank is to control the commercial banking system with the objective of stabilizing the economy. Currency issue plays only a subsidiary role. For developed countries, like the United States or Great Britain, the major weapons for controlling the credit base of the commercial banks are open market operations and the manipulation of the bank rate. A large number of central banks in the poor nations which have transplanted these controls often find these policies or structures inappropriate, if not completely useless. As Sayers remarked:

> . . . The growing doubt that eventually checked the multiplication of central banks was, however, not . . . the question of theory but rather reflection upon the experience of some of the infants. In one country after another open-market operations were just a dream, because there was no market in which to operate. The member banks were powerful institutions: many of them were free to draw upon their own offices in the world's leading financial centers and never needed to go near the central bank, whose rediscount rate remained completely inoperative. . . .[48]

After repeated failures of their policy tools in bringing about the anticipated result, central bankers in less developed countries are beginning to learn their lessons and have begun to take a new look at their policy tools.

The commercial bank is usually the leading private institution in the organized money market. Since many less developed countries today were colonies in the past, their economies were based on colonial economic systems in which

the commercial banking system was dominated by expatriate international banking organizations. These foreign banks were the sole money market creators in many instances. Because of the particular structure of the less developed economies and the financial strength of these foreign banks, they usually swallowed the lion's share of the money market. These foreign banks, with their head offices in developed countries, have had the experience and technological know-how for handling trade in the world markets. As the main source of foreign exchange to the less developed countries is from the export of a few primary products, agricultural exporters inevitably have had to rely on the well established foreign banks to handle their international transactions (e.g., bills of exchange, letters of credit, etc.). The indigenous local banks, lacking the volume and facilities have had to step aside and operate on business that was left over from the foreign banks.

To cite an example of the concentration of foreign banks in less developed countries, Crick noted that:

> The importance of the foreign banks in the Malaysian system is reflected in their share of total banking business. Nearly sixty percent of total deposits in Singapore are placed in foreign banks, and in the former Federation possibly over sixty-five percent of total deposits are in non-Malaysian banks. The British banks dominate not only the foreign banks, but the whole of Malaysian banking. They might well account for up to forty percent of the total banking business in Singapore, and possibly for over half the total in the Federation. They have a virtual monopoly of banking in the Borneo territories. . . .[49]

It is true that the organized money markets in less developed countries are usually created mainly by international banks. However, there exist numerous defects when the foreign banks are dominating the market. First, a foreign bank situated in a less developed economy is merely regarded as a branch of the bank--its head office being located in the home country. In terms of operation, there is no reason to assume that a branch office should act independently and differently from the head office. Thus, very often the foreign branch--where the local demand for loans is limited or qualified loan customers are few--will accumulate excess funds, which will eventually be transferred to the more active branches of the bank outside the less developed country. A dilemma then evolves: while the less developed country lacks domestic capital for investment or development, on the one hand, the foreign banks on the other hand, accumulate funds within the country and remit the funds overseas where there is higher profit and less risk.

Secondly, foreign banks are established in the less developed countries for the sole purpose of dealing in trade or commercial finance. The kind of finance which developing economies need most urgently at the present time, however, is for production and industry. The latter requires a relatively longer term than finance in trade. That is, it will take a longer period for a factory owner to repay his

loan for buying capital equipment than an exporter to pay back his trade credit. Foreign banks which have access to other more secure and profitable markets (overseas) will not have too much incentive to take part in the finance of industry or investment, even though, for the same rate of return the probability of default is higher for loans in developing countries than in developed countries.

Thirdly, every effort has been made by less developed countries to expand their organized money markets. It is, however, too much to expect the foreign banks to participate in this. To establish branches or expand into the rural areas simply takes a long time to pay off, if they pay off at all, because of the low level of economic activity prevalent in the rural agricultural areas.

To sum up, many commercial banking systems in the less developed countries are dominated by foreign banks which may be an advantage or a disadvantage to the developing nation. It is undeniable that foreign banks should be credited for establishing and supporting the organized money markets, but they may also be a source of leakage to domestic capital abroad, unless appropriate action is taken to prevent this. Furthermore, the interests of foreign banks quite often conflict with that of the less developed countries. In studying colonial banking, Nevin summarized the above neatly:

> The broad result of all these features of colonial banking--the integration of all branches of the bank into a single unit administered from the head office, the concentration of credit on expatriate primary-producing or trading enterprises, the application of conventions and standards exported from the home country--was at least until quite recent years an inadequate rate of expansion of credit for new development in most dependent territories. The banking system had the effect of channelling funds away from local industrial development and towards the country in which the banks' head offices are located. . . .[50]

Many of Nevin's comments remain true in the less developed countries nowadays, though the dominance of foreign banks is gradually weakening.

Apart from the dominating foreign banks, there are the locally incorporated commercial banks. Many of these local banks have a long history and are nearly as old as the country itself. They are usually family owned and management just passes on from generation to generation. Thus, the local banks are seldom innovative entrepreneurs if we regard bankers as entrepreneurs.[51] They are conservative and avoid risk. It follows that when the local banks have to operate on whatever business is left over from the foreign banks, they are apt to practice on a conservative basis. For example, they tend to hold excessive unborrowed reserves, and have rigid insistence on approved securities as collateral for borrowed money (e.g., real estate or government securities) which may often have value which is several times higher than the amount of the loan.

Unorganized Money Market

Participants in an unorganized money market include money lenders, shopkeepers, pawn brokers, farmers, or any concerns who supply or demand funds and are unable or unwilling to go to the organized money market. Fragmentation is a main feature in the unorganized money market. These markets are scattered around in the rural areas with heterogeneity. Participants usually do not know what is going on in other markets. Borrowers, as well as money lenders, have no idea of what other borrowers are paying or lenders are charging. In fact, some of the transactions are exchange in kind rather than through a medium of exchange. Imperfections in the market mean that the borrowers usually have to take whatever they offered. Examples of interest rates as high as 100 or 200 percent a year have been found in Ethiopia for providing loans, and as little as $50 to $100 has been cited.[52] This kind of imperfection or lack of market information is due to several reasons. First, unorganized money markets are more active in the rural areas where the major part of the population is engaged in farming. Borrowers in the unorganized markets are usually small farmers, cottage industry workers or some retail shopkeepers. Most of them do not have access to the organized money markets, nor do they have any contact with it. Hence, it is often very difficult, if not impossible, for the borrower to shop around before he makes his commitment. Secondly, the

purpose of the loan very often carries a sense of urgency or "necessity." Poor farmers need capital in the slack seasons or in between the time they harvest the crop and actually put it on the market for sale. A cottage industry worker, due to social custom, may have to borrow money to pay his wedding feast. All these situations make the borrower an interest taker, leaving little room for him to bargain. Finally, on the part of the lender, he is usually well informed about his customer and, therefore, he will always try to set his interest rate at the level which will allow him to get the most out of the borrower. In an isolated rural area, a money lender may be a farmer, a storekeeper, or even the borrower's relative. He often has intimate personal knowledge about his customer--e.g., the number of dependents the borrower has, the probability of default, etc.--so that he can optimize his loanable fund by minimizing his risk and maximizing profit.

The supply of loanable funds in the unorganized money markets is inelastic and very limited, due to the nature of the suppliers. The major sources of loanable funds are landlords or merchants who do not derive their income solely from lending money. They are willing to lend only at rates which are higher than the return from their normal course of business activity--which is usually quite high already. Unlike the commercial banks, the capital or loanable funds are merely savings of the individuals, the

supply of which is highly inelastic. The lack of information on the part of the borrowers adds more monopolistic power to the lender. Furthermore, since many countries regard usury as illegal, money lenders have to have a higher return to offset the risk of being caught. All these result in a high rate of interest being charged in the unorganized money market.

Capital Market

Capital markets are usually at their infantile stage in many less developed countries. Long term capital does exist in many of these lagging economies, but unfortunately, the capital is not channelled into its proper use. It is not uncommon to find huge long term capital invested in real estate such as luxurious apartments or recreation areas, which only the rich can afford to enjoy. Another source of long term capital is from the local foreign enterprises. Most of this capital comes from the head office or is retained earnings which will usually find its way back to the foreign enterprises without benefitting the local economy. Inevitably, insufficient funds constitute the major factor of underdevelopment of the capital markets in underdeveloped countries.

Summing up the characteristics of the money and capital markets in less developed countries, the existence of a nonmonetized sector--coupled with unorganized money

markets and underdevelopment in the capital markets--breed out the duality structure of interest rates. While the monetary authority is trying (according to orthodox theory and policy) to lower interest rates in the organized markets, there are continuing high rates prevailing in the unorganized markets. While the central bank is trying to stabilize the economy, the existence of a relatively large nonmonetized sector renders the traditional monetary policy tools--mainly open market operations and bank rates--close to being useless. Having looked at some of the major characteristics of the financial markets in less developed countries, we can see why the orthodox monetary theories need to be amended to fit the structure of the less developed economies.

Banking in Economic Development

After reviewing some of the characteristics of the financial markets in the less developed countries, we will now turn our attention to the measurement of financial development. Specifically, we will be concerned with the matter of the three proposed indicators of financial development. As mentioned above the first two ratios, the deposit and claim ratios, have been used in the literature before while the efficiency ratio is a new formulation. Several hypotheses about the banking sector vis-a-vis these ratios will be presented later in this chapter.

One of the major factors affecting the economic performance of a developing country is the ability to increase the proportion of domestic resources which are available for investment, that is, the extent to which the rate of domestic savings is increased. However, an increase in the rate of domestic savings is not synonymous with an increase in the rate of investment if the available savings are not channeled into productive investments efficiently. In performing the functions of attracting savings and channelling them into productive investments, the financial institutions play an important role. They tap the savings from the private sector and redistribute them to the business firms for investment. To the extent that financial institutions in developing countries are dominated by commercial banks, these intermediating functions are largely carried out by these banks. The more efficient the banking system is, the more domestic savings that can be accumulated and transformed into investments; thus, utilizing financial resources to the maximum for development purposes.

The Meaning of the Financial Indicators

The Deposit Ratio

The deposit ratio is defined as total bank deposit divided by the money supply. The ratio shows the extent to which the public is utilizing the services offered by the banking institutions. For example, it shows the degree

to which people are using the banks for settlement of debts, or the use of checking accounts instead of currency as a medium of exchange. On the other hand, the ratio also gives an indication of the ability of the banking sector in marketing their services to the public. For example, when bank offices spread to the less developed rural areas, farmers can have the opportunity to keep their savings as bank deposits instead of in a form of say excessive wheat inventory.

In terms of monetary policy, a high deposit ratio (i.e. a high deposit component of the money supply) implies that the monetary base of the banking system is high, thereby providing a larger scope for monetary policy to operate than in the case of a low monetary base. Note that though an increase in the magnitude of the deposit ratio will increase the credit base of the banks which the monetary authority is in the position to regulate, the immediate short-run effect of monetary policy on the banking sector cannot be captured in a specific ratio. For example, just by looking at the 1960 deposit ratio of Peru will not tell us much about the effect of the expansionary policy that the country was following. We have to look at the ratio from, say, 1960 to 1965. If the expansionary policy was successful, then the deposit ratio in these five years should be increasing after eliminating the time effect.

A high deposit ratio implies that people are making more use of the banking institutions while the monetary authority is in a better position to implement its monetary policy more efficiently. As the financial sector develops, we would expect the ratio to increase. That is, within a given country, if we look at the time series of deposit ratio, we may find that it has an increasing trend.

The Claim Ratio

The claim ratio is defined as the ratio of the banking sector's claim on the private sector to GNP. Looking at the other side of the balance sheet, we have the banking system's claim on the private sector. This includes among other items, loans or advances to the public, bills discounted, etc. The claim ratio shows the extent to which the private business and industrial units are making use of the commercial banking system to finance their operations. As the financial sector develops, business and industries will tend to use more and more external finance. As the commercial banks may be the most readily available source of external finance in many less developed countries, the commercial banks' claim on the private sector will therefore tend to rise more rapidly than GNP. Like the deposit ratio, we would expect the claim ratio to increase through time.

