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THE STRUCTURE AND GROWTH OF THE PHILIPPINE FINANCIAL MARKET AND THE BEHAVIOR OF ITS MAJOR COMPONENTS

by

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CHAPTER 1

Introduction

This monograph is an attempt to explain the pattern of development of the Philippine financial market. This market had a very modest beginning in the immediate postwar period consisting only of about seven commercial banks, three savings banks and a small stock exchange. It has since developed quite rapidly, though at uneven rates, over the years and among its major component institutions. Some sectors, particularly the private commercial banks, showed great entrepreneurial dynamism. They grew rapidly, they became very large banks and their portfolios became more diversified. A number of commercial banks expanded into conglomerate financial companies supporting allied financial as well as production and trading enterprises. Investment and finance houses, insurance companies and savings and mortgage banks also grew at fairly high rates but they, as a whole, were unable to increase their relative importance in the system. Investment houses exhibited sporadic growth starting at high levels around 1970 and slowing down in the latter half of the decade. Other parts of the system such as the rural banks and the bonds and equity market have not been able to compete for funds as successfully as private commercial banks. Of particular interest is the failure of the heavily subsidized rural banks to increase their market share and the average size of

each institution. Their level of intermediation has even deteriorated. Similarly, the market for bonds and equity has remained very thin. As a consequence of this uneven performance, the more dynamic commercial banks came to dominate the system. Some have attained such large sizes as to pose oligopoly power.

Another important feature of the system is the presence of a large public sector -- the Philippine National Bank (PNB), a commercial bank, the Development Bank of the Philippines (DBP), an investment bank, and the semi-public rural and development banks. The last two are savings banks with a development-oriented lending objective. The PNB has been the largest commercial bank whose assets comprise from 20 to 30 percent of the total commercial banking sector. The DBP assets have been about 15 percent of total banking assets. Counting rural and development banks, the share in assets of the public and semi-public banks amount to more than half of the total.

While the organized sector has grown quite rapidly, there still remains a large traditional market which relies on internal and personal sources for investments and saves in traditional forms such as hoarding, personal lending and direct investment. In a sense, a dualistic financial market exists wherein a modern sector operates separately but side by side with traditional segments. The paper shows that there is segmentation even in the organized sector.

This pattern of development has been discussed in several papers (World Bank, 1976; Tan, 1976, 1979), but so far there has not been a comprehensive description of this pattern of growth or an adequate explanation of why the organized system developed this pattern. The World Bank study attributed the seeming lack of competitiveness of the market to the specialized role assigned by the Monetary Authority to the different types of financial institutions. Tan, on the other hand, blamed the set of regulations which grant subsidy to selected banks and borrowers and interest rate ceiling on selected credit instruments. These works were narrowly focused and provided little empirical support to the possible impact of these factors. This study tries to understand how the Philippine capital market works and explains why it developed its present structure of institutions, instruments and interest rates. Explanation is sought in the analysis of the behavior of the three groups of economic units that transact in the market -- surplus, deficit and intermediary units. The monograph starts with a highly aggregative capital market model that extends the analysis of Gurley and Shaw (1956) and McKinnon (1973). It discusses the working of the market under different conditions. At one extreme is the traditional market where there are no intermediaries; funds flow between individuals like in a barter system. At another end is a capital market consisting of an extensive network of competing financial institutions. A comparison of these extreme cases is made to show the gains

that can be obtained from efficient intermediation. The model is then used to analyze the implications of specific forms of imperfections including rigidities imposed by government policy. The aggregative model is followed by an analysis of portfolio decision of surplus units and finance problems facing firms.

The Gurley and Shaw/McKinnon model of intermediation is highly aggregative and simplified. Funds from saving and other sources are channelled to borrowers for investment and other uses via intermediaries. We have to go into portfolio and capital budgeting theory to be able to understand the more complex choice of assets and sources of finance. Intermediaries offer assets and sources of finance that are differentiated as to risk, liquidity and returns. This they do in order to meet differences in liquidity requirements and preferences of surplus and deficit units for risk and liquidity. In this way, intermediaries are able to expand their level of output or intermediation activities.

Financial assets are substitutes of each other. Premium is paid for risk and illiquidity. The market determines the equilibrium structure of interest rates, portfolio of assets and sources of finance. Efficient market models including the capital budgeting model of Modigliani and Miller give a very neat derivation of the structure of interest rate and cost of capital that solely depends on risk. These models assume competitive conditions. We make use of the basic

behavioral assumptions of the theory. But we consider explicitly how it works under imperfect conditions. Imperfections in LDC markets are treated as determining the constraints in which economic units operate. They result in unequal sets of constraints for different groups of decision units. Segmentation of the market is shown to result from the inequality of constraints. Instead of one market equilibrium point, a structure of equilibria is obtained from the different segments.

Government intervention, which is extensive and highly selective in nature, is considered an important source of imperfection. Some imperfections result from physical barriers that still remain including discontinuous communication and transportation network. The latter imperfections are considered to arise from underdevelopment. Imperfect knowledge and indivisibilities also seem to prevail in the financial market. The implication of all these is analyzed in the paper.

The model seems able to explain some of the peculiar features of the Philippine capital market such as the wide interest rate differential, firms' reliance on loan and internal financing, the persistence of closed family corporations, the small size of the equity market and the short maturity of most financial papers.

The monograph contains eight chapters including this introduction. The second chapter develops an aggregative intermediation model. This is followed by a brief historical analysis of the financial system. Chapter 6 discusses the basic portfolio theory and how it applies to an imperfect market. The model is tested on the Philippine stock market. The results are given in Chapters 5 and 6. Chapter 7 deals with the money market; Chapter 8 with finance choice. Flow of funds data are used to provide some empirical insights into finance decisions. Chapter 9 gives the conclusion.

CHAPTER 2

A Model of Financial Market Development and The Structure of the Philippine Market

1. A Model of Financial Development

Gurley and Shaw (1956) and later Tobin (1963), McKinnon (1973) and other economists attribute much benefit from financial intermediation. The most important contribution of financial intermediaries is in resource allocation. They also help reduce risk and the cost of liquidity and financial transactions. These positive effects of intermediation are explained below through a model of financial development from a traditional to a developed financial market.

Financial intermediaries are channels of funds from surplus to deficit units. They collect a large pool of funds. In a large pool, the placement of any one small lender is liquid since it forms but a very small part of the total. On the other hand, each intermediary grants loans to a large number of borrowers. The depositor's claim against the intermediary is ultimately a claim against all borrowers. He therefore shares in the diversified portfolio of the intermediary. By placing his funds with an intermediary, the lender is able to diversify his portfolio of assets and to increase its liquidity. Diversification generally leads to risk reduction. And as specialized institutions, we expect intermediaries to gain from economies of scale

in operation and in the collection of information about lenders and borrowers. Such economies of scale should reduce risk and the transactions cost of lending and borrowing. These gains from intermediation could be substantial. We expect, however, that its most important impact is allocative in nature. To show this impact, we expand on McKinnon's analysis of investment-saving-borrowing-lending (S/I-B/L) choices in a segmented market.

Let us begin with the traditional market where there are no intermediaries. Money may or may not be in use. Income and wealth are unequally distributed. Transactions in goods and borrowing/lending may take place among individuals who are proximately located and personally known to each other. In an extreme case, they neither borrow nor lend. Each unit is financially self-contained and decides only on its rate of saving. In such a case, saving and investment take place simultaneously.

Unequal distribution of information results in unequal investment and financial market opportunity curves (IOC and FMOC). The best-informed individuals face the best possible options; the poorly-informed, inferior options. Borrowing McKinnon's graph, we take two individuals, A and B, each facing a different IOC. Each has his own map of indifference curves, IC^A's and IC^B's. The slope of the IC curve gives the rate of time preference, and the slope of the IOC, the internal rate of return. If there are no lending

possibilities, individuals A and B will save and invest at the point of tangency of their respective indifference and investment opportunity curves. Their respective optimal rates of return need not equal. We will see that the possibility of borrowing from each other will bring them to a higher level of utility. B may borrow from A at any rate between B's and A's original optimal rates at a_1 and b_1 and continue doing so until both A and B have reached equal marginal rate of return and equal time preference rate. Funds are transferred from the low productivity to the high productivity investor, and from one with low to one with high time preference. Both are able to reach a higher level of utility from saving and investing.

Individual borrowing-lending, like barter, is costly to transact and requires the coincidence of quantity and maturity of credit. This double coincidence does not easily occur between any two pairs of individuals. In our case, what B wants to borrow at the equilibrium rate is larger than what A wants to lend. B has to look for other lenders. Obtaining funds from several individuals would involve higher transaction cost than if the funds are obtained from one source. The matching of maturity is another complication, also that of risk.

Even with good matching of amount and maturity between bartering individuals, Pareto optimality is not feasible at the aggregate level. In traditional markets, transactions tend to take place between

proximate and familiar individuals. One does not usually face all transactors. We might have a group of individuals who are known to each other but who have equally low investment opportunity curves. In this case, there is a smaller possibility of gains from borrowing and lending. Borrowing and lending take place mainly to equalize the marginal time preference rate. Assume there is another group of individuals who have higher IOCs. Each group will reach its own equilibrium rate of return and rate of time preference. The equilibria need not equal for the two groups. The two groups would be better off if they could transact with each other so that funds are allocated optimally for all their members. Here we see how imperfect information results in some kind of segmentation and a poorer allocation of resources. Physical barriers work like poor information. They prevent the movement of funds from those with low productivity and low time preference rate to those with high productivity and high time preference rate. Intermediaries should reduce if not altogether remove these imperfections/so that the segmentation breaks down. An ideal situation is where borrowing and lending via intermediaries take place so smoothly that the Pareto optimal point is reached. This is where there is one common equilibrium time preference and internal rate for everybody, with total lending equal to total borrowing. This takes place because the presence of intermediaries reduces most of the problems inherent in a barter system -- double coincidence, indivisibilities and high

cost of information and transaction cost. We can imagine an intermediary being able to channel funds from many small surplus units such as A to borrowers in many locations.

Chart 2.1 may be used to derive the supply to and demand for funds from intermediaries. At each interest rate reflected in the slope of the market or borrowing/lending line MM, some people want to lend, some want to borrow. The supply curve is the sum of desired lending at each rate. The demand is the sum of desired borrowing at each rate. As interest rate increases, desired lending increases but desired borrowing decreases. The demand for funds from intermediaries is the total investment forthcoming minus the investment made by lenders and the self-financed investment borrowers.

We note that the supply and demand functions exist not just because of differences in time preference rates but also because of the heterogeneity of investment opportunities. Even with very good information in the market, entrepreneurial and managerial talent is fairly scarce and differs among individuals. Most individuals seem to have comparative advantage in working as employees. We can say that the allocative role of intermediaries rests in the very nature of man's capacity.

In the course of development, intermediaries diversify their credit offerings. They may find it more efficient to specialize in intermediary

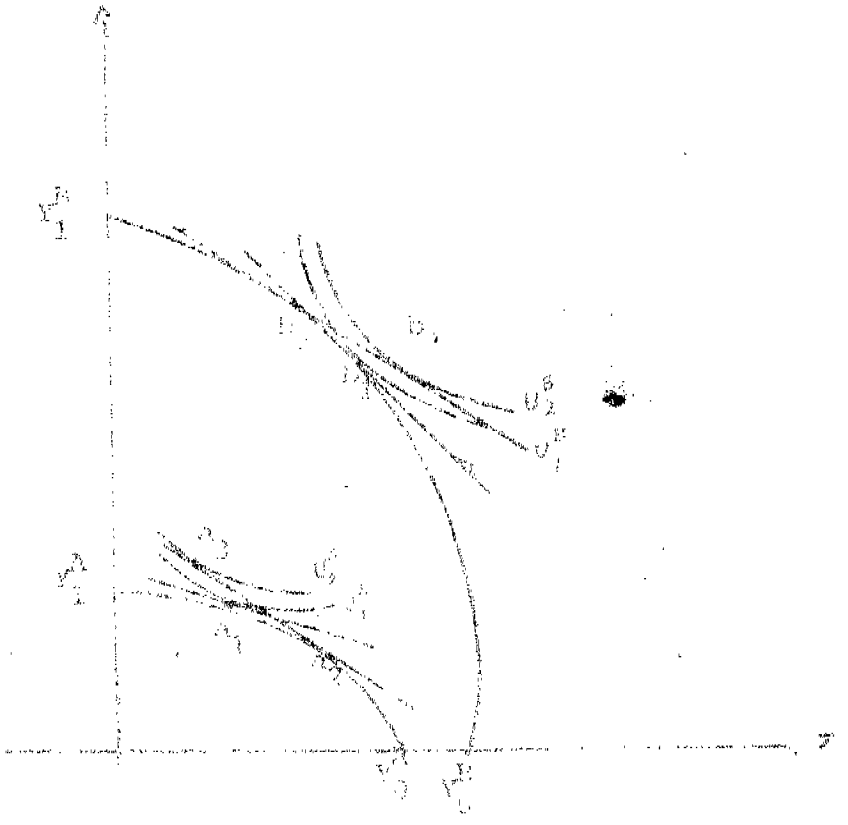

Figure 2.1

functions. We find many countries having several types of intermediaries -- commercial and savings banks, investment houses, securities dealers, and insurance companies each type specializing, to a certain extent, on one or a few instruments. Commercial and savings banks are usually the first intermediaries to be established. An important reason is that their intermediary function is easily understood by people who are just being introduced to financial assets. The act of depositing and lending is very elementary. Later on, other financial instruments become accepted -- bank bills, trust certificates, and other deposit substitutes, commercial papers and stocks and bonds of private and government entities, including financial enterprises. A greater variety is offered in order to meet the demand for different degrees of liquidity and risk by borrowers and lenders. The instruments offered are competing financial assets (or liabilities). The market would tend to move towards an equilibrium structure of interest rates reflecting the relative liquidity, risk and intermediation cost of each credit instrument. As the market develops the cost of risk, liquidity and intermediation are expected to fall. The reduction in these costs will lower equilibrium interest rates, everything else given, and narrow their ranges. At each lending rate, risk will tend to be lower and the asset more liquid.

The rate of diversification will depend, to a large extent, on the growth of the financial system as a whole since liquidity, risk

and intermediation cost are, to a large extent, determined by the market size of each asset. Diversification and financial growth are, therefore, expected to move together. Such diversification means an increasing number of credit instruments that would compete with bank assets and liabilities. It is therefore to be expected that, in the absence of intervention, the relative importance of banks in the system will decline during the process of development and possibly stabilize at some point vis-a-vis that of the securities market, mutual funds, insurance and other intermediaries. We will find in the following chapter that this did not happen in the Philippines. Banking institution continued to dominate the system. This pattern could be traced partly to the financial policy pursued by the government.