The Efficiency Ratio

The question of how to evaluate a banking system has remained unsolved for a long time. Many economists just regard the banking system as given and do away with the whole problem. Others try to attack the problem by presenting theoretical and judgmental criteria of what a good system should be. For example, Beckhart suggests that:

> The basic test of a well-functioning financial system, whether in the United States or in any other nation, is its ability to finance credit needs, which contribute to economic growth, and to finance those needs in such fashion that inflation and economic instability are not engendered. . . .[53]

Greenbaum, on the other hand, sets up a list of desirable performance characteristics of a banking system that has gained some popularity.[54] Unfortunately most of the characteristics are very difficult to quantify and test empirically.[55]

Gramley was able to come up with a more operational definition of efficiency than Beckhart or Greenbaum. By relating efficiency to social welfare, Gramley writes: "The amount of resources needed to provide a given quantity of banking services, evaluated in terms of its social value, would then provide a measure of the social efficiency with which resources were employed at the banking system."[56] The introduction of social value to the definition of efficiency may require some kind of subjective judgement

which may lead to some difficulty when applied to less developed countries. In fact, many discussions on the effectiveness of a banking system are merely confined to the theoretical and abstract issues such as those mentioned above. The following pages present a more operational measure of efficiency.

The efficiency ratio is defined as the percentage change in claim relative to the percentage change in deposits. The deposit ratio tells us to what extent can the commercial banks accumulate domestic savings, while the claim ratio reveals the extent to which the banks utilize their accumulated deposits. Each ratio gives us information on one side of the balance sheet only. The deposit ratio gives us information on the liability side while the claim ratio tells us something about the asset side. The efficiency ratio combines the two to give us information on both sides of the balance sheet.

If we consider the definition of the efficiency ratio, we can see that it includes an elasticity concept. That is, the ratio can be viewed as an elasticity of intermediation--the responsiveness of loans advanced by the commercial banks with respect to changes in deposits. Furthermore, let us separate the efficiency ratio into two components, that is:

$$\text{Efficiency ratio} = \frac{\%\ \text{change in claim}}{\%\ \text{change in deposit}} = \frac{dCL}{dDD} \times \frac{DD}{CL}$$

where CL = claim and DD = deposits

The first factor dCL/dDD is the change in claim per unit change in deposit within a given time interval of say three years. Now for every additional unit of deposit a commercial bank receives, there are several ways that it can be utilized. If the country concerned has a fractional reserve system, then part of the increase in deposit has to be kept as reserves to satisfy the reserve requirement. The rest can be used in different ways--loaning it out to business or individuals, buying government securities or simply keeping it as excess reserves. The resulting portfolio depends on three major factors: the different rates of return and risks associated with the different financial assets, the loan rate and the managerial ability of the portfolio manager (e.g. the ability to obtain market information and the efficiency in selecting the optimal portfolio, etc.). For the banking system as a whole, these same factors also apply. Thus the change in claim on the private sector per unit change in deposit is a function of monetary policy (reserve requirement, discount rate, etc.), the spectrum of rates of return on different financial assets and efficiency in portfolio selection.

The effect of monetary policy on the efficiency ratio needs to be discussed in more detail. Since a portion of additional deposits a bank receives during a given period of time have to be kept as required reserves, the magnitude of dCL/dDD will change with a change in the

reserve ratio. In the case of a tight money situation, and assuming that monetary policy can be carried out effectively, an increase in the required reserve ratio or the discount rate will tend to reduce the amount of loans to the private sector, i.e. a lower dCL/dDD. On the contrary, any expansionary policy will tend to allow the banking sector to advance more loans per additional unit of deposits received, thereby increasing dCL/dDD. It follows that the short-run effect of monetary policy will be revealed through the efficiency ratio. This is consistent with using the ratio as a measure of the efficiency of intermediation when we consider the fact that monetary policy can have an important influence on the intermediation efficiency of financial institutions.

The second factor in the efficiency ratio, DD/CL gives an average of the deposit that can be derived from one unit of claim. It indicates how well the banking sector did in attracting deposits in the past. Any change in monetary policy during the period when the efficiency ratio is computed will not affect this factor as it gives the initial average deposit per unit of claim.

When the two factors are combined to form the efficiency ratio, we can see that it is superior to the deposit or claim ratio. It takes into consideration of the effectiveness of obtaining both the input and output of the

commercial banks plus indicating the effect of monetary policy on the banking sector.

Let us consider two particular cases when the efficiency ratio seems to have a distinct superiority over the deposit and claim ratios in indicating the level of financial development. In the cases of chronic inflation or deflation, the deposit or claim ratio may be a misleading indicator. We shall only consider the case of inflation as the situation under deflation is just the reverse. Furthermore, our analysis is only concerned with mild or intermediate inflation. The situation under a hyper-inflation is not considered here. In a period of chronic inflation, prices are increasing continuously and so is money. The amount of demand deposits required to carry out a particular transaction will increase. The deposit ratio will not change if and only if both currency and demand deposits are increasing at the same rate. If demand deposits are rising faster than currency, then the deposit ratio will increase. We shall see whether this is the case in the less developed countries.

Let us reflect on who are the checking account holders in a less developed country. Probably they will be individuals with high incomes or large business firms. The latter seem to be more significant because large business firms probably need a checking account to carry out their transactions. Assume that a given business firm used to carry $10 thousand in cash and to keep $100 thousand in the

checking account for a given unit of time before inflation. Assume further that prices have now doubled, which means that under normal circumstances the firm will have to keep $20 thousand in cash and $200 thousand in demand deposits. If every firm in the economy behaves like this, the deposit ratio will remain the same as before because the money supply has doubled and demand deposits have also doubled. It is doubtful whether the firm will increase its cash holdings proportionately to that of demand deposits. One reason is that instead of counting the amount of currency which is twice than before, it may be more convenient and less time consuming to write a check to settle a transaction. That is, instead of counting ten $100 bills as in the past, one has to count twenty $100 bills which may not be as convenient and efficient as writing a check. This means that transactions which used to be carried out on a cash basis will now be done through the bank. Notice that it is the same group of people (the business firms) who is utilizing more of the banking facilities.

Another reason which induces people to keep a proportionately larger amount of demand deposits is because interest may be earned on demand deposits. This is not unusual in many less developed countries. This apparently raises the attractiveness of holding demand deposits relative to cash. In sum, convenience and a pecuniary return on

demand deposits may induce people to increase their holding of demand deposits at a faster rate than currency.

Let us consider the broad definition of the deposit ratio, i.e. deposits include time and savings deposits in addition to demand deposits. It may not be an overstatement to say that most of the holders of savings and time deposits belong to the upper income group in the less developed countries. Inflation may result in a redistribution of income. If the rich are going to get richer, then people in the upper income group may tend to put more money into their savings accounts. Furthermore, to the extent that income levels may be related to education levels which in turn may condition money holding practices, an increase in income may induce a person to keep a relatively larger amount of money in the form of savings or time deposits than simply holding the increased income in cash. Hence we may argue that the deposit ratio tends to rise during periods of inflation.

In sum, both the deposit and claim ratios will be high because of the inflationary effect rather than, say, an improvement in banking services offered or greater utilization of the existing banking facilities by more people. Now government authority cannot allow any sustained increase in prices unchecked. Probably government intervention will take place. The effect of any restrictive monetary policy

will be transmitted through the dCL/dDD factor of the efficiency ratio. The dCL/dDD will decline as banks are more reluctant to extend additional credit to the private sector. The magnitude of the DD/CL factor is difficult to assess because in a chronic inflation both deposit and claim ratios tend to be high. When DD/CL is weighted by the low dCL/dDD the resultant efficiency ratio will tend to have a lower value. Therefore, though the deposit and claim ratios have high values in a period of chronic inflation, indicating that the financial sector is highly developed--which in fact is not--the efficiency ratio gives a truer view of the intermediation efficiency of the banking system.

Based upon the above discussion on the three financial ratios, we may hypothesize that:

(1) The deposit ratio in developing countries tends to increase over time (i.e., it has an increasing trend). Furthermore, the level of the ratio is positively related to a country's level of economic development.

(2) The claim ratio has an increasing trend and the level of the ratio is positively related to economic development.

(3) The efficiency ratio is directly related to the rate of economic development during a given period, and it is a better indicator of financial development than the deposit and claim ratios.

In the next chapter, the above hypotheses will be tested empirically and several case studies will be presented to support the hypothesis that the efficiency ratio is a better indicator of financial development.

CHAPTER IV

TESTING THE HYPOTHESES

One of the main purposes of this study is to investigate the relationship between financial and economic development. In Chapter III we defined the three ratios as indicators of financial development. Granted that these ratios are close proxies for indicating the size or efficiency of a country's financial sector, we will now try to answer the following questions:

(1) Is there any positive association between financial and economic development?

If the answer is affirmative, then we can use the financial ratios as indicators of development--an aspect which has often been overshadowed by the real aspect of development in the literature.

(2) Which of the three financial ratios is statistically the best indicator of financial development?

(3) What are the characteristics of these financial indicators? Do they tend to increase over time? Is their association with economic development stable?

We have hypothesized that the deposit and claim ratios are positively related to a country's level of development and that they have an increasing trend. In addition, the efficiency ratio is also positively related to economic development and is a better indicator of financial development than the others. We shall test the validity of these hypotheses in this section. The methodology employed will be presented first, followed by the empirical results.

Methodology

How can we measure a country's level of economic development? This is a question which is often discussed by development economists. By definition, economic development is a sustained increase in the standard of living. So a country's level of development can be measured by the standard of living enjoyed by its people. Real variables like output, number of refrigerators per family, consumption of newsprint, calorie in-take per capita, etc., can be used to reflect a country's standard of living. It is generally agreed that Gross National Product per capita is among the best indicators of economic development and this is what we shall be using in this study. However, we have to be careful of the theoretical and empirical drawbacks associated with this indicator. Basically, the assumption of the existence of a best indicator is itself questionable. "Best" is used here in an empirical sense. That is, unless another indicator can be found which, in practice, performs

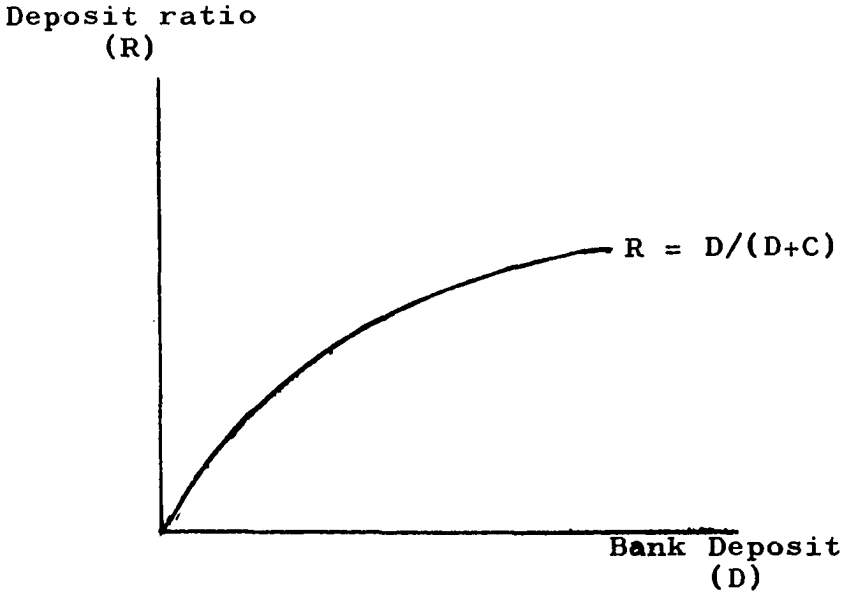
better in describing and estimating the overall characteristic of development, GNP per capita remains the variable that best points out the degree of economic development. Notice that we are not using GNP per capita as an operational definition of development in this case.[57]

The empirical drawbacks of using GNP per capita as an indicator of economic development are well-known and they will only be discussed briefly here. First, the self-sufficient nature of the small village farms leaves a lot of output unrecorded officially in national income statistics, since these goods are produced and consumed by the same unit without going through any market. Second, not unrelated to the above point, the existence of nonmonetized sectors in the economy does not allow output to be valued accordingly. Income earned from production is usually in kind, rather than in monetary terms. Third, population data in less developed countries are inaccurate due to various problems associated with census taking. Last, even if accurate GNP and population data are available, the use of an appropriate exchange rate in converting the local currency to a common currency (or numeraire) for intercountry comparisons is subject to varying degrees of accuracy. The frequent realignment in exchange rates, especially during the last few years--in developed and less developed countries alike--makes it very difficult to value goods and services of individual countries accurately for comparison purposes.

Despite all these questions as to its validity, GNP per capita is used in this study as an indicator of development, not because it is the perfect choice but because it may be regarded as the "second best." However, the shortcomings of using GNP per capita as an indicator of development should always be remembered.

The use of the financial ratios also has its drawbacks. First, these ratios do not measure exactly the degree to which the banking sector participates in economic development. Other relevant measures include the number of banking offices per capita and the multiplier of the banking industry, etc. Unfortunately none of this datum is readily available in the case of developing countries. Second, to the extent that the deposit ratio (total deposit to money supply) is of magnitude between zero and one, at successively higher stages of banking development, the ratio will increase but at a decreasing rate. This is so because the bank deposit is a component of the money supply. Graphically this can be illustrated as shown on the following page.

Assume that the currency component of the money supply is constant through time and that its value is C. If we increase the total deposit (D) continuously, a curve can be traced out as has been done below. Notice that at higher values of D, the curve flattens out. That is, the deposit ratio, R, increases at a decreasing rate.[58] Thus, if we correlate the deposit ratio with GNP per capita, at



successively higher levels of the latter--and, assuming that banking development is positively associated with economic development--the linear positive association between the two will not be as marked as at the lower levels. The zero to one limit of the deposit ratio simply constrains the relationship between banking and economic development.

Third, the growth of nonbank financial institutions may reduce the relative importance of the banking sector to some extent. The volume of commercial bank deposits may increase absolutely, but at a slower rate than when nonbank financial institutions come into existence. Nevertheless, the financial ratios remain good proxies of financial development and their theoretical validity as indicators of financial development may be challenged only at relatively high levels of development, which rarely apply to the less developed countries selected.

Having decided upon using GNP per capita as an indicator of economic development and having revealed the shortcomings of using it and the financial ratios, we will now select a method for validating the financial indicators. According to McGranahan, there are two ways of validation and selection of indicators; namely, the use of expert consensus and the use of correlation analysis or related multivariate techniques.[59] The first method is similar to those used by Adelman and Morris--that of collecting expert opinion on a particular area from which some kind of subjective judgmental index can be formulated. This method is not feasible in the present study as expert opinion is not readily available. The second method is the one we are using and it calls for some explanation. If we agree upon GNP per capita as one of the best and valid indicators of economic development, then any indicator which has a close association with it (no matter whether the association is positive or negative) is empirically valid as an indicator of development.[60] So, if our financial ratios bear close association with GNP per capita, it follows that they too must be empirically valid as indicators of economic development.

The selection of less developed countries to be included in our study is a problem. As is well-known among economists, the accuracy and reliability of economic data on many less developed countries are not too high. Every

effort is made in this study to be as accurate and consistent as possible in collecting the data. The communist countries are excluded from our sample because of the ambiguous role of their commercial banks. In fact, it is doubtful whether there exist any commercial banks that are free enterprises and which are not under direct state or government control in the communist bloc countries. As many noncommunist developing countries were included in our sample as possible, depending on the availability of data. A country is regarded as less developed if its per capita GNP in 1951 was less than $400 in U.S. currency. This is merely an arbitrary criterion or a point of reference for selecting our sample, and there may be some countries which are semi-developed today and yet were regarded as less developed in 1951. A total of sixty less developed countries were selected from statistics published by the International Monetary Fund. A list of these countries appears in Appendix I. The 1972 issue of the International Financial Statistics Supplement is used as the major data source for this study, instead of the regular monthly bulletin or other publications, because it is the most consistent and reliable source available. This International Monetary Fund publication gives yearly figures on GNP, population, price, bank deposits, currency conversion ratio, etc., from 1948 to 1971. If the monthly International Financial Statistics is used, adjustment has to be made to allow for revised data,

which is less accurate and more time consuming. The following annual series was collected for 1951-1971:

(1) Gross National Product

(2) Consumer Price Index

(3) Population

(4) Commercial Banks Demand Deposit

(5) Commercial Banks Savings and Time Deposit

(6) Commercial Banks Claims on Private Sector

(7) Money

(8) Quasi Money

(9) Currency Conversion Factor.

Some of these series need elaboration because of the ambiguity associated with them. According to the definition given in the International Financial Statistics,

> "Money" as used here comprises Currency and Deposit money held by the domestic non-government sector. "Currency" consists of notes and coins in current use. "Deposit Money" means deposits unrestrictedly exchangeable on demand into currency at par and without penalty; but this statement requires qualification (see Quasi Money). Deposit Money is mainly a liability of the Deposit Money Banks but in some countries the Central Bank also has small Deposit Money Liabilities to the Private Sector. . . .
>
> "Quasi-Money" comprises Time and Savings Deposits held by domestic Private Sector with those institutions whose accounts are consolidated in the Monetary Survey. Withdrawals of Time and Savings Deposits are usually subject to notice or, if on demand, involve loss of interest or restriction of amount. . . . Quasi Money also includes Foreign Currency Deposits of residents. For example, many banks in Latin America hold U.S. dollar deposits for customers. . . .
>
> Apart from deposits with institutions outside the Surveys other forms of Quasi-Money are excluded which are important in the financial systems of the more developed countries, e.g. the direct holding of

> Treasury bills or other short-term paper by non-financial institutions or financial institutions which do not form part of the Monetary Survey. These holdings are very often in direct competition with Time Deposits at the banks. . . .[61]

Though the International Financial Statistics does not give an explicit definition of claims on the private sector, it is intuitively clear from the content in the Country Tables that commercial banks' advances to business and individuals constitute the main element in this item. Any financial institution other than the money and banking system, for example, is part of the private sector.

The conversion factor presented in the Supplement of the International Financial Statistics is the most consistent and reliable source for currency conversion.

> It is used to convert statistics denominated in national currency into U.S. dollar equivalents and vice versa. . . . the annuals given . . . are simple averages of monthly factors. . . . These conversions are made in the monthly data in order to correctly represent the timing of changes in the factors and only the difference, if any, between the sum of months or quarters plus the annuals is converted at the annual average factor.[62]

This explanation, though expressed in an ambiguous and clumsy manner, at least suggests that the conversion factor is an appropriate series for converting different currencies into a common unit.

After the sample of countries was drawn, the various financial ratios, GNP per capita and growth rates were computed. It will be remembered that the deposit ratio for a given year is the share of the total deposits in commercial

banks to money supply. Notice that there are two versions of deposit ratio that can be derived from the raw data. If we use the narrow definition of money, then the deposit ratio is simply the ratio of demand deposit to total money supply, M_1, which is demand deposit plus currency. We shall call this ratio DDR. On the other hand, if we use the broad definition of money, the deposit ratio is the share of demand plus savings and time deposits to all of the above and to currency. We denote this ratio as DTR. It is an empirical matter as to whether DDR or DTR is more relevant to our study and so both ratios were tested. The claim ratio, CLR, for a given year is the share of total claims on the private sector to GNP. The efficiency ratio or the elasticity of intermediation is the ratio of percentage change in claims to the percentage change in total deposits. We label it as ER. In order to facilitate computation, which will be clear later on, the efficiency ratio was computed for three-year periods. That is, for example, the ER for 1951 to 1953 is the percentage change in claims on the private sector between 1951-53 to the percentage change in deposits for the same period. The year 1951 is used as the beginning year in this study because the quality and quantity of statistics on less developed countries seems to have improved since the 1950's. We used 1971 as the cut off year in order to maintain a consistent series. Many countries tend to revise their data one or two years after they

have first published the data. If the unrevised data are included with the revised ones, time series analysis may be distorted. Thus, though data as recent as 1973 are available, they have to be sacrificed for the sake of consistency.

To analyze the relationship between financial and economic development, a gross examination of the data was first performed. Two groups of countries--developed and less developed--were compared with respect to their deposit and claim ratios, as well as the efficiency ratio. Fourteen developed countries were selected and their DDR, DTR and CLR were computed for the years 1951, 1957, 1963 and 1971. The list of developed countries selected is given in Appendix II. The efficiency ratio was also computed for periods 1951-53, 1957-59, 1963-65 and 1969-71. An average of the fourteen countries' DDR, DTR and CLR was taken, respectively, in order to arrive at the respective overall ratio for the developed countries as a group. The same is done for the less developed countries. For example, the value 0.661 in Table 1 is the average of the fourteen developed countries' DTR in 1957 and it also represents the overall DTR for developed countries during 1957. If economic development is positively related to financial development, then we would expect the magnitude of these ratios to be higher in the case of developed countries as a group.

To examine the relationship between financial and economic development more rigorously, cross section analyses of the three-year averages of DDR, DTR and CLR were performed. Four three-year averages of the deposit and claim ratios, plus GNP per capita for 1951-53, 1957-59, 1963-65 and 1969-71 were taken. Each averaged ratio was used to correlate with the averaged GNP per capita. Take the 1963-65 period as an example. Statistics on 55 less developed countries are available for this particular period. The sample size is thus 55. The DDR, DTR, CLR and GNP per capita of each of these 55 countries is computed for every year. An average of the three years' DDR within each country is taken. The same is done for DTR and CLR. Three-year averages are taken in order to smooth out any irregularities which may have occurred in a particular year. It is hoped that any short-run distortions can be smoothed out within this period. Four successful periods with even lags in between were used in order to get some idea of how the ratios behave through time. That is, to see whether the association between each of the ratios and GNP per capita is stable or not and to see how the ratios move in the long run. If there is a positive association between financial and economic development, the simple correlation coefficients between GNP per capita and the three-year averaged DDR, DTR and CLR, respectively, will be positive. If the financial ratios have an

increasing trend, then these ratios will have successively higher magnitudes in the four periods under study.

To determine how each financial ratio behaves through time in a particular country, six countries having annual data for at least twenty years (i.e., twenty observations) were arbitrarily chosen. The DDR, DTR and CLR of these countries were used to correlate with time. A numerical value was assigned to each observation as the time variable. For example, the number 1 was assigned to the 1951 (first) observation, 2 to the 1952 (second) observation, and so on. If our hypothesis that the ratios have an increasing trend is valid, then there should be a significantly positive correlation between each of these ratios and the time variable.

To test the hypothesis that the efficiency ratio is positively related to the rate of economic development, as well as the level of development, two sets of correlation analyses were performed. First, the ER is used to correlate with the rate of change of real GNP per capita, and this is done for the periods 1951-53, 1957-59, 1963-65 and 1969-71, respectively. Second, the ER is used to correlate with the three-year averages of GNP per capita for the same periods. Again, positive association between the ER and the rate of change, or level of GNP per capita, is expected. If the ER is a better indicator statistically, then its

correlation coefficient (with GNP per capita) should be higher than that of the DDR, DTR and CLR.