The policy to promote the establishment of financial intermediaries is based on the benefits to be expected from their services. However, this policy has been intertwined with policies aimed at the overall development of the economy and of specific sectors. The mix of policy tools used had unequal impact on the different types of intermediaries and financial assets.

The strategy contained a mixed bag of regulations including interest rates and portfolio ceilings, and subsidies. Ceiling interest rates have been imposed on selected credit instruments -- bank deposits,

money market instruments and loans.[1] Banks have prescribed debt equity ceiling and size limitations on any individual borrower particularly Dosri (bank director-officers and related individuals) borrowers. Subsidy in the form of low rediscounting rate is granted to all banking institutions and preferential rediscounting rates and volumes are granted banks for their loans to priority activities such as in rice and exports. Cheap sources of equity are granted for the establishment of rural and private development banks. Other forms of subsidy are granted commercial banks on a more selected basis such as the allocation of proceeds from foreign loans. There are no clear-cut or objective criteria for rationing this fund. There are many other regulations such as the 35 percent tax on the interest rate paid by ultimate borrowers in the money market, the ₱100,000 minimum size placement in this market and the inclusion of at least 25 percent agricultural loans in commercial banks' loan portfolio.

The strategy, it is seen, has two important features. It is selective in nature and it involves both intended and unintended grant of credit subsidy. The subsidy comes mainly from monetary expansion. The selective nature of the regulations on interest rates, placement sizes and grant of credit subsidy through rediscounting and equity assistance discriminates among surplus units, among deficit units and

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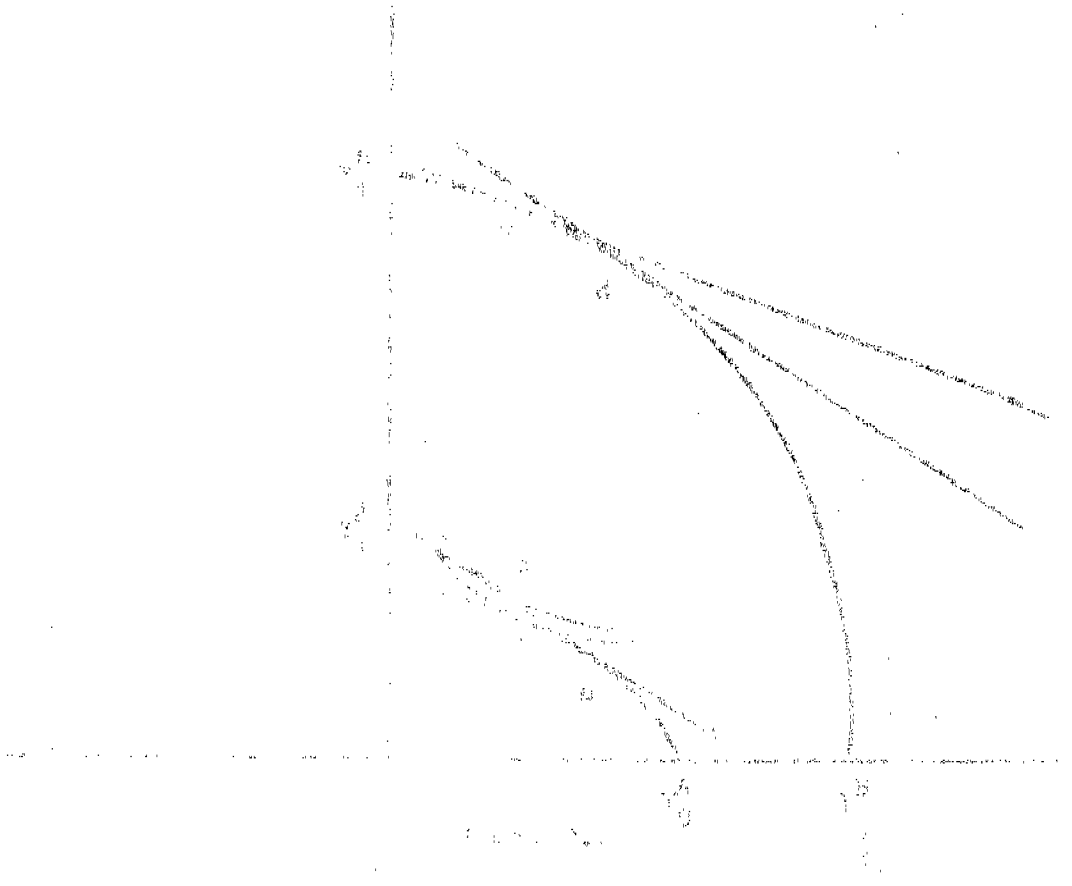
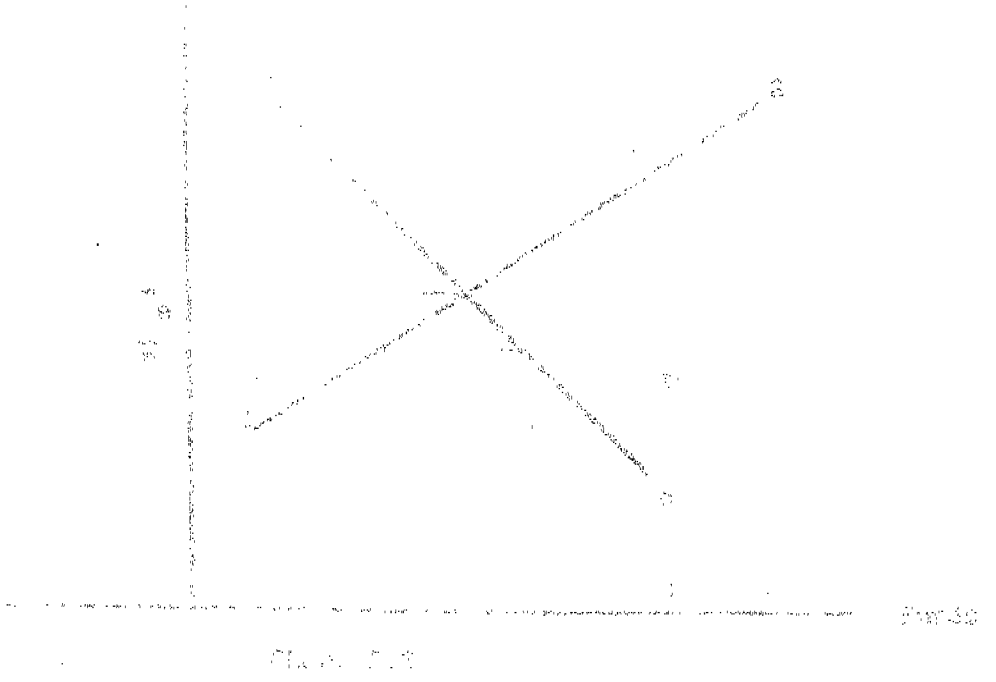
[1] All ceiling rates, except for short-term loans, are to be disbanded as of July 1, 1981.

among financial intermediaries. Some surplus units are benefited while others are hurt by these regulations. Banking institutions profit from the generous rediscounting facilities and the ceiling rates on deposits which provide banks with cheap sources of funds.

The ceiling on deposit reduces its attractiveness as an alternative asset to hold. Those who have few financial asset alternatives like small savers are therefore discriminated against by the deposit ceiling. The ceiling rate on loans makes these a relatively cheap source of finance so that those able to borrow at the ceiling rates are benefited, while those who are rationed out of the available loan funds and forced to rely on more expensive sources are disfavored.

The allocative impact of the interest and rediscounting regulations is roughly illustrated in the following chart. Assume again that opportunity curves differ for the average small household firm and the advanced modern entrepreneur as reflected in $Y_0^A Y_1^A$ and $Y_0^B Y_1^B$, respectively. Let us assume further that the aggregate supply and demand for funds derived from the IC and the IOCs of all households/firms are in Chart 3. A competitive financial system would determine the interest rate at the intersection of supply and demand at r_e. For A and B households/firms, it means a market line of equal slope. An artificial lowering of deposit rate would lead to a smaller supply of funds from the A-type households. They will tend to invest more on their own projects. The policy of lowering the rate below that of the market implies unfilled demand for funds by deficit units. There prevails a returns differential between A-type and B-type households.





Commercial bank funds have been supplemented by rediscounting. This is an increment in fund supply. Borrowing for investment increases, since A and B together invest more than what they would have done under purely self-finance or under competitive financial intermediation. If, as a consequence of the increased demand, inflation occurs and has a negative redistributive impact on the A households/firms, their IOC would shift downward and to the left as $Y_0^{A'} Y_1^{A'}$. Aggregate demand returns to the old level, and income is transferred to the B households/firms via inflation. Allocation might be made as efficient as in a competitive intermediation system, but at the expense of redistribution from the low saving investment units to the large B-type units.

The effect of other regulations are discussed in later chapters. We contend that policy has much to explain for the uneven growth of financial intermediaries or of the credit instruments which they specialize to issue. This has to be borne in mind in tracing the growth of the component institutions in the system.

In the next chapters, we try to provide an empirical answer to the question of how far the Philippines has progressed toward establishing a varied but integrated financial system in which a competitive structure of interest rates prevails. This involves describing the growth of the organized system as a whole and its major components, the subsequent

structure of financial assets they supplied to savers and other surplus units, their performance as measured by their intermediation activity, and for commercial banks where data are available, their profit rates also.

CHAPTER 3

The Growth and Structure of the Financial Market

Many forces account for the growth of the country's financial market and the structure that evolved. With the economy developing at a fairly fast rate, supply and demand for various financial assets increased. Physical barriers were breaking down, leading to the gradual integration of both real and financial markets. The growing level of income and economic activity generated a higher level of savings and investment. The financial market responded to these developments by establishing new institutions and new forms of financial papers, and increasing their level of intermediation. At the time that these were taking place, the Monetary Authority or equivalently, the Central Bank, adopted an aggressive but highly selective financial policy. It encouraged the establishment of banking institutions by subsidizing their initial capital and operational funds through the rediscount window. The main recipients of this subsidy were the rural banks but all banks received rediscounting privileges. The government also directly expanded the system by establishing the Development Bank of the Philippines (DBP) and expanding the size of the Philippine National Bank, a state commercial bank. Since the late 60s when the government has followed inflationary policy, credit expansion was partly channelled through the public and the rural banks.

This financial development strategy was selective in the sense that the development of other types of intermediaries was neglected and the different types of banking institutions received unequal rates of subsidy. Private savings banks were not deliberately encouraged to grow. A review of CB reports and regulations shows no concern about other sectors of the financial market. In addition to this bias towards banks, interest rates on banking deposits and loans were regulated. Ceiling rates were imposed on deposits; the rates depended on maturity, and on loans, the rate depending on whether or not they are collateralized. Portfolio constraints were also imposed on banks and the government social insurance system. There were other regulations but these are considered to be the most important in terms of their implications to allocation and financial growth.

In addition to these factors are some imperfections which also influenced the market for particular financial assets and the movement of funds between geographic areas. The quality of entrepreneurship seems to have differed especially between rural and city bankers. Information is not equally distributed and the poverty and generally low level of income of the majority of families make many assets and investments indivisible.

The way these factors influenced the market for particular assets or credit is analyzed in later chapters. This chapter tries to capture

some of these influences on the development of the institutions and their intermediary functions. The chapter is focused on the banking sector because there are more data on it. It is, moreover, the most important sector of the financial system.

1. The Financial System

The system consists of intermediaries that supply financial papers to surplus units and credit to deficit units. The financial papers supplied may be primary or secondary papers, i.e., those issued by ultimate borrowers or spending units like corporate stocks, and those issued by the intermediary like deposits and bank bills. Intermediaries also function as brokers for primary securities underwriting primary security issues or arranging a loan portfolio for surplus units who wish to lend directly as in the case of money market without recourse papers (WORP).

The growth of intermediary activity is gauged by the amount of funds that flows into and out of the system. Funds flow in the form of new deposits, payment for bank bills, etc. These are recorded as liabilities of the intermediary. Funds accumulated are lent out in the form of loans, securities purchased, etc. These are recorded as assets. These have counterpart accounts with spending or primary units -- they are assets of surplus units and liabilities of deficit units.

Flow of funds data (FOF) measure best the level of intermediation. A complete FOF traces the flow of funds among all four groups of economic units: households, business, government, financial institutions, and the foreign sector. An original placement of funds with an intermediary and their relending increase intermediation level. When the debt by a deficit unit is repaid and relent again to another deficit unit, intermediation increases further. In contrast, a portfolio change from, say, deposits to bank bills, does not add to intermediated funds. The FOF which contains the sum of all debit and credit entries to each account allows a more accurate accounting of intermediation activity. Balance sheet accounts, in contrast, net out the two sides of each account and report the ending balances only. They, therefore, tend to underestimate the level of intermediation. Balance sheet information is, however, the more readily available set of data. We have to rely on this for our historical description of the development and structure of the system. In later chapters when we analyze in greater detail the market for major financial assets, flow of funds and other information are used.

We have three tables to describe the growth and structure of the system. Table 3.1 gives a basic financial development indicator, Gurley and Shaw's financial assets to GNP ratio. Also in the table are data on a number of financial institutions and their offices, and their geographic distribution. Tables 3.2 and 3.3 show the growth of assets and their distribution among the different groups of financial institutions

Table 3.1

FINANCIAL DEVELOPMENT INDICATORS, 1950-1977

Year	No. of Bank Offices	Value of Financial Assets Held Privately (in Millions)	Ratio of Financial Assets to GNP
1950	113	₱ 1,480	.21
1960	404	3,994	.29
1965	780	7,462	.32
1970	1,303	17,985	.43
1975	2,075	53,890	.48
1977	2,655	77,274	.50

NUMBER OF OFFICES OF FINANCIAL INSTITUTIONS, 1978

	Total	Head Offices
Banking Institutions	2,904	1,092
Commercial banks	1,287	32
Private development banks	117	36
Thrift banks	509	126
Savings and mortgage banks	207	10
Stock savings banks	185	80
Rural banks	1,024	931
Specialized government banks	84	3
Non-Bank Financial Institutions	1,302	1,201
Investment houses	56	12
Finance companies	419	263
Investment companies	58	58
Securities dealers	130	130
Lending investors	40	39
Pawnshops	508	460
Non-stock savings and loans	71	71
Private insurances	n.a.	146
Social security system	n.a.	2

Source: Burkner (1980) Table A.6, p. 385 for cols. 1 and 2 first panel, NEDA Statistical Yearbook, 1978 and 1980 for the GNP data, Joint IMF-World Bank Mission Report 1979, Table 2, p. 4 for lower panel.