Results of Testing

Let us examine the gross comparison between developed and less developed countries as two separate groups first. Table 1 below gives the financial ratios of the fourteen developed and sixty less developed countries. It is clear that developed countries do have higher financial ratios than less developed countries, consistently. For instance, the DDR in less developed countries is in the neighborhood of 0.4, while that for developed countries is around 0.5. The DTR and CLR for less developed countries are about 0.5 and 0.1, respectively, while the same for developed countries are 0.6 and 0.3. Each of the deposit or claim ratio for less developed countries is at least one point below that of the developed countries. The case of ER is even more marked, with the exception of the 1969-71 period. This relatively small differential in the ER between the two groups of countries in 1969-71 may indicate that the banking sector in less developed countries is catching up and is performing as efficiently as that in the developed countries. However, one must not take this interpretation without any qualification, for if we compare the ER between 1963-65 and 1969-71, for developed countries, we can see that the ratio dropped from 1.191 to 1.161 within those periods.

TABLE 1

FINANCIAL RATIOS OF DEVELOPED AND LESS DEVELOPED COUNTRIES IN SELECTED YEARS

	1951	1957	1963	1971
Developed Countries				
DDR	0.509	0.500	0.555	0.603
DTR	0.629	0.661	0.724	0.800
CLR	0.286	0.302	0.381	0.453
ER	1.469	0.920	1.191	1.161
Less Developed Countries				
DDR	0.461	0.471	0.452	0.526
DTR	0.521	0.551	0.561	0.690
CLR	0.092	0.099	0.131	0.211
ER	1.098	0.864	1.019	1.157

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

If we move one step further we can gain a rough idea of how the financial ratios behave over time. The deposit and claim ratios in both groups of countries do have a roughly increasing trend. For example, the DTR for developed countries increased monotonically from 0.629 in 1951 to 0.800 in 1971. The same is true for the less developed countries in which the DTR increased from 0.521 to 0.700 within the same time period. The ER, however, does not show a clear cut increasing trend for the developed countries. For the group of less developed countries, the ratio decreased at first and then rose afterwards. There will be additional discussion on the behavior of these ratios with respect to individual countries below. In sum, developed countries,

as a group, do have higher financial ratios than less developed countries--a rough indication that financial development is positively related to economic development.

Next, we shall consider the result of a more rigorous method for analyzing the relationship between banking and economic development. Table 2 shows the result of the simple correlation analysis between the three-year averaged financial ratios and GNP per capita for four different periods. All the correlation coefficients are positive, and, except for the 1969-71 CLR and the 1951-53 ER, all are significantly different from 0 at the 0.05 level.

TABLE 2

CORRELATION COEFFICIENT OF THREE-YEAR AVERAGED FINANCIAL RATIOS AND GNP PER CAPITA

	1951-53	1957-59	1963-65	1969-71
DDR	0.53831	0.59300	0.52400	0.53220
DTR	0.59646	0.51300	0.47400	0.42940
CLR	0.74936	0.49500	0.29800	0.18446
ER	0.53360	0.60290	0.53190	0.51690

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

The regression equations of each of the financial ratios, with respect to the level of economic development, is given in Appendix III. The results indicate that no matter which indicator--DDR, DTR, CLR or ER--is used as a measure

of financial development, it is positively correlated with the level of economic development. Furthermore, the degree and direction of this correlation has remained quite constant in the past two decades.

Let us test if there is any significant difference in the relationship between banking and economic development when different financial ratios are used as indicators of financial development. A visual examination of the correlation coefficient suggests that the association between financial and economic development is higher when the ER is used instead of the CLR as an indicator of financial development. This is because three out of the four coefficients between ER and GNP per capita are higher than those between CLR and GNP per capita. That is, from Table 2 we can see that the correlation coefficients between ER and GNP per capita for 1957-59, 1963-65 and 1969-71 (0.503, 0.532 and 0.517, respectively) are higher than those for CLR (0.495, 0.298 and 0.185, respectively). As with DDR and DTR, the deviation is not as obvious. Actual tests of the significance of differences between correlation coefficients reveal the following: While the correlation coefficient between ER and GNP per capita is higher than that between deposit and claim ratios, statistical tests of significance do not support the hypothesis that there is a significant difference in the correlation between banking and economic development when different financial ratios are used as indicators

of financial development. In other words, our tests of significance reveal that none of the correlation coefficients between ER and GNP per capita is statistically different from that of the others. The Fisher's Z transformation score for testing the difference between each pair of correlation coefficients is given in Appendix IV.

Additional tests to see if there is any significant difference in the relationship between banking and economic development when different financial ratios are used as indicators of financial development were attempted. They are presented in Appendix IX. The results of these tests confirm that the three financial ratios perform equally well in indicating a country's level of financial and economic development.

The results of the cross section and time series analyses of the trend of the financial ratios are shown in Tables 3 and 4, respectively. Table 3 gives the averages of all the less developed countries' DDR, DTR, CLR and ER. For example, 0.45251 is the average of the fifty-five countries' DDR in 1963 and 1.157 is the average of twenty-nine countries' ER for the period 1969-71. First, let us look at the DDR column. The ratio increases gradually from 0.46 in 1951 to 0.47 in 1959 and falls down to 0.45 between 1963-65, and then increases again in the period 1969-71. Thus, we can argue from this cross section analysis that DDR does follow a roughly increasing trend

TABLE 3

FINANCIAL RATIOS OF LESS DEVELOPED COUNTRIES

Three-Year Span	DDR	DTR	CLR	ER
1951	0.46159	0.52129	0.09220	
1952	0.46440	0.52302	0.08928	
1953	0.47368	0.53023	0.08872	
Average 1951-53	0.46656	0.52463	0.09197	1.098
1957	0.47130	0.55107	0.09341	
1958	0.47308	0.55608	0.10366	
1959	0.47531	0.56535	0.10602	
Average 1957-59	0.47323	0.55065	0.10303	0.86408
1963	0.45251	0.56085	0.13147	
1964	0.45040	0.56650	0.14008	
1965	0.45516	0.57362	0.13686	
Average 1963-65	0.45572	0.56699	0.13553	1.0197
1969	0.52095	0.67335	0.19191	
1970	0.52036	0.67851	0.20159	
1971	0.52585	0.69001	0.21087	
Average 1969-71	0.52238	0.68062	0.20145	1.1570

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

TABLE 4

CORRELATION ANALYSIS OF FINANCIAL RATIOS AND TIME --SELECTED COUNTRIES

(Correlation Coefficients)

Country	DDR	DTR	CLR
Ecuador	0.896	0.941	0.722
Panama	0.201	0.600	0.899
Venezuela	0.896	0.913	0.687
Israel	0.496	0.935	0.616
Taiwan	0.848	0.765	0.987
Philippines	0.892	0.481	9.961

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

in the past two decades. Column 2 in Table 3 shows very clearly that DTR has a strong positive relationship with time during the period under study. In fact, the ratio is monotonically increasing during the period of years 1951-71. With the exception of 1952 and 1965, the CLR also follows a successively upward trend, as was expected. Unfortunately the ER dropped from 1.098 in 1951-53 to 0.864 in 1957-59, otherwise we will have an unambiguous increasing trend for the efficiency ratio.

A glance at Table 4 reveals that all the correlation coefficients are positively correlated with time. They are also significantly different from zero and we can conclude that within individual countries, the deposit and claim ratios tend to increase over time.

We have seen that the ER is positively correlated with the level of economic development, indicated by per capita GNP. One of our hypotheses suggested that the ER is also positively related to the rate of economic development. Table 5 on page 82 shows that this hypothesis is statistically valid.

The correlation coefficient between ER and rate of growth of real GNP per capita is above 0.5 in all the periods. The t statistic shows that all the correlation coefficients are significantly different from zero with a 95 percent confidence limit.

TABLE 5

RELATIONSHIP BETWEEN EFFICIENCY RATIO AND GROWTH RATE

Three-Year Span	Correlation Coefficient	t
1951-53	0.52002	1.9253
1957-59	0.52874	2.6430
1963-65	0.50990	2.9637
1969-71	0.53140	3.2593

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

Let us now summarize the hypotheses and the findings of the tests on these hypotheses.

(1) Financial and economic development are positively related;

(2) the deposit and claim financial ratios are positively related to the level of development and have an increasing trend; and

(3) the efficiency ratio is positively related to the rate of economic development and it is a better indicator of financial development than the DDR, DTR and CLR.

The result of gross comparison between the developed and less developed countries, as two separate groups, indicates that the developed countries do have higher financial ratios (Table 1). This encouraged us to go on to a more

rigorous test for the relationship between financial and economic development.

Three-year averages of each of the financial ratios were used to correlate with GNP per capita (Table 2). Except in two instances, all the correlation coefficients were found to be significantly positive. The two exceptions, though positive, were statistically insignificant. Nevertheless, the positive correlation coefficients indicate that financial development is positively associated with economic development.

By examining the cross-section data of the financial ratios for the periods 1951-53, 1957-58, 1963-65 and 1969-71 (Table 3), we can see that the deposit and claim ratios do follow an upward trend. The case for ER is not as obvious, though it increases consecutively in three out of four periods. The increasing trend of DDR, DTR and CLR was further confirmed by a time series analysis (Table 4). Six countries having continuous data for at least twenty years were arbitrarily chosen. By correlating the deposit and claim ratios with a time variable, results show that the ratios in each of the six countries chosen do increase over time.

The hypothesis that the efficiency ratio is a better indicator of economic development than the deposit or claim ratios cannot be accepted. A glance at Table 2 shows us that the correlation coefficients between each of the

financial ratios and the level of economic development do not have any significant difference between each other statistically. However, it can be argued that the ER, though it cannot be accepted as performing better than the other ratios, is at least as good in terms of the association with economic development. As to the relationship between the ER and the rate of economic development, Table 5 reveals that a positive association exists.

Case Studies

The result of our statistical analysis does not allow us to conclude that the efficiency ratio is a better indicator of financial development than the deposit or claim ratios. However, it may be helpful if we examine the respective ratios of the individual countries. Appendices V to VIII show the financial ratios of selected countries for the periods 1951-53, 1957-59, 1963-65 and 1969-71 respectively. Note that the deposit and claim ratios are three-year averages for the given periods.

Let us review the countries which have deposit and claim ratios as high as or higher than that of the developed countries.[63] In a given period, the ER of some of these countries is lower than that of the developed countries and sometimes this is true even when compared with the average of the less developed countries. For example, in 1951-53, Argentina has a DDR of 0.486 which is as high as the average for the developed countries (0.509). But the

corresponding ER is only 0.825 which is lower than that of the less developed countries (1.098). Apparently this phenomenon is not due to chance because for most of the countries this happened in at least two out of the four periods considered. These countries include Argentina, Peru, Brazil, Colombia, Chile, Venezuela, Panama, Ceylon, Trinidad-Tobago and Cyprus. We shall look at some of these countries later in order to understand the economic implications behind this kind of observation.

If the deposit and claim ratios are good indicators of financial development, then those less developed countries having deposit and claim ratios as high as the developed countries should have a highly developed financial sector. The fact that those countries remain underdeveloped financially implies that there are certain circumstances under which these ratios do not represent the real situation. If so, the ER may be a better indicator than the deposit or claim ratio because under these particular circumstances the magnitude of the ER is within the domain in which a less developed country should be expected to lie. That is, the ER magnitude is quite consistent with the country's level of financial development.

We may recall that in the discussion on the economic interpretation of the ER, we suggested that the ER is superior to the other financial ratios in cases of chronic inflation or deflation. During an inflationary period, the

money stock and prices are rising. To carry out a given volume of transaction more money will be required than before because of higher prices. People have to put more money in their checking accounts in order to carry out their day to day transactions. As discussed before, because of convenience or pecuniary return, the rate of increase in demand deposit may be higher than that of cash and consequently the DDR may rise. The redistribution of income vis-a-vis inflation may also raise the DTR. Hence in a chronic inflation, the DDR and DTR tend to be high. Notice that we are only concerned with mild or intermediate inflation and the above may not be true with respect to a hyper-inflation.

At the beginning of an inflationary period when business activity starts to become more dynamic, business and industry will try to borrow more from the commercial banks. The claims on the private sector will therefore tend to increase at a faster pace than gross national product. Thus, the claim ratio will tend to rise. As government starts to put on the brakes, credit will become tighter and the rate of growth of claims will decrease. Hence, the claims on the private sector will tend to increase at a slower rate or even decrease absolutely. The CLR though starting out with a high level will either increase at a slower rate or may even decline.

If we look at the DDR or CLR of a given year when the country is experiencing inflation, the ratios will lead us to conclude that the country is developed financially. However, the high DDR and CLR is a consequence of inflation rather than, say, an improvement in banking services or a change in the people's habits toward using banks more frequently. If the inflation is short-lived, then we can resolve the problem of mis-indication by averaging the ratios over a period of time--i.e. by eliminating the cyclical effect.[64] Any extreme values can be smoothed out and the ratios will continue to be valid indicators of financial development. In the case of chronic inflation, however, even by averaging the ratios for a short period of time (or by eliminating the cyclical effect) will still leave the ratios as misleading indicators as they will continue to be influenced by the inflationary effects.

Let us now take up a few countries and see if the above argument is valid. Since most of the countries having "high" DDR and CLR but "low" ER are Latin American countries, we shall concentrate on five of them--namely Argentina, Brazil, Peru, Chile and Colombia.[65] Each country's economic and institutional background will be presented first followed by a discussion on the behavior of the financial ratios. The main source of information on the individual countries is from the Economic Reports of the U.S. Department of Commerce and the Economic Survey of Latin America published by the United Nations.

Argentina

Argentina has been a large-scale producer of surplus agricultural and livestock commodities. The economy is virtually self-sufficient in the production and processing of foodstuffs and has steadily become more diversified since the 1950's. There was a high degree of government intervention in the national economy during the early 1950's. Official action extends, to some degree, into almost all fields of business and industrial activity. The government owns the country's railway system, airlines, grain elevators and many other enterprises. However, the great majority of industry and domestic commerce is still in the hands of private entrepreneurs.

The banking system includes a central bank, banks owned by the Federal Government, banks owned completely or partially by Provincial or Municipal Government, private banks and non-bank financial institutions. In 1946, the banking system was nationalized. All deposits were transferred to and guaranteed by the Central Bank. The latter also determined the loan policies of the banks. Commercial banks, acting from then on were mere agents of the Central Bank. All banking expenses incurred in the handling of deposit accounts, including interest payments, were to be paid by the Central Bank. The nationalization of the banks and the government's guarantee of the deposits with the commercial banks might have given depositors some confidence

on the banking system. This together with the high rate of inflation in the early fifties may account for the "high" deposit ratio. Credit policy, though mainly determined by the Central Bank, remained liberal before inflation was out of control in 1952. New loans granted by the banking system to the private sector was at a peak of 6,906 million pesos in 1951 as can be seen from the table on the next page. Even just before the introduction of the austerity program in late 1952, the amount of new loans granted continued to be large. This kind of liberal policy may be one of the reasons for the "high" CLR during the period 1951-53. Inflation was at a rate of 39 percent per annum in 1952.[66] A heavy external deficit due to excess of imports caused by the expectation of future shortages resulted in a severe drain on Argentina's international reserves. Consequently, an austerity program was launched to curb the high rate of price increase. Many different methods of credit restriction were introduced.[67] For example, private concerns requesting loans had to supply special property statements to justify the loan. Documentation for refusing credit, which had to be presented to the Central Bank in the past, was no longer required from the commercial banks. The effect of this severe credit restriction can clearly be seen in Table 6. New loans granted to the private sector in 1953 decreased significantly. In fact, some loans were recalled in the first quarter of the year. This rapid

TABLE 6

VARIATIONS IN LOANS GRANTED TO THE PRIVATE SECTOR BY THE BANKING SYSTEM OF ARGENTINA

Year	Change in Loans (Million of Pesos)
1948	3,405
1949	2,730
1950	4,615
1951	6,909
1952	(6,820)
I	1,047
II	1,841
III	1,318
IV	2,614
1953	(2,821)
I	-151
II	860
III	1,578
IV	534

Source: Computed from United Nations, Economic Survey of Latin America, 1953, p. 74.

contraction evidently lowered the dCL/dDD component of the ER. The "low" ER was mainly a result of the tight monetary policy. Commercial banks, under the direct control of the central bank, curtailed their loans to the private sector

after 1952. While deposits, especially demand deposits were at a high level, because people tend to keep adequate liquid assets so that they can transfer them to commodities should the value of money decline precipitously, the increase in loans to the private sector per unit of deposit dropped substantially, leaving the ER at a "low" level.

The austerity program introduced in 1952 was successful. The rate of inflation dropped from 39 percent in 1952 to only 4 percent in 1954. The improvement in the balance of payments, the stabilization of the cost-of-living index and the need to provide a fresh impulse to the country's economy induced authorities to relax credit restraints and adopt a more liberal policy once again. During 1957, according to Raul Prebish's Economic Recovery Plan, commercial banks were "liberated."[68] Deposits were returned to the private sector in that year, but they continued to be guaranteed, in the sense that the Central bank was ready to advance the required funds to pay for all deposits in the case of a bank failure. Laws were established to provide for minimum gold and foreign exchange reserve requirements for the Central Bank and the convertibility of the Bank's own currency. However, these provisions have never been enforced. Credit to the public sector remained high as a result of the loose control. Starting from 1955 the rate of inflation began to creep up again. It was announced in late 1958, that in order to check the incidence of credit

expansion, the minimum cash holdings of commercial banks had to be raised from 25 to 60 percent of their deposits and sight obligations.[69] Consequently, many banks temporarily suspended the granting of new loans for construction which was a blow to the real estate industry. The high reserve ratio of 60 percent may be a major reason for the "low" ER. A large proportion of the increase in bank deposits had to be kept in the banks' vault or with the Central Bank in order to meet the reserve requirement thereby lowering the dCL/dDD factor of the ER. It was not until 1963 when the country was in the hands of a different political party and through persistent pressures from both the official and private sectors that the Central Bank eased the tight monetary control to some extent.

The table below shows the different financial ratios of Argentina. The country has been experiencing a chronic intermediate inflation in the last two decades. Its "high" DDR and CLR plus the "low" ER clearly fits into our theoretical argument that the ER is a better indicator of financial development. In fact, intermediation inefficiency due to tight monetary control has induced the "high" CLR to decline through time.

Brazil

Brazil has had a long-term history of inflation. In moving within a relatively short period of time from a

TABLE 7

FINANCIAL RATIOS OF ARGENTINA (1951-1965)

Period	DDR	DTR	CLR	ER
1951-53	0.486	0.615	0.218	0.825
1957-59	0.498	0.616	0.173	0.835
1963-65	0.493	0.592	0.129	0.879

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

predominantly export-import economy to a producer of most of its consumer goods (and more and more of its capital goods), the country has been faced with problems of internal and external instability. Especially in the fifties and the early sixties, the rate of inflation has increased owing largely to the financing of sizable Government deficits. Chronic deficits on the current account in the balance of payments have occurred due to the excess of imports (to develop the infra-structure of the economy and to promote industrialization) over exports. Nevertheless, the rate of inflation in Brazil was not as high as that of Argentina.

The special nature of the financial and banking structure of the country should not be neglected in considering inflation in Brazil. Up to 1965 there was no central bank in Brazil. However, many of the functions of a central banking institution were performed by the Bank of Brazil which was also the country's largest commercial

bank. The banking system which existed in the 1950's was itself expansionary. "The Treasury could have recourse to the direct paper issues or loans of the "central bank," cancelling the latter by the former, which in turn allowed the bank to liquidate its debts with the Rediscount Department."[70]

It follows that any deflationary measure, which resulted in a rise in the cash assets of the "central bank" or the Bank of Brazil would enable the Bank to expand credit. This was rational when we consider that the "central bank" was also a commercial bank. Under these situations, there is little room for the use of traditional monetary policy. The use of the discount or interest rate as a tool of monetary control was very limited as the smaller commercial banks took permanent recourse to rediscount while the large banks did so merely in case of emergencies. Thus, monetary authorities were obliged to provide funds to the banks whenever they were in trouble. The use of minimum cash requirements was nonoperational as the high interest rate on deposits kept the banks from holding excess cash balances. Hence, in the early 1950's monetary authority was largely helpless to deal with the excessive monetary expansion.

A decisive step was taken by the Superintendent of Money and Credit in 1953 to restructure the banking system. The rediscount rate was increased and interest on time deposits was restricted to a 5 percent maximum. Credit to

the public sector continued to be high despite the restrictive policy.

1957 was a good year for coffee with increased foreign exchange earnings and savings. Aggregate private investment did not increase much, however, as the extra earnings from coffee went mainly to the hands of the coffee brokers or middlemen. Savings were thus accumulated in bank deposits with only a slight rise in advances to the public. The main change in the balance sheet of the commercial banks was a large increase in deposits with the Bank of Brazil and bank reserve ratios rose steeply by the end of 1957 which continued through 1959. The lack of marketing ability (or lack of market) for loans on the part of the commercial banks resulted in having a large proportion of deposits as excess reserves. This evidently has had a negative effect on dCL/dDD resulting in a "low" ER.

A central bank was officially established in 1964 to assume the functions previously carried out by the Bank of Brazil. Strengthening of the banking system was called for. The number of banks was reduced through mergers and many small banks were either merged or closed down. During 1964 the rate of inflation was the highest in the last twenty year period, as can be seen from Table 8 below.

Unfortunately, lack of information on the type of monetary policy pursued in this period does not allow us to comment on the financial ratios. In sum, like the case of Argentina, Brazil's chronic inflation rendered the DDR and

TABLE 8

BRAZIL--RATE OF INFLATION (1951-1970)

(Annual percentage increases in the cost of living between yearly averages)

Year	Percentage Increase
1951	12
1952	17
1953	14
1954	22
1955	23
1956	21
1957	16
1958	15
1959	39
1960	29
1961	33
1962	52
1963	70
1964	92
1965	66
1966	41
1967	31
1968	22
1969	22
1970	23

Source: Felipe Pazos, Chronic Inflation in Latin America (New York: Praeger Publishers, 1972), p. 14.

CLR to have high values while the ER continues to indicate the real level of the country's financial development. The following table shows the financial ratios of Brazil:

TABLE 9

FINANCIAL RATIOS OF BRAZIL (1951-71)

Period	DDR	DTR	CLR	ER
1951-53	0.566	0.599	0.179	1.019
1957-59	0.619	0.633	0.135	0.850
1963-65	0.616	0.620	0.105	0.946
1969-71	0.625	0.653	0.147	1.071

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

Colombia

Since the end of the Second World War, the rate of economic growth of Colombia has been rather high. Agriculture has not only been the main source of Colombia's national income, but it also has supplied most of the country's food requirements and has accounted for over 80 percent of the country's foreign exchange earnings. Beginning in 1945, the pace of inflation began to creep up due to heavy public expenditures. By 1950 the rate of inflation seemed to be slowing down. At the end of that year, by agreement with all components of the banking system, it was decided to maintain loans at figures not exceeding

credit at the end of September. This restriction remained in force until the end of 1951. Between 1951 and 1953 though monetary policy was mainly restrictive, the central bank was careful in not distorting the pace of financial development. Changes in cash reserve minimum requirements were made often enough to meet loans demand from the private sector. Thus, the 1951-53 period did have a close to "average" ER though the deposit ratio was as high as that of the developed countries. Prices began to shoot up again between 1955 and 1958 due to expansion in the finance of coffee stocks. Loans to the private sector were among the most rapidly increasing item between 1954 and 1957. In March 1958, the compulsory cash reserve was raised from 19 to 20 percent and from 9 to 11 percent for sight and time deposits respectively. The reserve requirement for demand deposit was increased to 23 percent. The maintenance of a reserve amounting to nearly 100 percent of the increase in sight and time deposits in relation to cash balances held at the beginning of 1958 was imposed at the end of that year. Thus, despite the increment of increase registered in demand deposits during the 1957-59 period, loans to the private sector increased by barely 3 percent.[71] This explains why the ER in this period suddenly dropped to 0.3. Again, what was true with respect to the other two countries studied above seems to be also true for Colombia.