Total Assets of the Philippine Financial System

	Amount (million pesos: end-of-year figures)					As percent of total				
	1974	1975	1976	1977	1978	1974	1975	1976	1977	1978
BANKING INSTITUTIONS	54,142.8	69,840.3	79,989.7	95,151.3	121,164.8	72.3	71.6	69.6	72.7	74.5
Commercial Banks	42,424.8	53,172.8	58,730.9	68,676.5	89,798.6	56.7	54.5	51.1	52.5	55.2
Thrift Banks	1,666.9	2,126.5	3,024.5	4,080.0	5,602.9	2.2	2.2	2.6	3.1	3.4
PDBs	296.3	381.9	482.1	595.5	759.7	0.4	0.4	0.4	0.5	0.5
Savings and mortgage banks	1,159.9	1,421.9	2,043.1	2,180.4	3,896.8	1.6	1.5	1.8	2.2	2.4
Stock SLAs	210.7	322.7	499.3	674.1	946.3	0.3	0.3	0.4	0.5	0.6
Rural Banks	2,110.7	2,749.3	3,017.7	3,327.5	4,037.0	2.8	2.8	2.6	2.5	2.5
Specialized Banks	7,940.4	11,791.7	15,216.6	19,067.3	21,726.3	10.6	12.1	13.2	14.6	13.4
DBP	6,758.0	9,644.2	12,779.8	15,805.7	18,209.7	9.0	9.9	11.1	12.1	11.2
Land Bank	1,182.4	2,095.5	2,384.4	3,193.9	3,446.1	1.6	2.2	2.1	2.4	2.1
Philippine Amanah Bank	-	52.0	52.4	67.7	70.5	-	0.1	0.1	0.0	-
NON-BANK FINANCIAL INSTITUTIONS	20,714.2	27,695.5	34,923.6	35,666.8	41,553.6	27.7	28.4	30.4	27.3	25.5
Investment Houses	3,839.9	4,774.0	4,824.7	4,746.7	4,762.5	5.1	4.9	4.2	3.6	2.9
Finance Companies	2,306.7	3,467.3	4,644.6	5,852.3	7,365.7	3.1	3.6	4.0	4.5	4.5
Investment Companies	689.0	1,988.9	3,751.4	3,922.3	4,651.1	0.9	2.0	3.3	3.0	2.9
Securities Dealers/Brokers	882.1	1,067.1	1,091.8	978.4	1,119.8	1.2	1.1	1.0	0.8	0.7
Pawnshops	100.8	89.6	149.0	177.8	192.3	0.1	0.1	0.1	0.1	0.1
Fund Managers	1,951.5	2,609.8	3,302.0	552.4	834.4	2.6	2.7	2.9	0.4	0.5
Lending Investors	24.9	60.9	16.9	16.2	18.5	-	0.1	-	-	-
Non-stock Savings & Loan Associations	71.2	86.2	112.1	143.5	191.8	0.1	0.1	0.1	0.1	0.1
Mutual Building & Loan Associations	24.7	25.9	23.5	23.2	21.4	-	-	-	-	-
Private Insurance Companies	3,468.0	4,244.5	5,230.1	6,168.0	7,273.9[a/]	4.6	4.4	4.6	4.7	4.5
Specialized Non-bank	7,355.4	9,281.3	11,777.5	13,086.0	15,122.2	9.8	9.5	10.3	10.0	9.3
GSIS	4,144.5	4,680.6	6,303.6	6,751.4	7,833.3	5.5	4.8	5.5	5.2	4.8
SSS	2,388.9	2,997.1	3,841.4	4,941.5	5,499.4	3.2	3.1	3.3	3.8	3.4
ACA	451.5	698.0	709.9	421.1	751.3	0.6	0.7	0.6	0.3	0.5
NIDC	370.5	896.6	922.6	972.0	1,038.2	0.5	0.9	0.8	0.7	0.6
T O T A L:	74,857.0	97,535.8	114,913.3	130,818.1	162,718.4	100.0	100.0	100.0	100.0	100.0

[a/] Extrapolated from 1977 figure assuming same annual growth rate as in 1977.

Source: Data provided by the authorities.

Total Real Assets of Selected Financial Institutions and their Annual Growth Rates

	Total	%	KBS	%	SB	%	PNB	%	DBP	%	RB	%
1965	17,763.9		11,369.9		340.2				1,824.7		471.3	
1970	29,444.8		12,179.8		916.96		5,625.4		3,349.2		829.1	
1971	29,291.5	- .5	13,004.4	6.7	924.24	2.8	4,654.6	-17.3	3,604.5	7.6	862.0	4.0
1972	32,262.0	10.1	15,360.6	18.1	862.9	- 8.5	4,637.6	- .4	3,857.6	7.0	982.3	14.0
1973	39,561.3	22.6	19,816.7	29.0	880.52	2.0	6,446.7	39.0	4,016.3	4.1	1,212.8	23.4
1974	40,555.3	2.5	19,822.8	0	762.09	-13.5	8,208.2	27.3	3,468.7	-13.6	1,386.8	14.3
1975	47,203.6	16.4	21,826.8	10.1	863.85	13.3	10,477.5	27.6	4,761.0	37.2	1,570.3	20.4
1976	51,506.7	9.1	23,389.6	7.1	1,168.82	35.3	10,573.3	.9	6,343.1	33.2	1,757.3	5.2
1977	57,069.1	10.8	26,213.3	12.1	1,485.37	27.1	10,200.5	- 3.6	8,380.5	32.1	1,764.3	.4
1978	66,506.8	16.5	32,760.8	25.0	1,920.55	29.3	11,496.8	12.7	8,974.7	7.0	1,827.6	3.6

PDB	%	All Banks	%	IH	%	GSIS	%	SSS	%
		14,006.1		224.0		2,741.2		792.6	
203.3		23,103.8		1,536.1		3,376.8		1,428.1	
201.1	- 1.1	23,268.8	.7	1,363.1	-11.3	3,195.8	- 5.4	1,463.8	2.5
199.7	- .7	25,900.7	11.3	1,398.2	2.6	3,390.8	6.1	1,572.3	7.4
207.3	3.8	32,580.3	25.8	2,100.2	50.2	3,171.6	- 6.5	1,709.8	8.7
195.5	- 5.8	33,844.9	3.9	2,507.3	19.4	2,633.5	-17.0	1,569.6	- 8.2
232.8	19.1	39,833.1	17.7	2,861.0	14.1	2,688.7	2.0	1,820.8	16.0
272.5	17.0	43,504.6	9.2	2,723.2	- 4.9	3,164.4	17.7	2,114.5	16.1
315.6	15.8	48,359.6	11.1	2,509.7	- 7.9	3,579.7	13.7	2,620.1	23.9
374.4	18.6	57,354.9	18.6	2,580.8	2.8	3,860.7	7.8	2,710.4	3.4

including the two large public banks -- the Philippine National Bank (PNB) and the Development Bank of the Philippines (DBP). The tables are self-explanatory but we want to note a few points.

On the whole, the figures in Table 3.1 are encouraging. The finance ratio rose from 1950 to 1977 from a rather low level of .21 to .50. However this degree of development is still low compared to advanced economies like the U.S. which even in 1950 had about 4.0 finance ratio. Japan's M_2/GNP ratio was about unity in the 70s. The number of institutions and bank offices also increased quite rapidly. However, their geographic dispersal is not so satisfactory. Almost one-half of banking offices are located in Metro Manila and only other major cities like Cebu have branches of investment houses. There are no branches of the stock exchange in the provinces. The rural sector is serviced mainly by rural banks.

In Table 3.2, we note the strong relative importance of two groups of intermediaries -- commercial banks and the government and government-supported-managed institutions. These include the PNB, the DBP, the rural and private development banks, the social security system, and other smaller specialized institutions.[2]

The dominance of these two groups has some important implications. Commercial banks supply mostly short-term papers and credit. Their dominance should explain, in part, the observed shortness of the maturity of financial papers.

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[2]These consist of the Land Bank, the Amanah Bank, the National Industrial Development Corporation (NIDC), and the Agricultural Credit Administration (ACA).

The assets of the "government" group amounted to 60 percent of the total. We might even consider adding to the assets of this group those of the United Coconut Producers Bank (UCPB) and the Republic Planters Bank which are controlled by the government organized monopolies on coconut and sugar export trading. Levies on coconut and sugar export have been channelled to these banks.

The establishment of these "government" institutions definitely hastened the growth of the financial system and provided remote areas with banking and insurance facilities. They offer an important potential for mobilizing saving. Yet some serious questions could be asked about the rationale for establishing this rather large government-controlled financial sector. These institutions are more directly and effectively controlled by the government. Their officers are executive appointees. They more readily follow Central Bank regulations such as that on interest rate. They have been an important channel for credit for priority activities such as the Masagana Program, BOI-registered industries, tourism and hotel building, the national airline and other government projects. Casual observations show that they might not have followed ordinary investment criteria in the allocation of funds. There is, therefore, a big question on whether the funds have been allocated socially efficiently.

It is to be noted also that a large part of the funds that get channelled to these institutions came from contractual savings of salaried employees, hidden taxes from inflation and the nebulous export levies. The savers were therefore not in a position to choose their asset portfolio. This fact leads to the question of whether these savers have gained by placing their savings in this way or whether they could have done better choosing their own portfolio. We see that these issues have serious efficiency and equity implications.

Looking now at Table 3.3, we find the growth rates between 1965 and 1978 of the different groups of intermediaries to be generally high but widely fluctuating. Commercial banks' growth rate ranged from -17.3 to 39.0 percent; investment houses, -11.3 to 50.2 percent; other banking institutions, -13.6 to 37.2. It is encouraging to see the increasing rate of growth of savings banks. These are generally small banks that cater to neighborhood savers. It will be seen later that their performance in intermediation and in term transformation has been very satisfactory.

As we proceed the rest of the paper shows that broad indicators like the finance ratio and the fast growth of financial institutions do not give us a good basis for judging the development of a financial market. The data presented, therefore, need to be interpreted with caution.

2. Bank Performance in Terms of Intermediation Rate and Term Transformation

Bank performance may be evaluated by the growth of its intermediation activity and by its ability to lengthen the maturity structure of its assets given the maturity structure of its liabilities. Other performance indicators may be used such as profit rate and overall financial position. Our interest here lies mainly in the banking system's effectiveness in mobilizing funds, hence our focus on intermediation rate and term-transformation. We also have a more complete set of data on intermediation rate which can be used to compare the various bank groups' performance.

Intermediation rate is measured by the ratio of liabilities to primary or non-financial liabilities to total liabilities. (Note that liabilities are the records of the sources of funds.) The bank balance sheet accounts we are using do not disaggregate by type of creditor. Here we assume that all deposits are intermediated funds. A small proportion of bank-issued securities are held by primary units. The money market reports that from 1976-1979, only about 22 percent of its papers were held by individuals, and 19 percent by private corporations. The bulk was inter-financial institutions transaction amounting to 63 percent of transactions. (See Table 7.3, p.124). From this we might assume that only about one-half of commercial bank bills including the PNB's was held by primary units and was considered to comprise interme-

Table 3.4

INTERMEDIATION RATE OF SELECTED INTERMEDIARIES, 1970-1978
(in %)

	Commercial Banks			Savings Banks		Rural Banks	PDB	DBP	Philippine National Bank		
	Deposits/TL	Bills Pay./TL	(1) + (2)	Deposits/TL	Other Liabilities/TL	Deposits/TL	Deposits/TL	Deposits/TL	Deposits/TL	Bills Pay./TL	(9) +
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11
1970	61.0	15.5	76.5	86.0	14.0	60.8	72.0	12.9	55.2	23.9	79.
1971	64.1	15.5	79.6	87.1	12.9	63.0	72.4	12.6	65.6	23.8	89.
1972	60.9	17.1	78.0	85.1	14.9	60.1	70.8	10.1	67.4	21.5	88.
1973	56.9	21.9	78.9	91.0	9.0	60.5	77.0	16.4	73.1	17.8	90.
1974	49.2	6.2	55.4	92.8	7.2	52.3	75.1	17.0	55.8	31.6	87.
1975	43.2	37.9	81.1	92.9	7.1	46.7	70.8	34.3	41.3	31.8	73.
1976	49.0	33.5	82.5	94.6	5.4	44.4	71.5	41.9	39.4	41.7	81.
1977	54.7	26.5	81.2	94.9	5.1	47.1	71.8	19.9	46.2	40.8	87.
1978	53.4	26.6	80.0	96.1	3.9	46.9	70.5	20.6	43.0	44.8	87.
1979	53.4	26.8	80.2	95.7	4.3	45.4	70.0	19.4	49.2	36.7	85.

Sources: 1. Central Bank Statistical Bulletin, 1979.
2. Central Bank Factbook, Philippine Financial System, 1979.

Note: Not counted are due from the CB and other banks, manager's checks, and other liabilities. Banks varied in the proportion of each of these. Rural banks had almost 50 percent liabilities from rediscounting in 1977-1978. This share had an upward trend from 1950. Private development banks' other sources were mainly rediscounting which amounted to more than 20 percent in most years.

diated funds. A similar problem arises with regard to DBP bonds. Only a portion is held by primary units. Since we had no adequate basis for estimating the intermediated portion of bank securities, we simply presented the figures. (Please see Table 3.4.)

The share of deposits varies substantially among bank groups with the savings and the private development banks relying mostly on this source. The DBP, the PNB and rural banks had low deposit/total liabilities ratio. The DBP used mainly bond and foreign loan financing, while the PNB used the money market for its short-term issues. Rural banks' other liabilities consisted mostly of CB rediscounting. Commercial banks used deposits at a decreasing rate and seemed to have substituted these with the higher yielding deposit substitutes and short-term notes.

From these we find the performance of the different bank groups in intermediation to vary significantly. Notably, there is a decline in the share of deposits for commercial and rural banks. These banks have the widest network of offices in the country and therefore offer a great potential for mobilizing savings. The rise in importance of bank bills is not altogether encouraging since they tend to cater to large financial and non-financial corporate transactions that only partly reflect saving mobilization. These bills are not divisible and accessible to most savers. Rural banks, on the other hand, have increasingly relied on CB rediscounting so that by the late 70s, this source comprised one-half

of these banks' regular source of funds. Despite or possibly because of such assistance, they have failed to grow as fast as other banks.

The performance of rural banks may be compared to that of two similar bank types -- the savings and the private development banks. All three are essentially savings banks catering to the longer term credit needs of smaller borrowers. Moreover, private development banks obtain the same kinds of subsidy as rural banks. We speculate that differences in the quality of entrepreneurship and in the attitude to government subsidy may help explain differences in their performance. It will be useful to study this problem in the future since these banks have a good potential for fund mobilization.

2.1. Term Transformation

We may expect variation in term transformation for different bank groups. Commercial banks are essentially in the shorter-term market for funds while development banks were established precisely to cater to the longer-term capital requirements of business. Savings banks are also essentially in the longer-term market. The rural and private development banks in the country are also development-oriented so that we can expect more longer-term credit from them. The same applies to the Philippine National Bank.