TABLE 10

FINANCIAL RATIOS OF COLOMBIA (1951-65)

Period	DDR	DTR	CLR	ER
1951-53	0.527	0.571	0.092	1.023
1957-59	0.566	0.591	0.114	0.373
1963-65	0.600	0.690	0.121	1.017

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

Peru

Peru has attracted some attention after the Second World War through its successful policy in developing the economy. Basically an agricultural country, Peru was able to have a more diversified combination of exports than many other Latin American countries.

The banking system of Peru is made up of the Central Reserve Bank, which is the Central Bank, thirteen commercial banks and three development banks. General prices increased quite rapidly in the late forties, mainly as a result of upward fluctuations in prices of imports. Policies were introduced in the early fifties to correct the disequilibrium in the trade balance and to maintain monetary stability. Unfortunately, these policies were not very successful though the trade imbalance and inflation would probably have been worse if the government did not step in on time.

During March 1951, the commercial banks were required to deposit additional cash reserves in the Central Bank. This did not have too much effect on the commercial banks as many banks as a matter of practice, did not observe the reserve requirement. Despite the introduction of the tight monetary policy, the cost of living index rose by 9.1 percent between 1952 and 1953. The credit situation was eased somewhat due to an improvement in the balance of payments during the last half of 1953. Thus, we have in the 1951-53 period, a rather high ER.

Beginning in 1955, deficit financing was used continuously by the government. Commercial banks' short term advances to the Treasury rose steadily. A new method of computing the reserve requirement of the commercial banks was introduced in 1957. Many banks which did not observe the reserve requirement previously were forced to keep their additional deposits as reserves due to the more stringent requirements imposed by the Central Bank. This may explain the sudden drop in the ER during the 1957-59 period as the commercial banks had to replenish their required reserves from in-coming deposits, thereby lowering the dCL/dDD component of the ER.

The rate of inflation rose again in 1962 due to heavy government expenditure--the latter was mainly spent on improving the country's infrastructure. Government expenditure increased by 15 percent in 1963. Though credit

to the private sector was restricted, the heavy government deficits continued to keep the deposit ratio at a "high" level while maintaining a "low" ER.

Chile

Despite a low rate of growth in the fifties, many basic changes have occurred in the structure of the Chilean economy.[72] Agriculture is still the principal activity of the Chilean people but it is no longer the principal source of income. Mining has declined in importance in the late fifties though it is still the principal source of government income and accounts for over half of the value of exports. Chile has a large public sector and the role of the government is becoming increasingly more important.

The Chilean banking system consists of the Central Bank, two development banks, about thirty commercial banks, the State Bank of Chile, and two mortgage credit institutions. The Central Bank also engages in general commercial banking activities. A large part of the Bank's portfolio consists of loans to the Government. As in the case of Brazil, the banking system followed an expansionary policy in the fifties. Severe inflation in the fifties resulted in sharp increases in the price index, and a steady depreciation of the Chilean peso.[73] In order to prevent inflation from becoming a hyper-inflation, an economic stabilization program was undertaken by the government.[74] One of

the major items of the program was a strict system of credit controls which created a tight condition in the money market. Quotas were imposed on commercial banks to limit their amount of monthly credit expansion. In addition, a strict rediscount policy was followed by the Central Bank. For example, the rediscount rate rose sharply for loans of commercial banks exceeding half of a bank's capital and reserves. These measures, together with high reserve requirements were the principal credit controls till the early sixties. The effect of the stabilization program can be seen through the "low" ER as tight monetary control lowered the dCL/dDD in the ER.

Although the stabilization program did have some effect in restricting credit to the private sector, public expenditure and especially credit to the public sector remained very high. This is so because special legislation periodically authorized and even expanded the Treasury's capacity to borrow from the banking system. For instance,

> Towards the end of 1958 a new device was added to those at the government's disposal. It was empowered to make temporary use of the frozen funds represented by prior deposits on imports, and cover them with Treasury notes in dollars.[75]

As a result of the high government expenditure, the commercial banks' deposits greatly exceeded that of credit to the private sector. Hence, we can see that the deposit ratio in the periods 1957-59 and 1963-65 were "high" while the ER remained "low." Furthermore, high interest rates

were paid on time deposits as the monetary authority wished to attract long-term deposits. This resulted in a substantial increase in the contribution of quasi-money to the total means of payment as is revealed by the high DTR in the sixties.

A new banking and credit policy was announced by the President of Chile at the end of 1970. All private banks were "nationalized." Privately owned commercial bank shares, which were voluntarily sold by the owners were purchased by the Government. One of the objectives of the new policy was "to increase the number of people that use banking and financial facilities."[76] Credit control was eased to some extent. The ER, though increased to 0.884 in the 1969-71 period continued to be "low" while the deposit ratio remained "high." Notice that the CLR has a decreasing trend as the dCL/dDD factor in the ER was continuously kept at a "low" level. Table 11 shows the financial ratios in Chile from 1957 to 1971.

TABLE 11

FINANCIAL RATIOS OF CHILE (1957-71)

Period	DDR	DTR	CLR	ER
1957-59	0.574	0.432	0.183	0.855
1963-65	0.592	0.649	0.110	0.800
1969-71	0.598	0.609	0.089	0.884

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

In conclusion, we can see that a general pattern exists in the five countries we have just examined. Though information is mainly limited to the 1950's and early 1960's, enough can be found to draw some conclusions on the relative merits of the ER. The long period of inflation in these countries has kept their DDR and CLR "high." As monetary policy was active in combating the expansionary forces, the dCL/dDD component in the ER was kept down throughout the period under study, thereby eliminating the mis-indication problem that prevails in the DDR and CLR. Consequently, during periods of chronic inflation as experienced by the five countries briefly examined above the ER offers some advantages in measuring financial development.

CHAPTER V

SUMMARY AND CONCLUSIONS

Economic development is a long run process that is multidimensional and involves changes in structure, capacity and output. The subject is commonly discussed in terms of output, income and wealth. The emphasis on this "real aspect" of development in the literature often ignores the "financial aspect" of economic development.

Besides the central bank, the commercial bank is the main financial institution in the financial sector of many less developed countries. A major role of the commercial banking system in the development process is financial intermediation--mobilizing savings and allocating them among competing sectors in the growing economy. The more efficient this intermediation process is, the less wasted financial resources are, and, hence, the more rapid the economic development may be. The purpose of this study is to formulate an indicator of financial development and to investigate the association between financial and economic development. One of the major questions this study attempts to answer is whether financial and economic development are positively associated or not. If the answer is affirmative,

then government authorities may want to include the development of the financial sector as one of their objectives for achieving economic development. Parallel to this, a country's degree of development in the financial sector can also be used as an indicator of its level of economic development.

Empirical research on the topic of finance and economic development is not abundant. Among the few economists who have written in this area are Goldsmith, Adelman, Morris, U Tun Wai and McKinnon. McKinnon's view on money and capital in economic development is especially thought-provoking. A review of common characteristics of financial markets in the less developed countries suggests that organized and unorganized money markets co-exist in less developed countries. In the organized money market the commercial bank is the leading private institution. Many commercial banking systems in less developed countries are dominated by foreign banks whose interest quite often conflicts with that of the less developed countries. The local banks, which are usually conservative and risk averting, have to operate on whatever business is left over from the foreign banks. Imperfection is the key feature in unorganized money markets. Participants in this market include people from all walks of life. The prevailing interest rates are usually very high. Neoclassical economists, neglecting the imperfections in the unorganized financial markets, treat money and physical

capital as substitutes in the asset holders' portfolios. This renders inappropriate their prescription for increasing less developed countries' capital accumulation. McKinnon, on the other hand, argues that capital and cash balances are compliments in the asset holders' portfolio when the imperfection of financial markets are taken into consideration. Thus, according to McKinnon, in order to escape from financial repression, less developed countries should increase the real rates of interest so as to induce a higher rate of capital accumulation.

To investigate the relationship between financial and economic development, three indicators on banking development were presented. They were the deposit ratio, the claim ratio, CLR; and, the efficiency ratio, ER. With the exception of the ER, which is formulated by the present writer, all the other ratios have been used in the literature before.

Basing on the narrow or broad definition of money the deposit ratio can have two versions. First, the demand deposit ratio, DDR, which is the ratio of the commercial bank's demand deposit to money supply M_1. Second, the demand, time and savings deposit ratio, the DTR, which is the ratio of demand, time and savings deposits to money supply M_2. CLR is the proportion of commercial banks' claim on the private sector in GNP. The ER is defined as the percentage change in claim to the percentage change in total deposits

of commercial banks. Each of these financial ratios reflects an aspect of financial development. The deposit ratio looks at the banking sector from the liability side, while the claim ratio approaches it from the asset side of the balance sheet. The ER reveals how efficient the commercial banking system is in performing its intermediation function.

It was hypothesized that each of these financial ratios, being an indicator of financial development, is positively associated with economic development, which is measured by per capita GNP. In addition, it was hypothesized that each ratio has an increasing trend and that the ER has a higher degree of association with the level of economic development than the deposit and claim ratios.

Statistics on sixty less developed and fourteen developed countries from 1951 to 1971 were collected from International Monetary Fund Publications. A gross comparison of the less developed countries and developed countries, as two distinct groups, was first performed. Each country's financial ratios were calculated for the years 1951, 1957, 1963 and 1971. The efficiency ratio was computed for three-year periods--1951-53, 1957-59, 1963-65 and 1969-71. For a particular ratio in a given year, averages of developed and less developed countries, as two distinct groups, were taken. For instance, with respect to the DDR in 1963 (14 developed and 55 less developed countries were included), an average

of the fourteen DDR's of developed countries was obtained. This average constituted the DDR of the developed countries as a group in 1963. Similarly, an average of the fifty-five DDR's of the less developed countries was computed and it formed the DDR of these countries. The same procedure was carried out for other financial ratios and for other years. The results were presented in Table 1. We can see from this table that no matter which the period is, less developed countries, as a group, have lower financial ratios than the developed countries.

Next, correlation analysis was performed to test the relationship between financial and economic development more rigorously. Three-year averages of the less developed countries' financial ratios and GNP per capita were taken for the same periods of years mentioned above. Correlation analysis between the three-year averaged financial ratios and GNP per capita revealed that each ratio is positively associated with the level of economic development. That is, countries with a low GNP per capita also have low financial ratios. A look at the average of the three-year averaged ratios led us to conclude that, in general, each ratio tends to increase over time. Six countries were selected to perform time series analysis on their financial ratios. For a particular country, its annual DDR, DTR and CLR from 1951 to 1971 were used to correlate with time, respectively. This time series analysis confirms the

hypothesis that the financial ratios have an increasing trend.

Though the result of the statistical analysis does not allow us to conclude that the ER is clearly a better indicator of financial development, we were able to demonstrate that under certain circumstances the deposit and claim ratios are misleading while the ER remains a more valid indicator of financial development. Studies on five Latin American countries substantiated this point.

FOOTNOTES

[1]Benjamin Higgins, Economic Development: Problems, Principles, and Policies (New York: W. W. Norton and Company, Inc., 1968), p. 5.

[2]Arnold C. Harberger, "Investment in Men versus Investment in Machines," Chicago Essays in Economic Development, edited by David Wall (Chicago: University of Chicago Press, 1972), p. 201, reprinted from Education and Development, edited by C. A. Anderson and M. J. Bowman (Chicago: Aldine Publishing Co., 1965), pp. 11-50.

[3]A break-through from this traditional theory was attempted by Leif Johansen in "The Role of the Banking System in a Macro-economic Model," in International Economic Papers, No. 8, 1958, pp. 91-110. Unfortunately his model is highly restrictive.

[4]A. G. Chandavarkar, "Money and Economic Growth," Economia Internazionale, XVIII (February, 1965), p. 87.

[5]Hugh T. Patrick, "Financial Development and Economic Growth in Underdeveloped Countries," Economic Development and Cultural Change, XIV, No. 2 (1966), pp. 174-189.

[6]Rondo Cameron, et al., Banking in the Early Stages of Industrialization (London: Oxford University Press, 1967); and Banking and Economic Development (London: Oxford University Press, 1972).

[7]Anand G. Chandavarkar, "How Relevant Is Finance for Development?" Finance and Development (September 3, 1973), pp. 14-16.

[8]U Tun Wai, "Interest Rates Outside the Organized Money Markets of Underdeveloped Countries," International Monetary Fund Staff Papers, VI, No. 1 (1957), p. 80.

[9]Charles R. Whittlesey, "Relation of Money to Economic Growth," American Economic Review, XLVI, supplement (May, 1956), pp. 188-201.

[10]Ibid.

[11]Shaw and Ellis, for example, criticized Whittlesey on this point. See, Edward S. Shaw and Howard S. Ellis, "Discussion," American Economic Review, XLVI (May, 1956), pp. 202-210.

[12]Hugh T. Patrick, "Financial Development and Economic Growth in Underdeveloped Countries," Economic Development and Cultural Change, XIV, No. 2 (1966), pp. 174-189.

[13]Ibid., pp. 174-175.

[14]Rondo Cameron, "The Banker as Entrepreneur," Explorations in Entrepreneurial History, 2nd Ser., I, No. 1 (1963), p. 54.

[15]Rondo Cameron, et al., Banking in the Early Stages of Industrialization (London: Oxford University Press, 1967); and Banking and Economic Development (London: Oxford University Press, 1972).

[16]Cameron, Banking and Economic Development, p. 25.

[17]Ibid.

[18]Anand G. Chandavarkar, "How Relevant Is Finance for Development?" Finance and Development (September 3, 1973), pp. 14-16,

[19]Ibid., p. 16.

[20]U Tun Wai, "Interest Rates in the Organized Money Markets of Underdeveloped Countries," IMF Staff Papers, V, No. 2 (1965), p. 249; "Interest Rates Outside the Organized Money Markets of Underdeveloped Countries," IMF Staff Papers, VI, No. 1 (1957), p. 80; "Role of the Money Market in Supplementing Monetary Policy," Proceedings of the Third Rehovoth Conference, 1965.

[21]U Tun Wai, "Interest Rates in Organized Markets," p. 250.

[22]Hideo Kurosaki, "Characteristics of Finance in Underdeveloped Countries," Developing Economies, I, No. 2 (1963), p. 35.

[23]Irman Adelman and Cynthis Taft Morris, "An Econometric Model of Socio-economic and Political Change in Underdeveloped Countries," American Economic Review, LVIII (December, 1968), pp. 1184-1218; "Performance Criteria for Evaluating Economic Development Potential: An Operational Approach," Quarterly Journal of Economics, LXXXII (May,

1968), pp. 260-280; "The Measurement of Institutional Characteristics of a Nation," Journal of Development Studies, VIII, No. 3 (1972), pp. 11-36; and Society, Politics and Economic Development: A Quantitative Approach (Baltimore: John Hopkins Press, 1967).

[24]Adelman and Morris, "An Econometric Model," p. 1190.

[25]Adelman and Morris, Society, Politics and Economic Development.

[26]Henry C. Wallich, "Money and Growth, A Cross-Section Analysis," Journal of Money, Credit and Banking, I (May, 1969), pp. 281-302.

[27]Raymond W. Goldsmith, Financial Structure and Development (New Haven: Yale University Press, 1968).

[28]Ibid., p. 45.

[29]Ibid., p. 373.

[30]Ibid., p. 278.

[31]Ibid., p. 400.

[32]John G. Gurley, "Financial Structures in Developing Countries," in Fiscal and Monetary Problems in Developing States, Proceedings of the Third Rehovoth Conference, edited by David Krivine (New York: Frederick A. Praeger Publishers, 1967).

[33]Ibid., p. 115.

[34]John M. Keynes, The General Theory of Employment, Interest and Money (London: 1936).

[35]In the words of Benjamin Higgins: ". . . underdeveloped countries are labeled 'underdeveloped' because they are poor in a way that other countries are not. Let us say that any country should be considered underdeveloped if more than half of its population lives in poverty. Poverty itself is an ambiguous term, and the concept of poverty changes with the times. . . ." Source: Higgins, Economic Development, pp. 16-17.

[36]Under the more modern liquidity preference theory, the asset demand for money may be higher in this case because savings would not flow into stocks and bonds.

[37]Jerome L. Stein, "Monetary Growth Theory in Perspective," American Economic Review, LX (March, 1970), p. 87.

[38]James Tobin, "A Dynamic Aggregative Model," Journal of Political Economy, LXIII (April, 1955).

[39]James Tobin, "Money and Economic Growth," Econometrica, XXXIII (October, 1965).

[40]Henry Y. Wan, Jr., Economic Growth (New York: Harcourt Brace Jovanovich, Inc., 1971), p. 244.

[41]David Levhari and Don Patinkin, "The Role of Money in a Simple Growth Model," American Economic Review, LVIII (1968), pp. 713-53; reprinted in Don Patinkin, Studies in Monetary Economics (New York: Harper and Row, Publishers, 1972), p. 209.

[42]See Jerome L. Stein, "Neoclassical and 'Keynes-Wicksell' Monetary Growth Models," Journal of Money, Credit, and Banking, I (May, 1969). "Monetary Growth Theory in Perspective," American Economic Review, LX (March, 1970).

[43]Ronald Britto, "Some Recent Developments in the Theory of Economic Growth: An Interpretation," Journal of Economic Literature, XI, No. 4, 1973, p. 1351.

[44]This section is drawn from McKinnon, Money and Capital, Chapter 6.

[45]Edward S. Shaw, Financial Deepening in Economic Development (London: Oxford University Press, 1973) and Ronald I. McKinnon, Money and Capital in Economic Development (Washington, D.C.: Brookings Institution, 1973).

[46]Shaw, Financial Deepening, p. 115.

[47]McKinnon, Money and Capital, p. 57.

[48]R. S. Sayers, "Central Banking in Underdeveloped Countries," lectures given in April 1956 to the National Bank of Egypt; reprinted in Central Banking After Bagehot (London: Oxford University Press, 1967), pp. 112-113.

[49]W. F. Crick, Commonwealth Banking Systems (London: Oxford University Press, 1965), p. 147.

[50]Edward Nevin, Capital Funds in Underdeveloped Countries: The Role of Financial Institutions (London: MacMillan and Co. Ltd., 1963), pp. 49-50.

[51]There have been some disagreements among economists as to whether banks are entrepreneurs. See, for example, Rondo Cameron, "The Banker as Entrepreneur;" Norman W. Taylor and Walter M. Stern, "The Banker as Entrepreneur--

Some Observations," Explorations in Entrepreneurial History, 2nd Ser., I, No. 1 (1963), pp. 279-281.

[52]McKinnon, Money and Capital, p. 71.

[53]Haggott Beckhart, "Criteria of a Well-functioning Financial System," Proceedings of the Fifth Annual Conference on Savings and Residential Financing, 1962, pp. 61-85; reprinted in Readings in Financial Institutions, edited by Marshall D. Ketchem and Leon T. Kendall (Boston: Houghton Mifflin Co., 1965), pp. 79-103.

[54]Stuart I. Greenbaum, "Competition and Efficiency in the Banking System," Journal of Political Economy, LXXV (August, 1967), pp. 561-579. Also see, Larry R. Mote, "A Conceptual Optional Bankers Structure for the United States," reprinted in Banking Markets and Financial Institutions, edited by Thomas Gies and V. Apilado (Homewood, Ill.: Richard D. Irwin, Inc., 1971).

[55]The characteristics are (1) productive efficiency, (2) allocative neutrality, (3) absence of exploitation of consumers or suppliers of inputs, and (4) responsibility to changes in technology and in the demand for banking services.

[56]Lyle E. Gramley, A Study of Scale Economies in Banking, Federal Reserve Bank of Kansas City, 1969, p. 3.

[57]If GNP per capita is used as an operational definition of economic development, development is then simply and solely what is measured by per capita GNP. See Donald McGranaham, "Development Indicators and Development Models," Journal of Developing Economies, VIII, No. 3 (1972), p. 91.

[58]The first derivative of $R = D/(D + C)$ with respect to D, is $C/(D + C)^3$ and the second derivative is $-2/(D + C)^3$.

[59]McGranaham, "Development Indicators," p. 93.

[60]According to the Webster and Oxford dictionaries, an indicator is something which points out something else.

[61]International Monetary Fund, International Financial Statistics, January, 1961.

[62]International Monetary Fund, International Financial Statistics, Supplement, 1971, p. iii.

[63]That is, countries which have deposit and claim ratios higher than the average of the developed countries as a group during the same period. From now on when we say

the ratio of the developed countries, we are referring to the average ratio of the developed countries as a group. The same is also true for less developed countries.

[64]This is what I have done in the statistical analysis--by taking three-year averages.

[65]A "high" ratio means the ratio is as high as or higher than that of the average of the developed countries as a group. A "low" ratio means that the ratio is lower than the average of the less developed countries.

[66]Felipe Pazos, Chronic Inflation in Latin America (New York: Praeger Publishers, 1972), p. 14.

[67]Unfortunately no exact detail of the austerity program with respect to the commercial banks was available. Otherwise a more solid conclusion can be drawn.

[68]Adolfo Cesar Diz, "Money and Prices in Argentina," in Varieties of Monetary Experience, edited by David Meiselman (Chicago), 1970, p. 73.

[69]"Business Conditions in Argentina," Quarterly Report, No. 301 (Buenos Aires: Ernesto Tornauist & Co., 1959).

[70]United Nations, Economic Survey of Latin America, 1953 (New York), 1954, p. 81.

[71]United Nations, Economic Survey of Latin America, 1958, p. 119.

[72]The rate of growth in Chilean national output averaged only 2.4 percent a year in the fifties.

[73]In 1956 the cost of living index rose by 86 percent. [See U.S. Department of Commerce, Economic Reports (Washington, D.C.: Government Printing Office, 1959), p. 3.]

[74]For a discussion of inflation and the stabilization programs, see Tom E. Davis, "Inflation and Stabilization Programs: The Chilean Experience," in Werner Baer and Isaac Kerstenetzky, Inflation and Growth in Latin America (Homewood, Ill.: Richard D. Irwin Inc., 1964), pp. 360-364.

[75]United Nations, Economic Survey of Latin America, (New York, 1958), p. 130.

[76]U.S. Department of Commerce, Economic Reports (Washington, D.C.: Government Printing Office, 1971), p. 22.