This problem of term transformation and the observed average shortness of the maturity structure of credit granted by financial

institutions has bothered policy-makers. The reason for this seems to be that the financial market has been dominated by commercial banks which by their nature transact in short-term papers. This is exacerbated by the fact that they have increased their participation in the money market both as a borrower and a lender. Within the commercial bank sector, however, we should still expect some term transformation unless this is not optimal for the firms for reasons like capital rationing and inflation. (See Chapter 8 on this.)

We show in Table 3.5 the maturity structure of loans granted by five bank groups. The maturity structure for each group is more or less what we expect for commercial banks. DBP loans were mostly intermediate and long-term. Savings and private development banks had a shorter maturity than the DBP but still they granted more than fifty percent longer-term maturity credits. It would appear as if commercial banks had no term transformation and that there might have been reverse transformation. Note that the share of their short-term loans was generally high at more than 90 percent in the 70s but it rose to 98 percent by 1976 at which it has remained. At the same time the share of time deposits in total deposits rose substantially in recent years. We have to consider, however, that money market and loans usually turn over regularly, resulting in longer term maturity than as stated in the loan contract. In regard to rural banks, it is surprising to see an absence

Credits Granted by Banking Institutions by Maturity and Percentages of Total Credits Granted

	Commercial Banks	Savings Banks	PDB	Rural Banks	DBP	Total
1973						
Short term	44,546.2	39.1	17.2	966.2	930.0	46,498.8
	(95.4)	(25.7)	(21.2)	(90)	(26.5)	(90.3)
Intermediate term	826.9	32.7	48.1	107.4	981.5	1,996.6
	(1.8)	(21.5)	(59.3)	(10)	(27.9)	(3.9)
Long-term	1,311.5	80.2	15.8	-	1,604.0	3,011.5
	(2.8)	(52.8)	(19.5)	( )	(45.6)	(5.9)
Total	46,684.6	152.0	81.1	1,073.6	3,515.5	51,506.9
	(100.0)	(100.0)	(100.0)	(100)	(100.0)	(100.0)
1974						
Short term	76,925.3	186.9	28.7	1,642.0	761.9	79,544.8
	(93.4)	(55.8)	(28.7)	(90.0)	(23.5)	(90.6)
Intermediate term	2,393.2	26.2	47.7	182.5	1,007.3	3,656.9
	(2.9)	(7.8)	(47.7)	(10.0)	(31.1)	(4.2)
Long-term	3,004.3	121.7	23.6	-	1,474.8	4,624.4
	(3.7)	(36.4)	(23.6)	( )	(45.4)	(5.3)
Total	82,322.8	334.8	100.0	1,824.5	3,244.0	87,826.1
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
1975						
Short term	112,617.2	193.0	25.3	2,242.7	1,216.0	116,294.2
	(98.5)	(56.6)	(25.3)	(90.0)	(20.5)	(95.3)
Intermediate term	1,057.9	4.6	53.7	249.2	1,158.6	2,524.0
	(0.9)	(1.3)	(53.7)	(10.0)	(20.0)	(2.1)
Long-term	691.0	143.5	21.0	-	2,342.6	3,198.0
	(0.6)	(42.1)	(21.0)	( )	(59.5)	(2.6)
Total	114,366.1	341.1	100.0	2,491.9	5,933.2	122,016.2
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

1976						
Short term	129,460.2	251.2	26.2	1,693.3	1,215.4	132,646.3
	(98.2)	(35.3)	(26.2)	(990.0)	(15.5)	(93.3)
Intermediate term	917.7	80.8	53.7	188.1	1,554.4	2,794.7
	(0.7)	(11.4)	(53.6)	(10.0)	(20.0)	(2.0)
Long-term	1,345.6	379.6	20.2	-	5,055.0	6,800.4
	(1.0)	(53.3)	(20.2)	( )	(64.5)	(4.8)
Total	131,723.5	711.6	100.1	1,881.4	7,824.8	142,241.4
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
1977						
Short term	153,680.2		28.4	1,859.1	563.9	156,131.6
	(98.3)		(28.4)	(90.0)	(5.8)	(92.8)
Intermediate term	1,639.5		53.0	206.6	1,794.9	3,694.0
	(1.0)		(53.0)	(10.0)	(18.5)	(2.2)
Long-term	1,018.9		18.6		7,356.0	8,393.5
	(0.7)		(18.6)		(75.7)	(5.0)
	156,338.6		100.0	2,065.7	9,714.8	168,219.1
	(100.0)		(100.0)	(100.0)	(100.0)	(100.0)

NOTE: Figures in parentheses indicate percentages of total credits granted.

of long-term loans granted in the 70s. Like loans at commercial banks, rural bank intermediate loans are renewed so that their actual maturity becomes longer than as reported.

This problem of maturity is discussed in more detail in Chapter 8 as we analyze the sources and uses of funds.

3. Performance and Structure of Private Commercial Banks

We observe earlier the rapid growth of the assets of commercial banks. This growth involved not so much growth in new banks but more in the growth in size of existing banks and in its network of branches. There were about 1,370 in 1979. By 1972, there were 33 banks. This number fell to 26 by 1979 following the Central Bank policy to encourage growth of bank size by restricting the number of banks operating.

Table 3.6 gives data on the sector's structure and performance. We find that in 1972, bank (asset) size ranged from ₱66M to ₱4638M. In 1977, the range was ₱300M to ₱19,238M and in 1978, the range was ₱561 to ₱4442. We also find these banks growing at uneven rates, their growth rate ranging from 148 percent to 1,261 percent over the 1971 to 1978 period. As a result, their relative position frequently shifted so that among

Table 3.6

ASSETS OF INDIVIDUAL BANKS AND THEIR EARNINGS TO EQUITY RATIO AND ASSETS TO EQUITY RATIOS
1970s

Private Domestic	1978	1977	1976	1975	1971	Earnings/Equity 1975-78	Assets/Equity 1975-78
1. Bank of the Phil. Islands[1]	₱ 4,442.0	₱ 3,173.0	₱ 2,641.3	₱ 2,107.0	₱ 592.2	14.90	9.66
People's					276.0		
2. Metropolitan Bank	4,073.0	3,002.0	2,111.0	4,612.0	310.0	17.97	16.48
3. Allied	3,709.3					18.70*	14.30*
Genbank			795.1	731.0	258.9		
4. United Coconut Planters Bank	3,437.0	2,275.0	1,172.3	668.3		26.96	9.45
FUB					159.3		
5. Phil. Commercial and Industrial Bank[2]	3,236.4	2,451.0	2,085.1	1,356.2	620.4	9.51	12.18
Merchants				327.4	127.0		
Commerce				506.0	282.0		
6. Far East Bank & Trust Company	3,202.3	2,554.0	2,238.0	1,756.1	372.0	16.83	11.84
7. Rizal Commercial Banking Corporation	3,092.3	2,515.0	2,191.2	1,570.1	537.0	17.14	15.11
8. China Banking Corporation	2,815.0	2,260.0	1,853.0	1,527.0	682.0	18.79	9.20
9. Pacific Banking Corporation[3]	2,544.4	2,070.1	1,803.4	1,248.0	483.0	20.80	26.30
Progressive				75.1	67.2		
10. Consolidated Banking Corporation	2,524.2	2,060.4	1,775.0	1,254.0	557.4	17.62	10.20
11. Equitable Banking Corporation	2,444.0	2,184.0	1,881.0	1,458.0	633.0	14.85	8.95
12. Manila Bank	2,207.0	1,633.3	1,611.3	1,347.0	352.0	11.36	10.41
13. Commercial Bank and Trust Co.	1,985.0	1,677.0	1,345.0	1,146.0	372.0	15.88	10.87
14. Philbanking	1,953.0	1,609.4	1,605.0	1,173.0	318.2	12.96	11.52
15. Insular Bank of Asia and America[4]	1,814.4	1,795.3	1,502.1	1,209.1		15.38	9.83
Asia					142.3		
First Insular					176.0		

[1]Merged with People's Bank in 1974.

[2]Merged with Merchants Banking Corporation and Phil. Bank of Commerce.

[3]Merged with Progressive Commercial Bank.

[4]Merger of Bank of Asia and First Insular Bank of Cebu.

Table 3.6
(Continued)

Private Domestic	1978	1977	1976	1975	1971	Earnings/Equity 1975-78	Assets/Equity 1975-78
16. Traders Royal Bank	₱ 1,802.0	₱ 1,135.0	₱ 771.0	₱ 500.3	₱	4.46	5.49
Traders Commercial					114.0		
17. Prudential	1,604.0	1,444.0	1,473.0	1,187.2	468.1	16.06	10.40
18. Philippine Bank of Communications	1,410.3	1,017.0	916.0	950.0	305.0	14.50	7.34
19. Security Bank & Trust Co.	1,369.4	973.0	710.0	521.2	372.0	9.88	7.34
20. Associated Citizens Bank[5]	1,110.3	1,055.0	1,022.3	742.1		14.24	8.31
Associated					104.0		
Citizens					163.0		
21. Interbank	976.3	611.1				9.23**	9.14**
Continental					133.0		
22. City Trust	824.2	654.0				12.25	5.81
			475.3	375.0	106.1		
23. Republic Planters Bank	745.4					n.a.	10.20
Republic[6]		301.4	312.3	289.0	270.0		
24. Filmanbank	710.0	634.0	586.1			7.55***	9.31
Filipinas				353.0	96.2		
Manufacturers				146.4	129.4		
25. Producers	682.0	481.0	351.3	369.0	30.0	9.12	4.46
26. Phil. Trust	561.0	444.3	367.4	350.0	132.3	11.01	3.64
27. Overseas	-	-	-	-	-		
Overall (Private Domestic)	₱55,272.2	₱41,919.3	₱33,592.3	₱26,450.4	₱9,734.3	14.32	4.97

Source: 1978-CB Factbook; 1976-SGV 1978 Table F1975-SGV 1975 Table F_1 1974-SGV 1974 Table H; 1971-SGV 1971 Table D_1 1969-SGV 1969 D_1; 1968-SGV 1968.

[5]Merger of Associated Banking Corporation and Citizens Bank.

[6]Merger of Filipinas Bank and Manufacturers Bank.

the ten largest banks in 1971, only five maintained their rank in 1977. Of the five largest in 1971, only two stayed at this rank by 1978. There were big shifts in the late 70s. Two new giants, the Allied Bank and the United Coconut Planters Bank, each absorbing small banks, were established in 1977.

The rise of large banks and their shifting position may be explained by several factors: performance, mergers, acceptance of foreign equity, and special government support. The expansion of a bank depends to a significant degree on its ability to increase the intermediation activity. This, in turn, determines profit rate. Thus, there is a direct relation between a bank's ability to expand its intermediary services and its assets. The level of profit is in turn determined by the level of output.

Statistics show that the ability of banks to intermediate differs. This is reflected by assets to net worth ratio which showed wide variation among banks. Profit rates also varied ranging from .01 to .24 for 1972, 1973 and 1974; .01 to .30 for 1975; .02 to .21 for 1976; and .02 to .30 for 1977. Most banks earned more than 10 percent on their equity.

It is expected that the profit rate of financial intermediaries will depend on how well they manage their portfolio and the level of their

intermediation activity at a given net worth. Lamberte is developing an econometric model of cost and revenue behavior of banks. Among others, it will explain variation in the profit rates of banks and what is the optimal bank size and portfolio. In the meantime, we have the findings of Roxas and Reyes (1980) that profit rate and intermediation rates are highly positively correlated. Intermediation rate was reflected in assets to equity ratio.

The effect of size was tested by regressing net income on equity. There was a very high positive relation between these variables but the elasticity at the mean was less than unity for all years except in 1974 when its value was 1.02. This implies that profit rate did not increase with bank size. R^2s were very high, ranging from .65 to .92 for all years except in 1972. R^2 was .04 then. The students interpreted the 1972 result as reflecting the uncertainty due to the declaration of Martial Law in that year.

Two other factors contributed to the growth of individual banks -- merger and foreign equity contribution and special government support. In 1973, the Monetary Authority adopted a recommendation of the 1972 IMF Mission to the Philippines of increasing the size of commercial banks and their equity contribution. Each bank was required to have at least ₱100 million equity. Early this year (1981), the Universal Banking Law[3] was put in effect. This law further encourages size growth by merging and other means. Universal banking status is granted to banks

[3]The law frees commercial and other banks to engage in many activities which they were formerly restricted to do such as acceptance of demand deposits by savings banks and acquiring equity in other financial and non-financial enterprises by all banks.

with more than ₱500 million equity. Since this regulation was imposed, 14 banks have merged into six and eight have accepted foreign capital, including three that merged.

In addition to foreign equity, two large sources of funds became available to some banks. The United Coconut Planters' Banks's extraordinarily rapid growth was mainly a result of the deposit into this bank of the large revenue from the levy on coconut output. To illustrate the dimension of the support, we point to a conservative estimate of revenue collection in 1979 of around a billion pesos. The rate of levy was roughly calculated to be from 30 to 50 percent of the export value of coconut product. The tax proceeds do not go to the Treasury but are deposited as the farmers' contribution to the coconut fund at the UCPB. Except for minor allocation to subsidize domestic oil consumers (20 percent at most of the levy) and for scholarship (less than 5 percent), the fund remains under the personal control of the officers of the Philippine Coconut Authority, the UCPB and the United Coconut Millers (Unicon). This rather irregular levy and its disposition amount to a grant of confiscatory power to PCA, monopoly of a source of fund to the UCPB, and a monopoly of export and milling to Unicon. The efficiency and equity implications of this legislation are alarming but are not within the scope of this paper.

A similar explanation applies to the rapid growth of an otherwise modest bank -- the Republic Bank. The proceeds from the export levy on

sugar also go into this bank rather than to the Treasury. In addition to these two cases of very special support, loans for capital expansion have been granted by the Central Bank to selected banks since the rule on merger became effective.

The following domestic banks have merged:

1. Bank of the Philippine Islands (existing) and People's Bank and Trust Co., later with the Commercial Bank and Trust Company
2. Pacific (existing) and Progressive Commercial Bank
3. First Insular Bank of Cebu with Bank of Asia and America (now Insular Bank of Asia and America)
4. PCIBank (existing), Philippine Bank of Commerce and Merchant Banking Corporation
5. Associated and Citizens now Associated Citizens Bank
6. Manufacturers and Filipinas now Filmanbank
7. The Land Bank absorbed the Bancom Development Corporation.

The following accepted equity from foreign investors:

		Foreign Investor	% of Equity Participation
1.	BPI	Morgan Guaranty Trust Co.	20.4
2.	Comtrust	Chase Manhattan Bank	20.0
3.	FEBTC	Chemical International Finance of New York	12.7
4.	Rizal Commercial Banking Corp.	Continental International Finance Corp.	30.0
5.	Security Bank & Trust Co.	Bank of Nova Scotia	30.0
6.	Traders Royal Bank	The Royal Bank of Canada	30.0
7.	Feati	First National City Bank of New York	30.0
8.	General	Grindlay's Bank Ltd.	31.22

4. Commercial Bank Organization

We looked into a possible monopoly base of the large private domestic banks as indicated by their relative importance in the sector and their conglomeration with other corporations, financial and otherwise. The 26 private domestic banks are ranked by their 1978 asset values and divided into three groups -- large, medium, small banks. In 1978 and 1979, the share of the largest five banks was quite large (35 percent) and that of the nine largest more than one-half of the private domestic bank assets. Their share dropped to 31 percent when taken in proportion to the whole commercial banking sector since the PNB and the foreign sector comprised a large group (almost 40 percent). In spite of their large share, the large banks do not seem to pose at present a basis for oligopoly power. The PNB and other government banks forming a very large group can operate as a strong countervailing force against the large private domestic banks. And the foreign branches, though not a dominant group, opens the domestic sector to some foreign competition. We might anticipate, however, a further concentration of banks under the universal banking law and with the forthcoming (July 1981) deregulation of interest rates. Already this year (1981), Bank of the Philippine Islands merged with the Commercial Bank and Trust Company in a move to acquire a universal bank status. (Please see Table 3.7.)

Moreover, we find in Table 3.6 that some banks have been able to increase their size rather rapidly. New giants could rise overnight such

Table 3.7

PERCENTAGE SHARE IN COMMERCIAL BANK ASSETS OF THE LARGEST PRIVATE BANKS, THE PNB AND THE FOREIGN BANKS, 1971 and 1978-1979

	1971		1978 and 1979 Combined	
	Share in Private Domestic Banks	Share in All Banks	Share in Private Domestic Banks	Share in All Banks
Top Five	31.7	20.5	34.6	19.5
Top Nine	50.8	32.6	55.0	31.3
Second Nine	29.4	18.1	31.0	18.1
Private Domestic to Total		61.6		59.3
PNB to Total		26.8		25.9
Foreign to Total		9.7		12.9
Philippine Veterans Bank		2.1		2.2

Source: Table 3.6.

as Allied Bank and the United Coconut Planters Bank. There was great volatility among banks and even among the giants. Between 1971 and 1975, and 1975 and 1979, only two among the top five remained at the top, with the ten largest shifting among themselves in their relative sizes. Three banks failed between 1967 and 1976, two of which were reestablished under new names.[4] Small banks might be vulnerable to merger. The absorption by the Land Bank of Bancom Development Corporation rapidly increases its relative importance and adds a potentially large bank to the system.[5] More mergers and foreign equity participation may be expected in the future if universal banking proves profitable and as a way to absorb weak banks.

The universal banking law allows commercial banks to invest in other banks. One possible direction is for some large banks to acquire controlling interest in small savings and rural banks, especially those that have not been so successfully operated. We might also expect poorly managed rural banks not to be able to compete with larger banks under unregulated rates. In such a case, they may either fold up or be absorbed by the larger banks. In conclusion, we have reasons to expect increasing concentration of banking. With a large government sector and an active foreign sector, such concentration may not result in oligopoly pricing. The danger paused by this kind of market structure is different.

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[4] We have no report as of this date on this newly-established publicly supported bank.

[5] The Allied Bank and Interbank took over two of these.

5. Conglomeration

Philippine business is allegedly controlled by groups of families. One observes the Zobel-Ayala enterprises, the Puyat, Madrigal, Disini groups of industries, and others. It is not easy to document controlling interest, less so, group control of business. The work of John Doherty, a Jesuit, documents the affiliation of firms through their interlocking directorate. Interlocking directorate, by itself, does not mean control. More information such as equity share is needed to be able to measure the extent of control of a group of entrepreneurs over a set of firms. But such information is not readily available. Position in a firm may be used but this can be confounded in the relationship of officers to the head of a group of firms. Interlocking directorate may underestimate the influence of one family since it traces only each director's firm affiliation, not of related individuals. The sons and daughters of the head of a conglomerate may be fanned out as directors to different firms. Each may interlock with one or two other firms. The relevant interlock is the whole family's, not each son's or daughter's. Individual-based interlock does not therefore distinguish family affiliation nor the quality of directorship, whether a director is a principal one or not. Despite these qualifications, Doherty's study provides a good starting point at describing the affiliation of the major business enterprises in the country and provides some insight into possible controlling groups. Even at the individual level, the affiliation he found was very extensive. Interestingly enough for our purpose, he uses commercial banks

as the basis of affiliation. We expect that in most cases the interlocking directorate involves conglomeration of varying degrees. (Conglomeration is joint ownership of several firms.)

Doherty chose 12 private domestic banks which include five that belong to the 10 largest in 1977 and four controlled by naturalized Chinese. Their 605 directors were traced to the directorship of the top 1,000 corporations in the country. The banks were selected on the basis of available data and they happen to represent all size groups of the industry. The affiliated firms were then classified into fine industrial groupings. We reproduce on page 47 his summary table and two charts on financial affiliation.

To be noted is the prevalent interlocking directorship of commercial banks with two other types of financial intermediaries -- investment houses and insurance companies. This was in spite of the law (Presidential Decree No. 129) which prohibited interlocking of banks and investment houses. Such interlocking increases the relative importance of the banks in the financial market. For instance, the Bank of the Philippine Islands, one of the 5 largest banks, interlocks with two major investment houses and several large insurance companies, the Far East Bank interlocks with Philippin American Life and General Insurance Co., the largest insurance company, Bancom Development Corporation, the largest investment house, and the Private Development Corporation of the Philippines (PDCP), another large investment house.

Bank interlocking with non-financial corporation is found to be very extensive, covering food, construction, mining, metal, chemical, household appliances, heavy equipment, textile, pharmaceutical, paper, shipping, real estate and petroleum products. To illustrate the extent of interlock of five large family group enterprises and their banks, we reproduce Table 3.7. Doherty further considered the industrial concentration of the interlocked group. Note that the firms studied were from the top 1,000 corporations meaning that, they were the largest firms in each industry. He found significant concentration among some of the conglomerated firms.

Conglomeration adds another complexity to the working of our financial market. It could influence the allocation of funds especially when these have to be rationed. The financial system consists of a large public sector catering to priority activities or borrowers, a large conglomerated commercial and financial corporations, a small segment of many small rural and savings banks and a neglected securities market. We cannot expect competitive trading in such a financial market.

Table 3.8

NUMBER OF COMPANIES INTERLOCKED WITH SELECTED COMMERCIAL BANKS, BY INDUSTRY, 1977

Bank of the Philippine Islands
Zobel-Ayala Group

- 8 Petroleum and Chemical Companies
- 2 Mining Companies
- 2 Machinery Companies
- 2 Automobile Companies
- 2 Textile Companies
- 1 Pulp and Paper Company
- 3 Real Estate Companies
- 2 Hotel Companies
- 2 Communications Companies

Far East Bank and Trust Company
Fernandez and Yulo Group

- 3 Chemical Companies
- 6 Mining Companies
- 2 Heavy Equipment Companies
- 3 Automobile Companies
- 3 Textile Companies
- 5 Pulp and Paper Products Companies
- 1 Pharmaceutical Company
- 1 Tobacco Company
- 3 Shipping Companies
- 1 Real Estate Company
- 2 Hotel Companies
- 2 Communications Companies

Insular Bank of Asia and America
Aboitiz Group

- 1 Heavy Equipment Company
- 1 Industrial Gases Company
- 3 Automobile Companies
- 2 Pulp and Paper Companies
- 1 Tobacco Company
- 5 Shipping Companies

China-Rizal Banking
Yuchengco-Sycip Group

- 5 Mining Companies
- 2 Heavy Equipment Companies
- 1 Fertilizer Company
- 5 Automobile Companies
- 6 Textile Companies
- 7 Pulp and Paper Companies
- 3 Pharmaceutical Companies
- 2 Tobacco Companies
- 2 Communications Companies

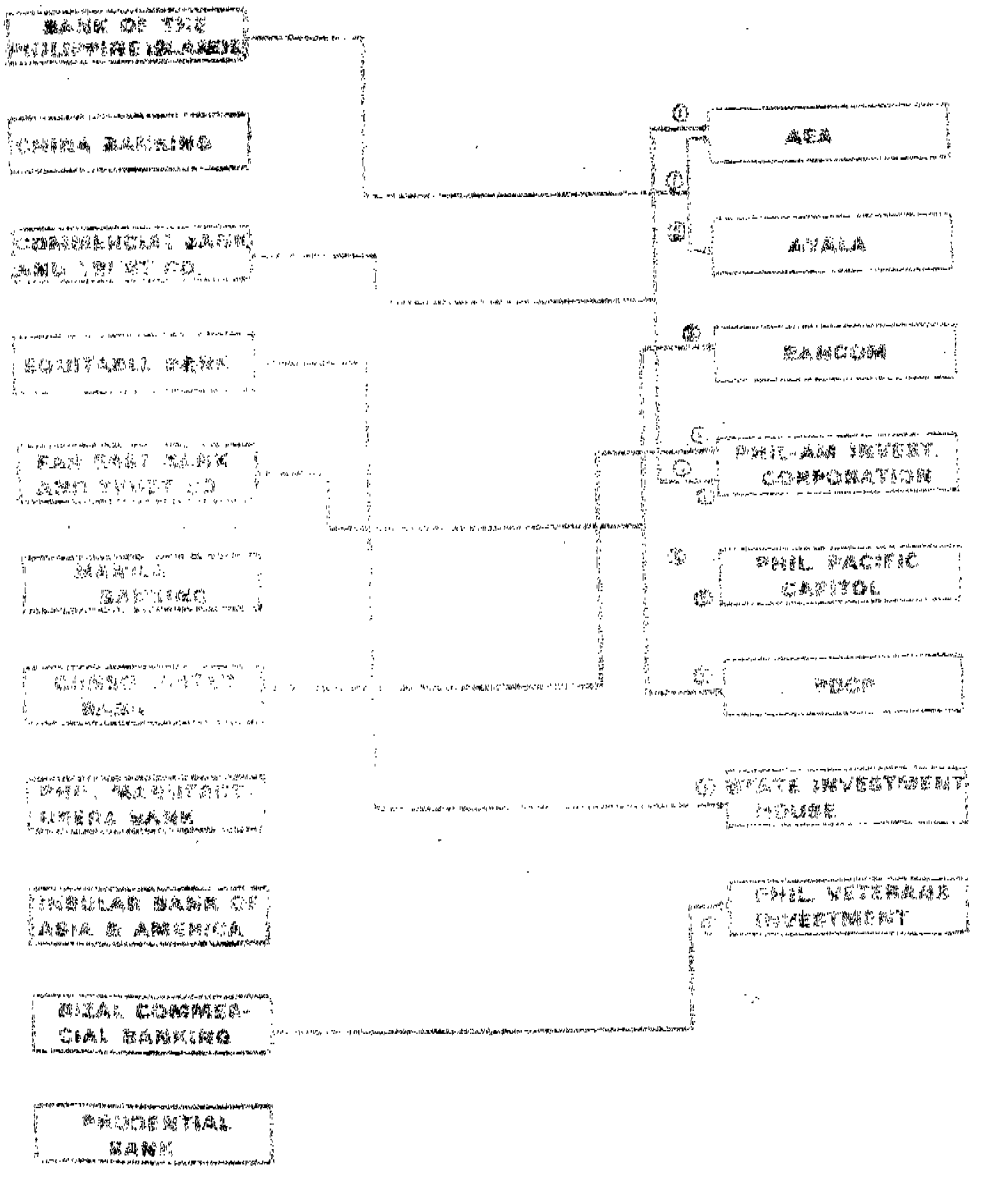
Manila Banking
Puyat Group

- 1 Chemical Company
- 5 Mining Companies
- 1 Explosives Company
- 2 Automobile Companies
- 3 Textile and Fiber Companies
- 1 Pulp and Paper Company
- 3 Shipping Companies
- 1 Real Estate Company

Source: Doherty (1979), pp. 98-99.

CHART 3.1

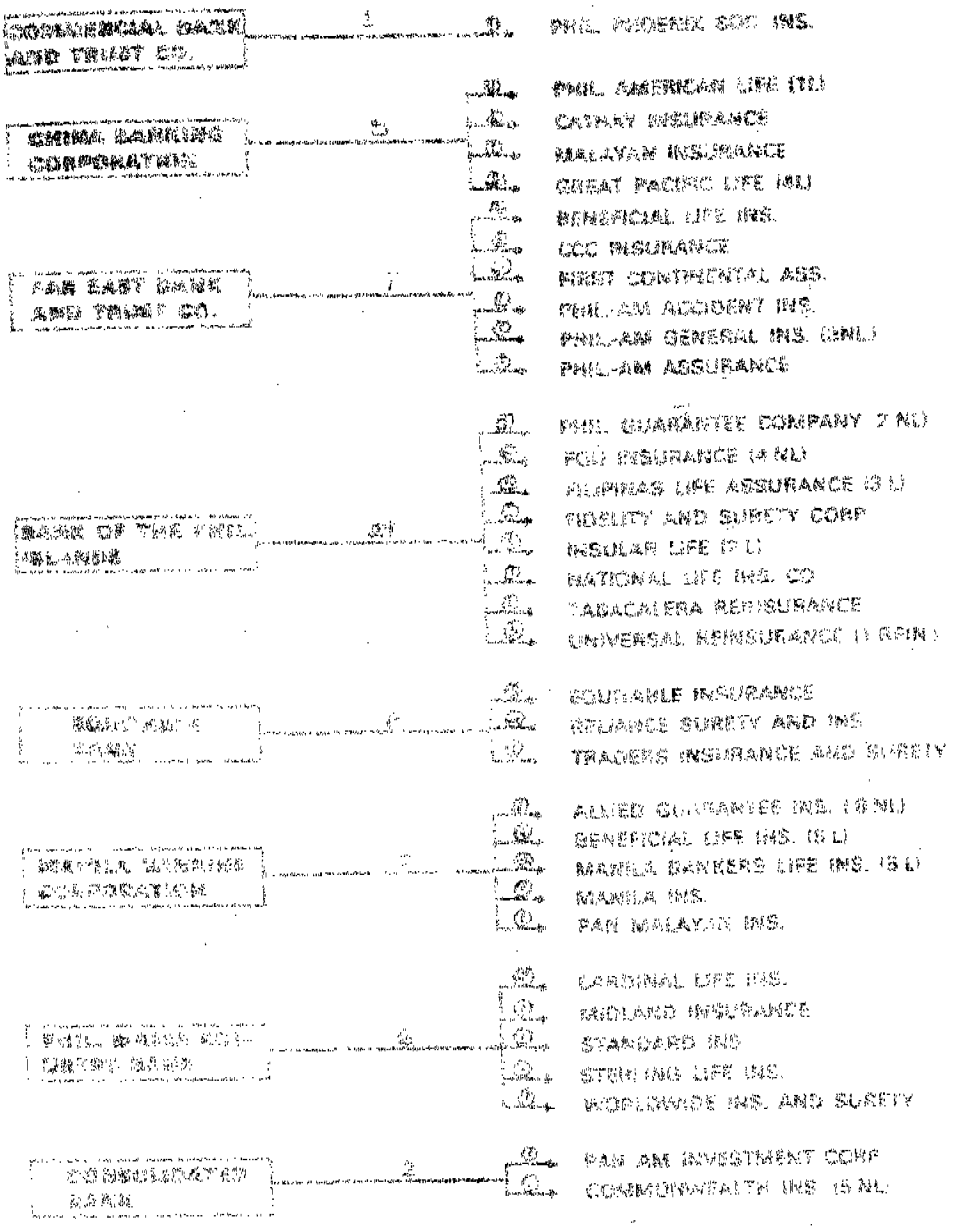
BANKS AND INVESTMENT HOUSE INTERLOCKS



Source: Doherty (1979), p. 1)

CHART 3.11

BANKS AND INSURANCE COMPANIES



Source: Industry (1979), p. 15.