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APPENDIX I

LIST OF LESS DEVELOPED COUNTRIES STUDIED

(60)

Argentina
Bolivia
Brazil
Burma
Cameroon
Ceylon
Chile
Colombia
Costa Rica
Cyprus
Dahomey
Dominican Republic
Ecuador
Egypt
El Salvador
Ethiopia
Gambia
Ghana
Guatemala
Guyana
Honduras
India
Indonesia
Iran
Iraq
Israel
Ivory Coast
Jamaica
Jordan
Kenya
korea
Libya
Malawi
Malaysia
Mauritius
Mexico
Morocco
Nicaragua
Nigeria
Pakistan
Panama
Paraguay
Peru
Philippines
Saudi Arabia
Senegal
Sierra Leone
Singapore
South Africa
Sudan
Syria
Taiwan
Tanzania
Thailand
Togo
Trinidad and Tobago
Tunisia
Uruguay
Venezuela
Vietnam

APPENDIX II

LIST OF DEVELOPED COUNTRIES STUDIED

Australia

Austria

Belgium

Canada

Denmark

France

Germany

Italy

Japan

Netherlands

Norway

Sweden

Switzerland

United States

APPENDIX III

REGRESSION EQUATIONS OF THREE-YEAR AVERAGED FINANCIAL RATIOS AND GNP PER CAPITA

1951-53

GNP Per Capita = - 531 + 1967 DDR

GNP Per Capita = - 779 + 2222 DTR

GNP Per Capita = 13 + 4061 CLR

GNP Per Capita = 128 + 65 ER

1957-59

GNP Per Capita = - 157 + 980 DDR

GNP Per Capita = - 122 + 780 DTR

GNP Per Capita = 86 + 2140 CLR

GNP Per Capita = 187 + 62 ER

1963-65

GNP Per Capita = - 91 + 895 DDR

GNP Per Capita = - 84 + 708 DTR

GNP Per Capita = 187 + 957 CLR

GNP Per Capita = 114 + 192 ER

1969-71

GNP Per Capita = - 250 + 1407 DDR

GNP Per Capita = - 315 + 1175 DTR

GNP Per Capita = 364 + 546 CLR

GNP Per Capita = - 38 + 408 ER

APPENDIX IV

Z SCORE FOR TESTING THE SUPERIORITY OF THE EFFICIENCY RATIO

Category	1951-1953	1957-1959	1963-1965	1969-1971
DDR	-0.01225	-0.36280	-0.67585	-0.0767
DTR	-0.17144	-0.03825	0.30501	0.4104
CLR	-0.69773	0.02956	1.12242	1.4008

APPENDIX V

FINANCIAL RATIOS OF SELECTED LESS DEVELOPED COUNTRIES (1951-1953)

Country	DDR	DTR	CLR	ER
Argentina	0.486	0.615	0.218	0.825
Bolivia	0.311	0.318	0.024	0.231
Brazil	0.566	0.599	0.179	1.019
Ceylon	0.599	0.638	0.144	0.177
Colombia	0.527	0.571	0.092	1.023
Costa Rica	0.522	0.564	0.002	1.436
Dominican Republic	0.535	0.597	0.054	1.257
Ecuador	0.415	0.472	0.083	1.056
Guatemala	0.298	0.368	0.044	0.451
Panama	0.552	0.623	0.142	0.980
Peru	0.546	0.649	0.135	1.211
Philippines	0.405	0.563	0.090	1.081
Thailand	0.260	0.316	0.047	0.637
Trinidad-Tobago	0.540	0.557	0.162	0.283
Venezuela	0.511	0.574	0.088	0.906
Less developed countries	0.466	0.524	0.091	1.098
Developed countries	0.509	0.629	0.286	1.469

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

APPENDIX VI

FINANCIAL RATIOS OF SELECTED LESS DEVELOPED COUNTRIES (1957-1959)

Country	DDR	DTR	CLR	ER
Argentina	0.498	0.616	0.173	0.835
Bolivia	0.198	0.204	0.021	0.721
Brazil	0.619	0.633	0.135	0.850
Ceylon	0.530	0.618	0.073	0.372
Chile	0.574	0.432	0.183	0.855
Colombia	0.566	0.591	0.114	0.373
Dominican Republic	0.486	0.636	0.094	0.898
Ecuador	0.439	0.499	0.134	0.640
Ghana	0.347	0.410	0.026	0.556
Guatemala	0.407	0.505	0.070	0.749
Guyana	0.442	0.564	0.087	0.915
Honduras	0.371	0.470	0.047	0.971
Iraq	0.327	0.453	0.092	0.644
Jamaica	0.721	0.856	0.143	2.890
Korea	0.380	0.447	0.073	0.788
Malaysia	0.323	0.420	0.065	0.792
Mexico	0.494	0.479	0.047	0.500
Nicaragua	0.496	0.533	0.165	0.822
Panama	0.612	0.512	0.085	0.905
Peru	0.559	0.669	0.137	0.365
Philippines	0.448	0.639	0.124	0.782
Sudan	0.461	0.462	0.075	0.154
Taiwan	0.431	0.566	0.075	1.096
Thailand	0.333	0.445	0.090	1.032
Trinidad-Tobago	0.705	0.846	0.171	0.766
Venezuela	0.638	0.754	0.185	0.978
Less developed countries	0.473	0.550	0.103	0.864
Developed countries	0.500	0.661	0.302	0.920

Source: Computed from: International Monetary Fund, International Financial Statistics, Supplement, 1972.

APPENDIX VII

FINANCIAL RATIOS OF SELECTED LESS DEVELOPED COUNTRIES (1963-1965)

Country	DDR	DTR	CLR	ER
Argentina	0.493	0.593	0.129	0.879
Bolivia	0.183	0.211	0.034	0.832
Brazil	0.616	0.620	0.105	0.946
Cameroon	0.423	0.482	0.154	0.457
Ceylon	0.459	0.588	0.089	0.333
Chile	0.592	0.649	0.110	0.800
Colombia	0.600	0.690	0.121	1.017
Costa Rica	0.592	0.652	0.216	1.237
Cyprus	0.521	0.630	0.362	0.464
Dominican Republic	0.434	0.546	0.066	0.898
Ecuador	0.479	0.527	0.135	0.918
Egypt	0.319	0.442	0.169	0.521
El Salvador	0.485	0.698	0.210	0.867
Ghana	0.461	0.567	0.070	1.025
Guatemala	0.406	0.575	0.094	0.922
Guyana	0.414	0.716	0.099	0.304
Honduras	0.445	0.609	0.073	1.170
India	0.303	0.480	0.011	1.098
Iran	0.462	0.647	0.158	0.870
Iraq	0.229	0.407	0.097	0.527
Israel	0.660	0.729	0.199	1.260
Ivory Coast	0.392	0.467	0.184	0.324
Jamaica	0.649	0.859	0.173	1.503
Korea	0.529	0.646	0.093	0.571
Malaysia	0.430	0.637	0.130	0.944
Mauritius	0.564	0.649	0.154	1.023
Mexico	0.544	0.570	0.060	1.589
Morocco	0.483	0.511	0.130	0.093
Nicaragua	0.594	0.645	0.153	0.777
Nigeria	0.369	0.534	0.076	0.825
Pakistan	0.369	0.517	0.114	0.633
Panama	0.657	0.576	0.142	1.020
Peru	0.595	0.675	0.129	0.800

APPENDIX VII (cont'd)

Country	DDR	DTR	CLR	ER
Philippines	0.460	0.716	0.192	1.235
Sierra Leone	0.333	0.496	0.064	0.800
Singapore	0.491	0.721	0.367	1.895
Sudan	0.410	0.450	0.113	1.002
Syria	0.197	0.231	0.211	0.610
Senegal	0.409	0.428	0.109	0.257
Taiwan	0.606	0.786	0.175	1.407
Thailand	0.418	0.638	0.140	1.072
Trinidad-Tobago	0.691	0.860	0.101	1.029
Tunisia	0.609	0.662	0.290	1.860
Uruguay	0.266	0.399	0.194	0.890
Venezuela	0.647	0.778	0.162	1.020
Vietnam	0.287	0.332	0.064	0.160
Less developed countries	0.455	0.567	0.135	1.019
Developed countries	0.555	0.724	0.381	1.191

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

APPENDIX VIII

FINANCIAL RATIOS OF SELECTED LESS DEVELOPED COUNTRIES (1969-1971)

Country	DDR	DTR	CLR	ER
Bolivia	0.235	0.370	0.058	0.864
Brazil	0.625	0.653	0.147	1.071
Chile	0.598	0.609	0.089	0.884
Costa Rica	0.662	0.712	0.200	0.843
Cyprus	0.548	0.645	0.383	0.646
Dominican Republic	0.534	0.620	0.122	0.875
Ecuador	0.551	0.562	0.136	0.669
Egypt	0.334	0.462	0.139	1.134
El Salvador	0.514	0.748	0.224	0.894
Ethiopia	0.254	0.479	0.089	1.065
Gambia	0.246	0.363	0.175	1.140
Guatemala	0.426	0.507	0.123	0.467
Guyana	0.381	0.771	0.159	0.913
Honduras	0.484	0.619	0.166	0.761
Indonesia	0.337	0.511	0.090	1.006
Iraq	0.202	0.312	0.702	1.288
Ivory Coast	0.487	0.603	0.226	1.174
Jamaica	0.647	0.881	0.293	0.813
Kenya	0.695	0.789	0.154	1.214
Korea	0.588	0.853	0.339	1.221
Libya	0.314	0.329	0.076	0.495
Malawi	0.581	0.651	0.100	1.032
Malaysia	0.470	0.536	0.190	1.033
Mauritius	0.533	0.635	0.219	1.045
Mexico	0.586	0.631	0.069	1.134
Morocco	0.484	0.522	0.129	0.761
Panama	0.753	0.744	0.323	1.143
Paraguay	0.393	0.661	0.107	0.854
Philippines	0.499	0.676	0.205	1.116
Singapore	0.549	0.805	0.432	1.317
Taiwan	0.623	0.756	0.289	1.451
Tanzania	0.574	0.663	0.094	0.406
Thailand	0.363	0.433	0.197	0.972
Tunisia	0.615	0.698	0.389	0.576
Uruguay	0.208	0.311	0.078	0.966
Venezuela	0.679	0.809	0.198	1.070
Less developed countries	0.522	0.680	0.201	1.157
Developed countries	0.603	0.800	0.453	1.161

Source: Computed from International Monetary Fund, International Financial Statistics, Supplement, 1972.

APPENDIX IX

The result of our simple correlation analysis shows that there is no significant difference in the relationship between banking and economic development when different financial ratios are used as indicators of financial development. A multiple correlation analysis was used in an attempt to cross-check this result. Instead of correlating GNP per capita with each of the financial ratios, the former was used to correlate with the efficiency ratio and the deposit ratios. The same is done with respect to the growth rate, i.e. the rate of change of real GNP. If the ER is a better indicator of financial development than the other financial ratios, then we would expect that the multiple correlation coefficient between GNP per capita (or growth rate) and the ER and the deposit ratio will be significantly higher than the simple correlation coefficient between GNP per capita (or growth rate) and the deposit ratio alone. The table below gives the results of the correlation analysis for the period 1963-65.

It is clear from the table that we have a higher R^2 whenever the ER is used as an additional explanatory variable. However statistical test of significance reveals that the explanatory power of the additional ER is statistically insignificant. Hence we cannot conclude that the degree of association between banking and economic development is

higher when the ER is used instead of other financial ratios as an indicator of financial development.

RESULTS OF THE CORRELATION ANALYSIS

Dependent Variable	Independent Variable	R^2
GNP per capita	DDR	0.2946
GNP per capita	DDR + ER	0.3415
GNP per capita	DTR	0.2762
GNP per capita	DTR + ER	0.3315
Growth rate	DDR	0.1537
Growth rate	DDR + ER	0.2705
Growth rate	DTR	0.2005
Growth rate	DTR + ER	0.2964

Source: Computed from International Monetary Fund, International Financial Statistics, 1972.