CHAPTER 4

Portfolio Choice Theory

From the saving-lending/borrowing decision discussed in Chapter 2, we now go into the more complex choice of what forms of lending to make, or equivalently, what forms of assets to hold saving and the initial wealth. The literature has, as a whole, treated saving and portfolio decisions as being made independently of each other. The literature concentrated on the behavior of asset returns over one time horizon and on methodologies for arriving at efficient portfolios. This focus allowed the neglect of the wealth effect on portfolio choice and, therefore, the interaction of saving and portfolio choices. Such neglect limits the usefulness of the literature in understanding the effects of wealth distribution and growth on the equilibrium market portfolio and behavior of asset returns.

Portfolio theory starts with a given value of wealth which is to be held in alternative assets. In order to link portfolio choice to saving, we may argue that the returns and risk to alternative portfolios influence the saving rate and therefore the value of wealth in the succeeding period. This becomes the new wealth level to be allocated to different assets in the next period. In a later chapter, we will speculate on the effect of wealth on portfolio. For now, we simply discuss the basic portfolio theory and use it to analyze the Philippine experience.

At the heart of the portfolio choice theory is diversification. In general, diversification reduces risk. There are, however, innumerable ways of diversifying from a set of available assets. The theory specifies a measure of risk and provides a methodology for obtaining the best or the efficient portfolio choice set. The desired portfolio is to be chosen from this set, using conventional utility maximization model.

There are two types of risk in financial assets -- risk of default or credit risk and risk due to uncertainty about returns. The latter risk is measured by the variance of returns. Other measures have been suggested such as the half variance (taking account of negative deviations from the expected returns only). The total variance of returns has been the most accepted measure in theoretical as well as empirical studies. This measure is particularly suited to measuring risk of equity issues.

Alternative portfolios can be formed out of N assets including one-asset portfolios of 1, 2, ..., or the N^{th} asset. Each portfolio gives an expected return, R_p equal to the weighted expected returns of the assets in the portfolio, $\sum_{i=1}^{N} x_i E(R_i)$. x_i is the proportion of wealth invested in asset i and R_i is its observed returns. The risk of a portfolio is not as simply estimated as portfolio returns. Financial assets are substitutes of each other and exogenous variables

tend to affect their returns in the same direction. For these reasons, returns of different assets tend to be positively correlated, though there may be special cases where the correlation is negative. In either case, the risk of a portfolio would depend not just on the own variances of the component assets but on their covariances.

Risk of a portfolio, V_p, is thus measured by

$$V_p = \sum x_i \sum x_j \text{ cov } (R_i, R_j) \qquad (1)$$

$$\sum_{i=1}^{N} x_i = 1$$

Assuming perfect divisibility of assets or portfolios, innumerable portfolios can be formed out of available assets. We may imagine a space of portfolio returns and risk that can be derived from these assets as pictured below.

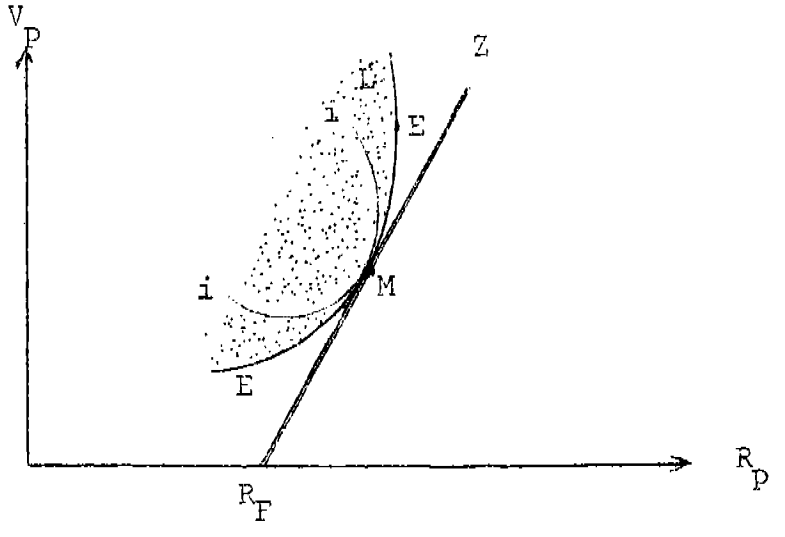


Chart 4.1

Some are inferior to others in the sense that their risk is greater for a given level of return. The positive outer boundary of the space of portfolio return-risk is the best or the efficient portfolio frontier. Along the frontier, risk is at the minimum at every level of portfolio return, or return is at the maximum at every level of risk.

The efficient frontier of risky assets, EME, may be solved by quadratic programming. For each value of portfolio return R_p^*, we find the portfolio that minimizes the portfolio variance, V_p. Given N assets,

$$\text{min.} \quad V_p = \sum_{i=1}^{N} x_i \sum_{j=1}^{N} x_j \operatorname{cov}(R_i, R_j) \tag{2}$$

$$\text{s.t.} \quad \sum_{i=1}^{N} x_i = 1$$

$$\sum_{j=1}^{N} x_i E(R_i) = R_p^*$$

A portfolio P is defined by values of the x_i's.

$$x_i = \frac{P_i Q_i}{W}$$

P is the price and Q, the number of units of asset i.
W is total wealth.

The availability of a riskless asset, or the possibility of lending or borrowing at a riskless rate R_F generates a new efficient frontier. We shall call this market line. As shown in Chart 4.1, the new frontier dominates the efficient frontier of risky assets. Wealth can now be held in alternative combinations of the riskless asset and any efficient portfolio of risky assets R_p.

(3) $R_p = x_F R_F + (1 - x_F) R^*_p$

(4) $V_p = (1 - x) V^*_p$

R^*_p is the return on an efficient portfolio of risky assets with risk V^*_p. This implies that the combination of expected returns and standard deviation provided by portfolios involving risk-free asset F and an efficient portfolio R_p must fall along a straight line and passing through R_F. The dominant line is that which passes through R_F and is tangent to the EME curve at portfolio M. This new frontier which dominates the frontier of risky assets is now considered the (efficient) market line, $R_F MZ$.

Once the efficient frontier is derived, the theory applies conventional economic tools for optimization. A two-variable utility function, $U(R_p, V_p)$ where $\frac{dU}{dR_p} > 0$ and $\frac{dU}{dV_p} < 0$, is assumed for each decision unit. The U-functions are reflected in indifference curves that are positively sloped to reflect risk aversion.[6] They are assumed convex and non-intersecting. The tangency point between the efficient frontier and the indifference curve of an individual gives his optimal point.

Theory assumes that R_F is the lending and borrowing rate. Individuals chooose along the dominant or the efficient market line, $R_F MZ$. At the tangency point M, where portfolio is purely of risky assets and holding of risk-free asset, x_F is zero. Some may choose points below M where $x_F > 0$, some at M where $x_F = 0$, others above M where $x_F < 0$. Investors of this last type borrow to invest in risky assets. Their holding of portfolio M is greater than their original wealth.

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[6] Some people may be plungers, some risk-lovers. We expect that risk averse individuals form the majority wealthholders and that the former two types do not significantly affect the determination of market returns.

The micro analysis leads to the derivation of the aggregate demand for the riskless asset at given values of risk and returns of available assets which generate the efficient frontier. As assets' risk and returns change, the EME curve shifts, and so with the R_FMZ line. We can therefore analyze changes in demand for riskless assets (or risky assets) as returns and risk change. This was very clearly illustrated by Tobin (1958). From here, the efficient market model of Fama (1965), Mossin (1966), Lintner (1965) and Sharpe (1964) developed. Market adjustment under competitive assumptions leads to the equilibrium rate of return of available assets. This is reviewed briefly below.

The model assumes equal distribution of information among investors, perfect divisibility of assets, zero transaction cost, decision over one time horizon and equal lending and borrowing rate at R_F. The first assumption implies that the market opportunity curves R_FMZ and EME are the same for everybody. Individual portfolios will differ depending on their preferences. Their optimal portfolios will be the tangency of their indifference curve and R_FMZ the market line. Assuming equal borrowing and lending rate at the risk-free rate, some will be lending, others will be borrowing. Those whose optimal point is to the left of point M will be lending, i.e., their holding of risk-free asset (say, bank deposits) is positive. Those to the right of M will be borrowing and holding a portfolio size greater than their wealth. The market is at equilibrium at the tangency

point of market line $R_F MZ$ and the EME curve. At this tangency, net holding of riskless assets is zero and there is equality between available assets and their demand.

If the aggregate value of lending, $\sum_{k=1}^{K} x_{FR}^{k} W_k$ k=1, 2 ... K individuals, is not equal to the aggregate value of borrowing, prices at securities will change. More precisely, if $\sum_{k=1}^{K} x_F^k W_k > 0$, there is excess supply of risky assets. Returns will go up as asset prices fall. This will shift the EME and the $R_F MZ$ curves upward, leading to substitution of risky assets for the riskless assets. Asset prices would continue to change until total lending is equal to total borrowing and the excess supply or demand is eliminated. Note that equilibrium in the market means that the total holding of the riskless asset is zero or deposit holding.

From this equilibrium condition, the model proceeds to the equilibrium structure of rates of return of risky assets. Consider portfolios of any asset i and M portfolio. The expected return-variance of alternative portfolios of asset i and M will look like iMi curve. iMi will also be tangent to the EME curve at M where x_i is zero, $x_M = 1$. Since $R_F MZ$, EME and iMi are all tangent to each other at M, their slopes are equal or

$$\delta\sigma(R_i)/\delta E(R_i) = \frac{\delta\sigma(R_p)}{\delta E(R_p)} \quad \text{at} \quad x_i = X_F = 0$$

Evaluating the derivatives at $x_i = X_F = 0$, we have

$$\frac{\text{cov}\,(R_i, R_M) - \sigma^2(R_M)}{[E(R_i) - E(R_M)]\,\sigma(R_M)} = \frac{\sigma(R_M)}{E(R_M) - R_F} \qquad (7)$$

To get an expression for expected return on asset i solve (7) for $E(R_i)$. This gives

$$E(R_i) = R_F + \frac{[E(R_M) - R_F]}{\sigma^2(R_M)} \text{ cov } (R_i, R_M) \qquad (8)$$

$$i = 1, 2, \ldots N.$$

The risk premium in the expected return on asset is

$$E(R_i) - R_F = [\frac{E(R_i) - R_F)}{\sigma^2(R_M)}]\text{cov } (R_i, R_M) = \lambda \text{ cov } (R_i, R_M) \qquad (9)$$

$$i = 1, 2, \ldots N.$$

Equation (9) applies to all assets in the market. λ is the average premium or price per unit risk in the market, and the risk of asset i is measured by $\text{cov}(R_i, R_M)$. The $\text{cov } (R_i, R_M) = \sum_{i=1}^{M} x_i \text{ cov } (R_j, R_i)$, $i = 1, 2, \ldots N$. Equations (8) and (9) give a testable hypothesis of the CAPM.

The tests of the model on the more advanced security markets such as the United States and Britain gave mixed but not altogether bad results. The random walk behavior of security prices which was observed as early as 1900 by Bachelier and later by Cowles [1937], Kendall [1953],

Roberts [1959] and others are consistent with the efficient market model. The famous works of Samuelson [1965] and Mandelbrot [1966] conclude that properly anticipated prices fluctuate randomly. The studies of stock-split and its announced effect on future security prices arealso consistent with the assumption about the quick spread of and fast action on new information [Fama, et al. 1969]. The studies show that prices adjust to a new level fairly quickly so that no serial correlation of prices takes place. An evaluation of performance of mutual funds shows that as a whole, they earn no better than a random selection of assets in the market. These studies confirm the predictions of the theory's assumption about the distribution of information. The market would not behave as observed if this assumption did not bear.

The more direct tests of the efficient market theory via the asset pricing equation gave less conclusive results. A positive relation between security returns and β_j or of the market rate R_M has been obtained but the predicted values of α_0's and α_1's were not always borne out. Variants of the pricing equation have been developed and tested including one which takes market factor, rather than risk-free assets as the other alternative to risky assets. It may be concluded that the empirical analyses have not demolished the efficient market model. On the contrary, there has been ample support for it, given some qualification.

We presented the efficient market model as an analytical framework for our study though we knew beforehand that some of its major assumptions have to be relaxed to fit Philippine conditions. A preliminary look at the market leads us to conclude that there are significant imperfections there to warrant a reformulation of the model. The more serious imperfections are identified based on casual observations and their implications on individual and market behavior, analyzed. In particular we discuss below indivisibilities of asset, apparent imperfections in knowledge, segmentation of the market arising from physical barriers, and imperfections other than the above and their implications on risk-return relationship.

2. Indivisibility of Financial Assets

The importance of assets' divisibility lies in the size of the wealth constraint of individual decision units. In the perfect model of portfolio selection, choice is made out of a set of efficient portfolios. The value of wealth of a given portfolio k, W^k is equal to $\sum_{j=1}^{n} P_j Q_j = \sum_{j=1}^{n} x_j W^k$, where P_j is asset price, Q_j is number of shares of asset j purchased, x_j is proportion of wealth in asset j. When assets are divisible the x_j's can take on any value from zero to one, $0 \leq x_j \leq 1$, and we can have the largest possible set of feasible portfolios.

In most markets there are assets that are denominated in relatively large amounts. There are always, however, divisible cash and savings deposits. When there are indivisibilities, say, of assets j, $j = 1, 2, \ldots m$ with divisible assets ℓ, $\ell = m + 1, \ldots n$, x_j may take on values in multiples of P_j only. Feasible portfolios will be

$$W^k = \sum_{j=1}^{m} Q_j P_j + \sum_{\ell=m+1}^{n} x_\ell W^k, \quad k = 1, \ldots, q$$

where

$$Q_j \text{ are integers, } \sum_{\ell=m+1}^{n} x_\ell = 1 - \sum_{j=1}^{m} \frac{Q_j P_j}{W^k}$$

The presence of indivisibility will result in a smaller number of possible portfolios and a discontinuous efficiency locus since the portfolio cannot be varied by small changes in the x_j's.

Given a wealth size, the larger the denominations of assets, the smaller the number of possible portfolio alternatives; and the smaller the value of wealth to be managed, the smaller the number of feasible portfolios for a given degree of indivisibility. To illustrate an extreme case of two assets, one perfectly divisible cash or deposits and one of denomination P_2. If $P_2 > W$, then the only feasible portfolio is a one-asset portfolio of cash or deposits, where

$x_{\text{cash or deposit}} = 1$. Or we may take a case where an individual may choose between two indivisible large-denominated assets, that is, A_1 and A_2 with prices P_1 and P_2 where $\frac{P_1}{W} + \frac{P_2}{W} > 1$. His portfolio choice consists of $P_1 + (1 - \frac{P_1}{W})W$ and $P_2 + (1 - \frac{P_2}{W})W$. $(1 - \frac{P_1}{W})W$ or $(1 - \frac{P_2}{W})W$ will be in cash.

The effect of indivisibility is to limit the number of feasible portfolios from which choice is made. Unfortunately for the average Filipino saver, there are many indivisible assets in the market, WORP (without recourse papers), equities and even government securities.

3. Market Information

There are two sources of imperfection in knoledge in the financial market. The average amount of information about each asset differs, i.e., some are more perfectly known than others. Secondly, information about each asset or about the market as a whole is unequally distributed. In the Philippine case, there is practically perfect information on savings deposits at commercial and savings banks and possibly near-perfect information on time deposits of differing maturities. Information on money market instruments and lending instruments without recourse is higly imperfect and is possessed by only a small number of surplus units. There may be more published information on equity shares than on money market

instruments since the stock exchange regularly publishes reports on trading in the mass media. Many registered corporations issue financial statements. Though this information is available its interpretation is no easy matter. There is no straight-forward way of estimating expected yield and riskiness and accepted methods involve difficult calculations and are based on past yield movement only.

The following sections describe the nature of major financial assets -- deposit, money market papers and direct lending or without recourse instruments.

3.1 Savings and Time Deposits

The regulated rate on savings deposit prevails throughout the economy. Hence, we may assume that this rate is well-known. The case for time deposit though also regulated is different. In the cities where banks compete with each other the interest rate on longer maturity deposits are publicized over the radio, newspapers and on walls of bank buildings. In smaller towns where there are usually only one or two banks, such advertisement for funds is not done. It is thus very likely that savers are not informed of the higher yield they can earn if they place their funds in time rather than in savings deposits. It is not to the interest of banks which have monopoly power in smaller cities and towns to so inform their clients.

Another case of imperfections is in the offer of premiums to large deposits in certain banks. Because of the ceiling on deposit rates, banks cannot publicize their interest rate offer if this happens to be higher than the ceiling. Offer of a premium for large deposits is spread by word of mouth only. Experience shows the dissemination of this information is very limited and that unlike other news items, depositors do not compare notes on what they earn on their wealth. One reason is that discussing financial matters is not socially accepted. A rough telephone canvass we conducted showed that time deposit rates varied between 12 and 16.5 percent. The maturity did not seem to affect the rate. Some banks simply give a uniformly higher interest rate. We may conclude that information on the lowest yielding savings deposits is perfect and equally distributed but not so good and unequally distributed for large time deposits.

3.2 Money Market Papers

The bulk of money market papers is a secondary issue of banks and investment houses. Their riskiness, therefore, depends on the financial condition and quality of management of the issuing institution. The risk of a bank-issued money market instrument would be equal to the risk of deposits, for both are liabilities of banks. There is greater uncertainty about the instruments issued by investment houses since they are less known and have weaker financial bases than competing commercial banks. Being relatively new intermediaries (since 1964 only)

they have not been able to fully develop their goodwill. Moreover, they are not backed by the CB for equivalent credit accommodations granted banks.[7]

Many wealthholders in the country are still unaware of the existence of money market papers or if they are, their information is imperfect. There is no mass media publication of interest rate and features of money market papers. Instead, small circulation papers such as the Business Day, the Bancom Review and other monthly pamphlets regularly report on the rates. Occasionally, the market made news when, for instance, Filcapital, the Manotoc Investment House and Agrix failed. The news coverage on their failures was rather limited and did not offer adequate information on the features of the issues and why the institutions failed. Such inadequate reporting has probably lead some investors to generalize the weakness of these companies, thus, to over-estimate the risk on placements with stable companies. On the other hand, investors in the safer investment houses probably did not apply the problem to their placement. In either case, the information was inaccurately perceived.

At this time there is no way money market risk can be measured from published information. There has been no attempt to measure it.

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[7]Until the most recent experience when a major investment house obtained CB funds to meet the demand of its money market lenders after the Dewey Dee caper.

There were some defaults but most investment houses have been able to bear them, leaving the market risk borne by investors equal to zero. Reputed investment companies and banks have even met the WORP obligations. Risk due to fluctuations in interest rate can be estimated from published reports but so far this has not been done, either.

3.3 Lending Without Recourse

Direct lending to a portfolio of borrowers that is arranged by a broker bank or investment house is becoming a popular financial investment. The investor assumes the risk of default. Its portfolio risk depends on the probability of default by the borrowing companies and the choice of the lending portfolio among borrowers. The degree of diversification is much more limited than in investment in secondary issues of financial institutions. To compare, a deposit or bank bill is a claim against the depository bank's total portfolio of loans and other assets, while placement in WORP is for a selected number of companies.

There is less information on direct lending than on regular money market instruments. An investor may take the recommended set of borrowers which the broker has evaluated and/or make an independent assessment of the borrowers. He will have to canvass the offers of various brokers. Apparently, the gross rate of interest offered to clients by brokers is competitive since it varies within a narrow range. However, there is significant variation in borkers' fees which results in a wider range in net yield. Investment brochures do

not clearly state fees or riskiness. Fees have to be negotiated by the parties. The negotiation usually takes place after the broker has been chosen. The probability of default by a firm depends, among others, on its financial conditions and quality of management. Its inancial condition is evaluated from the balance sheet and statement of operation accounts from which financial ratios used in credit evaluation are obtained -- short-term assets to short-term liabilities; liquid assets to short-term liabilities, total debt to total assets; and debt to net worth. Cash flow statements are also looked into. Ideally, financial information for several years is used in credit evaluation to gauge a firm's stability and quality of management. Some investment bank managers stated that even qualitative aspects of borrowing firms' management are considered in the evaluation.

Most credit managers here rank borrowing firms by their credit standing based on the above criteria and make their recommendation of lending portfolios to their client lenders. Lenders, therefore, have to trust the competence and integrity of their brokers in selecting their loan portfolio, or else undertake their own evaluation of prospective borrowers. The cost of individually-conducted evaluation is high and undertaking it defeats the very purpose of financial intermediation. It seems that what is needed is a systematic collection and publication of credit information by brokers aimed at facilitating investors' evaluation of yield, fees and risk.

3.4 Corporate Stocks

It is interesting to note that trading in corporate stock is regularly reported in all major dailies and over the radio and T.V.. The Manila Stock Exchange also issues a monthly report on transactions including dividends. These provide a continuous series for security analysis. However, this study is just the second attempt to undertake such an analysis so that the public has not had any useful guide for portfolio selection. Up to this time there is no information on the yield-risk curve, or on the time series of the same variables. Prices are highly volatile and sensitive to large transactions since the market is small. There is no published information on how well stock market rate compares with the risk-free rate on time and saving deposits, money market, and other financial assets.

3.5. Other Papers

The government has issued large amounts of long-term and short-term bonds. They have been held mainly by financial institutions as reserve assets; some, as primary; others, as secondary reserves. Treasury bills are specially attractive primary reserve assets because of their high yield compared with reserve deposits which have zero yield. Because of this feature, new treasury bill issues have been oversubscribed for by financial institutions. The purchase

of government securities as primary reserves releases to the government the equivalent reserve deposits by financial institutions. Its effect is monetary expansion. The government has also used other treasury bills like the Central Bank Certificates of Indebtedness (CBCI) as means for allocating commercial bank funds to priority sectors. Banks are required to allocate one-fourth of their loans to the agricultural sector or to buy CBCIs. Most of the proceeds were channelled to rice producers. There are other cumbersome features of bonds like the premyo savings bond whose earnings are to be won by lottery. There is no way an investor can estimate the average yield of the bond since information on total earnings and outstanding value of the bonds are not reported. This is indeed a strange gimmick that is hard to rationalize. Consequently, it has not become an important instrument for mobilizing small savings.

Private bonds have also failed to be marketed. Firms probably find other financial sources cheaper. As in equities, the cost of marketing is quite high. An investment house reports an underwriting cost of 5 percent.

The foregoing describes how the competitiveness of financial instruments is weakened by regulations and imperfections. With this problem, it is not easy to predict the behavior of asset returns. We approach the problem mainly by description in order to gain insight into how the market works. We chose to study in more detail equity and money market papers because of data availability.

CHAPTER 5

The Stock Market

The Philippine stock market is very small in absolute terms and in relation to the market for other financial claims. It has been volatile and is supposed to be highly vulnerable to manipulation by large investors. It includes a relatively large listing of weak mining and oil issues in which intermittent purely speculative movements take place. The list of blue chips is short and consists mainly of well-established companies like the San Miguel Corporation, Atlas Mines, and the Philippine Long Distance Telephone Company. Trading volume is small and many companies remain inactive for periods of time. These peculiar features of the market should lead to high risk. How well this is compensated by returns is the subject of this section. Here we studied the price movement of the more actively traded stocks and estimated the rate of return and risk as reflected in the variances of returns. From these estimates we obtained a yield-risk curve over a four-year period, 1976-1979. We considered as actively traded the shares that appear in the major dailies, picking the month of April of each year as the reference date to get the newspapers' listing. About 100 companies were initially chosen but only 72 of these had fairly regular trading over the four-year period. Many of them exhibited zero trading for several months at a time. Consider that about 37,000 corporations were registered with the Securities and Exchange Commission in 1978. Daily volume of transactions over the last two years ran to as little as a million pesos only.

Following conventional measures of portfolio returns and risk we calculated the market rate of return R_m and its risk, V_m, from monthly returns of 72 securities. Their systematic risk, β_j, and their own variances, σ_{jj} were also calculated. Monthly data on average price (value traded divided by the number of shares traded for each month), dividends including stock dividends, and outstanding shares, were used to estimate these variables. Our calculations are as follows:

$$r_{jt} = \frac{P_{jt} - P_{jt-1} + D_{jt}}{P_{jt-1}} \quad \text{or} \quad r_{jt} = \ell_n \left(\frac{P_{jt} + D_{jt}}{P_{jt-1}} \right)$$

$$\bar{r}_{jy} = \sum_{t=1}^{12} r_{jt}/12$$

$$\bar{\bar{r}}_{jy} = \sum_{t=1}^{48} r_{jt}/48$$

$$r_M = \sum_{j=1}^{n} Z_j r_j \; ;$$

$$V_m = \sum_{k=1}^{n} \sum_{j=1}^{n} Z_k Z_j \operatorname{cov}(r_j, r_k), \quad \text{or}$$

$$= \sum_{k=1}^{n} Z_k \sum_{j=1}^{n} Z_j \operatorname{cov}(r_j, r_k); \quad \text{and}$$

$$\operatorname{Cov}(r_j, r_M) = E\{[r_j - E(r_j)][r_M - E(r_M)]\}$$

$$= E\left[\sum_{k=1}^{n} Z_i (r_i - E(r_i)) (r_j - E(r_j)) \right]$$

where

r_j is observed monthly return

$\bar{r}_j$ is the estimate of $E(r_j)$ for a given period;

P_{jt} is the average price for month t of security j and measured as value of trading divided by no. of shares traded;

D_{jt} consists of cash and stock dividends;

$Z_j = \frac{Q_j}{Q_M}$

Q_j is the total outstanding market value of asset j, which is equal to the monthly outstanding shares multiplied by the monthly average price summed for the whole year;

$Q_M = \sum_{j=1}^{n} Q_j$; thus Z_j is the proportion of the total market value of all assets accounted by asset j;

y subscript is for the period in which the variables are calculated, 1 year and 4 years.

We calculated the variance of security returns to have an insight on how much they fluctuated from month to month.

$$\hat{\sigma}^2_{jy} = S^2_{jy} = \sum_{t=1}^{T} (r_{jt} - \bar{r}_{jy})^2/T-1$$

Please see Appendix A for details of the computation.

Here are some initial findings:

1) The market is highly volatile. The annual market rate of return moved up and down with such wide amplitude as shown below.

	r_M	$\sigma_M^2 = V_m$
1976	-0.0033	1.3641
1977	0.0434	0.3703
1978	0.4910	0.7244
1979	-0.0565	0.4585
1976-1979	0.1229	0.7259

The high market variance reflects the extremely high variances of the securities and the extremely high variation of their means with the market mean. Annual mean return of securities ranges from many large negative values to as high as 1,364 percent in 1976, 992 percent in 1977, 1,033 percent in 1978, and 844 percent in 1976. The range of the means over four years was 68 percent to -46 percent, much narrower than the yearly range but is still quite wide by developed market standards. Security risk β_j, measured by its covariance with the market (or with all securities) and weighted by market shares are, as a whole, very high with a few negative values. Many securities have values of β_j ($=\frac{\sigma_{jM}^2}{\sigma_M^2}$) greater than 1.0 which means that their variances are larger than the market variance. The number of β_j's which have negative values are shown in Table 5 below.

Table 5

Period Covered	Number of β_j's < 0	Percent of Total No. of Sec.
1976	7	9.7
1977	15	20.8
1978	5	6.9
1979	12	16.7
1976-1979	5	6.9

2) There is no apparent relationship between return and risk as shown by the plot of points of these two variables, in each year and for the whole four-year period. This implies that premium is not being paid for risk in any regular manner.

3) To verify the above initial observations we tested the efficient market equation, $r_j = R_F + (R_m - R_F)\,\beta_j$, using equation 8 or 9, i.e., $r_j = \alpha_0 + \alpha_1 \beta_j + e_j$.

The results obtained are shown in Table 5.2. Such results on the whole, do not confirm the hypothesized positive linear relationship between r_j and β_j. It is only for the year 1976 where there is a significant relationship. However, only 11 percent of the variation is explained by the regression. For the years 1977 and 1978, and for the 4-year period 1976-1979, the hypothesis is rejected at .10 level. For the year 1979, though the result is significant, the relationship is perverse in the sense that the sign of $\hat{\alpha}_1$ is negative.

The values of $\hat{\alpha}_0$ and R_F are seen to be different from each other. Column (7) of Table 5.2 shows their ratios which range from -2.89 to 2.5. The ratio of $\hat{\alpha}_1$ and $(R_M - R_F)$ are shown in column (8). The predictions of the model are that both ratios should be equal to 1.0. Although the values of $\hat{\alpha}_1/(R_M - R_F)$ are much closer to 1.0 than that of $\hat{\alpha}_0/R_F$, care should be taken in making inferences from these values due to the absence of significant relationship as noted.

Table 5.2

RESULTS OF REGRESSION ANALYSIS, OLS

Period Covered	$\hat{\alpha}_0$ (1)	$\hat{\alpha}_1$ (2)	R^2 (3)	F-Value (4)	R_M (5)	R_F^a (6)	$\hat{\alpha}_0/R_F$ (7)	$\hat{\alpha}_1/(R_M-R_F)$
1976	-0.29364	0.15503[b] (2.96806)[c]	0.11038	8.80936	-0.0033	0.1022	-2.8932	-1.4695
1977	-0.04179	0.05751[d] (1.45282)	0.02887	2.11068	0.0434	0.1074	-0.3891	-0.8986
1978	0.26004	0.06283[d] (.87667)	0.01071	0.76885	0.4910	0.1040	2.5004	0.1624
1979	0.02258	-0.22723[e] (-3.38963)	0.13929	11.48958	-0.0565	0.1194	0.1891	1.2918
1976-1979	-0.0045	0.52992[d]	0.00394	0.28081	0.1229	0.1083	-0.0416	1.6842

[a]The average of the 49-day Treasury Bill rate. Perez (1979, p. 66) used the 9% tax-prepaid return on Central Bank Certificate of Deposit.

[b]Significant at .01 level.

[c]Values in parentheses are computed t-values.

[d]Insignificant at .10 level.

[e]Significant at .005 level, but sign is perverse, i.e., negative.

These results may not be definitive in the sense that the usual stationary assumption in deriving the estimates of the parameters of the underlying probability distributions of returns of securities may not be valid.

Recall that to arrive at an estimator of the expected value $E(r_j) \equiv \mu$ of the rate of return of a security j, we used

$$\bar{r}_j = \sum_{t=1}^{T} r_{jt}/T,$$

where $T = 12$ or 48 (months). That is,

$$\mu_j \stackrel{\sim}{=} \hat{\mu}_j = \bar{r}_j.$$

Clearly, using a larger value of T, i.e., extending the period of observation, will not provide a better estimate for μ_j using $\bar{r}_j$ as the estimator if, in fact, μ_j is non-stationary.

This could serve as one possible explanation of the poor explanatory results of the regression analysis. If we look at the F-values or R^2 for the four-year period $(T = 48)$ and compare them with those of the one-year periods $(T = 12)$, the former are much lower compared to the latter. For example, the lowest value of R^2 for the annual tests is 0.01071. This is almost three times as large as the R^2 for the four-year period.

If our estimates of the parameters of the underlying distributions of returns of the various securities are inadequate, then the fact that our model failed does not, therefore, necessarily imply that the model is inadequate. Thus, before any further attempt to modify the model to take into account some of the implications of its assumptions, alternative estimates of the underlying parameters of probability distributions of returns of the securities may be necessary. This is being investigated by Francisco.

It may also be argued that this market behavior reflects imperfections in the market and possibly the existence of a significant group of risk-lovers. Imperfect information may take two aspects. One, is that an investor desiring to obtain a certain return and riskiness from his investment may not know the methods by which this is obtained. He may have a feeling that diversifying will reduce risk but the method of arriving at the efficient frontier is unknown to him. Unlike other economic decisions, optimality condition cannot be arrived at without going into complex calculations. Housewives are assumed to arrive at an optimal consumption basket of goods quite accurately. Arriving at a probability distribution of returns of alternative assets and estimating their expected returns and risk requires expert knowledge. For this reason, application of portfolio selection criteria according to efficient market models is done by financial intermediaries and professional portfolio managers mostly. In this country very few, if any, intermediaries undertake portfolio returns-risk calculations. Many of them select

portfolios on the basis of feel, special information, and rough rules. These rules might be categorized as satisficing rules. It is likely the rule differs among investors. Some may choose from a small set of assets on which they have information. Another rule might be to hold the larger part of wealth in moderately risky assets and to "gamble" the balance on risky assets. Other satisficing rules may be in use. Satisficing behavior would seem reasonable in a market with very imperfect information for optimizing over socially efficient frontier is difficult to do.

If information is inadequate and unequally distributed, estimates of returns and risk will differ from the actual and will vary among investors. Some will overestimate returns or risk; some underestimate them. The efficient frontier for individuals will form a blurred band around the market frontier. Those below the frontier overestimate risk; those above, underestimate it. If risk is overestimated, demand for risky assets will tend to be lower than when risk is correctly estimated, and vice versa. Excess demand or supply will be determined by the excess or shortage of borrowing to lending. The excess or shortage will be due to the distribution of investors by their preference for return and risk as well as their distribution between conservative (those who consistently underestimate risk) and optimistic investors. If optimistic investors dominate the market there will tend to be a greater demand for assets than if risk were correctly estimated.

Security prices would go up, returns would go down. The converse would be true. Highly inaccurate estimation of market return and risk would place the (perceived) efficient frontiers of individuals scattered all over the portfolio return-risk space. The scatter of efficient frontier will generate its own $r_j - \beta_j$ relationship that is not necessarily positive and α_1 not equal to $(R_m - R_F)$. Another consequence of imperfect knowledge is that investors failing to realize their expected returns and risk would tend to correct their initial position. Correction under imperfect information assumption would result in greater amplitude of price fluctuations and therefore greater risk. Risk is thus contributed by variation in corporate performance as well as by market adjustment to correct or wrong forecast.

In the Philippine market, a little more than half of listed stocks belong to the small board. These are stocks of new mining and oil companies which are still in exploration. Thus, there is much greater uncertainty about their expected returns. In the past, there were alleged manipulation of their trading which led to extremely wide price changes and therefore to large losses for misinformed stockholders. To be remembered are the speculations on Redeco, Oriental and Western Minolco stocks, prices of which rose and dropped within a day or a few days by as much as 100 percent. "Inside" information received too late allowed large speculators to realize substantial capital gains. Uncon-

Average Returns and Variances of Traded Securities, 1976-79

		R_j					σ^2_j				
		1976-79	1976	1977	1978	1979	1976-79	1976	1977	1978	1979
1.	Oriental Pet. & Mrl. Corp.	.6770	1.0383	.5203	1.0220	.1575	11.0961	43.4252	3.3603	1.6536	1.3290
2.	Globe Mackay Cable & Radio Corp.	.4921	.0878	.3403	.5945	.9123	1.8909	.1510	.3683	.8051	6.2041
3.	Engineering Equipment, Inc.	.4878	.0520	1.3628	1.6025	-1.1007	10.1840	15.1580	17.9742	4.7513	.0333
4.	Oriental Pet. & Mrl. Corp.	.4621	- .3076	.6085	1.0580	.4255	7.8975	28.0670	2.4215	2.8483	1.4356
5.	San Miguel Corp. 'A'	.4543	.2492	.2824	1.1501	.1187	5.6961	1.5536	.2023	20.1439	1.3313
6.	Lepanto Const. Mng.	.3606	.4053	.4580	.7421	- .1595	3.8089	6.8998	4.5400	2.5534	2.0959
7.	Basic Petroleum & Mrl. 'A'	.3574	.5208	- .3167	1.1695	.0696	6.0202	13.9226	5.4687	4.6558	1.0621
8.	Phil. Overseas Drl. & Oil Dev. Corp.	.3293	.1405	.1221	.9519	.0868	8.0484	27.3684	2.2757	4.1677	1.7643
9.	BF Goodrich	.3274	.5180	.2330	.6967	- .1224	1.2653	1.5472	.7895	1.6647	1.0149
10.	Manila Mining Corp.	.2700	.0642	.6275	- .0875	.4585	3.5703	2.1684	5.5747	4.6361	2.8382
11.	Consolidated Bank	.2662	.2768	.0886	.2726	.4277	1.0295	.2710	.1326	.0735	3.7636
12.	Trans-Asia Oil Mrl. Expl. Dev. Corp.	.2532	.1727	.808	.5220	- .4974	5.8970	7.2932	7.1139	4.6848	5.1985
13.	Lepanto 'B'	.2450	.3583	.333	.4479	- .1497	3.7678	6.7681	4.5255	2.4052	2.4366
14.	China Bank	.2329	.1726	.2097	.2754	.2691	.8787	1.1027	.7268	1.2473	.6904
15.	PLDT (Common)	.2189	.2723	.3428	.2082	.0591	.7723	.6544	.1388	.8120	1.6362
16.	Bank of PI	.1915	.0703	.2615	.3164	.1079	.3347	.0584	.5869	.5740	.1410
17.	Benguet Cons., Inc.	.0752	- .7716	.678	.9503	- .2356	4.9767	1.8587	9.0040	6.8959	1.2026
18.	Banco Filipino	.1610	- .0910	.3199	.1570	.2371	.3234	.0910	.5583	.1560	.4579
19.	Landoil Resources Corp. 'B'	.1513	- .0058	.097	.5298	- .0289	2.1449	4.0676	1.8048	2.6857	.0618
20.	Landoil Resources Corp.	.1460	- .2003	.2966	.6491	- .1904	2.7127	7.1403	1.9015	1.2117	.4953
21.	CDCP	.1378	.1460	.143	1.0375	- .7750	1.3201	.3214	.7013	2.0288	.7061
22.	Apex Exploration & Mng. Co. 'A'	.1354	- .5404	.143	.2546	.6280	3.4681	.6200	5.3073	5.6017	2.2935
23.	PLDT 'B'	.1281	.1441	.2297	.2043	.1358	.1392	.0962	.3046	.0790	.0026
24.	Phil. Oil & Geothermal Energy	.1244	.5915	.0668	.0797	- .2014	4.4605	9.515	3.5010	3.0357	3.1265
25.	PLDT 'A' 10%	.1232	.2158	.1376	- .0771	.2242	.2053	.3134	.0875	.2153	.2070
26.	Seafront Petroleum & Mrl. Res.	.1108	.2529	.0426	.0799	.0798	10.9461	27.0085	4.4198	4.0667	12.4079
27.	Ayala Fund, Inc. 'A'	.1093	- .0708	- .069	.7686	- .2048	1.0520	.6952	.4402	1.5621	1.1159
28.	Phil. Oil Dev. Co., Inc.	.0900	.1416	- .3042	.6105	- .0839	3.2487	6.3112	4.0616	1.4695	1.8163
29.	Atlas Consolidated	.0898	- .0553	- .0300	.2392	.1932	2.8762	9.0423	5.6038	1.8352	1.7504
30.	Atlas Fund Inc. 'B'	.0773	.0097	.035	.4249	- .1671	.8091	.0664	.0155	2.1147	.9896

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firmed reports ran that some issuing corporations and stock brokers were responsible for such manipulations of the market. Needless to say, capital gains arising from speculation are at the expense of the losers.[8] Whether or not these reports had a solid basis, the fact is that price fluctuation in small board has been extremely wide. This is seen in Table 5.3 in which the own variances and returns of securities classified into blue-chips and small-board are given.

The inclusion of risk-lovers in the market complicates the determination of the equilibrium structure of returns and risk for the different assets. Risk-lovers would optimize by selecting from the maximum return point on efficient frontier. This would be point L in Figure 1. Under imperfect information and/or indivisibility condition, individuals would have their own perceived efficient frontiers which the market frontier dominates.

Equilibrium condition is that demand and supply of each security are equal. Demand is the summation of the number of each security in the optimal portfolios of all investors. Demand would thus depend on the distribution of efficient frontiers and of risk averse and risk loving investors. A relatively large proportion of risk-lovers in the population would raise demand for more risky assets.

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[8]Capital gains arising from a permanent improvement in a corporation's profit rates are at no one's cost.

In the next chapter, we will try to arrive at the market frontier and at frontiers from some subsets of available equities. Theoretically, the frontier from a subset is expected to be dominated by the market. The subsets are taken to be the possible choices of satisfiers.

Appendix 3.A

1. The Variance, Covariance Matrix

For each of the years 1976, 1977, 1978 and 1979 and for the 4-year 1976-1979, a variance-covariance matrix was computed. The format is shown in Table 1 below.

Table 1

	1	2	3	...	72
1	$\hat{\sigma}_{11}$	$\hat{\sigma}_{12}$	$\hat{\sigma}_{13}$		$\hat{\sigma}_{172}$
2	$\hat{\sigma}_{21}$	$\hat{\sigma}_{22}$	$\hat{\sigma}_{23}$	...	$\hat{\sigma}_{272}$
3	$\hat{\sigma}_{31}$	$\hat{\sigma}_{32}$	$\hat{\sigma}_{33}$	...	$\hat{\sigma}_{372}$
.	.	.			.
.	.	.		...	.
.	.	.			.
72	$\hat{\sigma}_{721}$	$\hat{\sigma}_{722}$	$\hat{\sigma}_{723}$		$\hat{\sigma}_{7272}$

The formula for the variance of a random variable X is defined as:

$$\sigma_X^2 = E[(X - \mu_X)^2] = E[X^2 - 2\mu_X + \mu_X^2]$$

The sample variance is defined[9] as:

$$\hat{\sigma}_X^2 \equiv s_X^2 = \frac{1}{T-1} \sum_{i=1}^{T} (X_i - \bar{X})^2, \quad \text{where} \quad \bar{X} = \frac{\sum X_i}{T},$$

$$= \frac{1}{T-1} \sum_{i=1}^{T} [X_i^2 - 2X_i\bar{X} + \bar{X}^2]$$

$$= \frac{1}{T-1} [\sum_{i=1}^{T} X_i^2 - 2\bar{X}\, T\, \bar{X} + T\, \bar{X}^2]$$

$$= \frac{1}{T-1} [\sum_{i=1}^{T} X_i^2 - T\, \bar{X}^2]$$

Computationally, the last equation for the sample variance is more convenient to use.

The covariance of random variables X and Y is defined to be

$$\sigma_{XY} = E[(Y - \mu_X)(Y - \mu_Y)]$$

$$= E[XY - \mu_X Y - X\mu_Y + \mu_X\mu_Y]$$

$$= E[XY] - \mu_X\mu_Y.$$

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[9] See, for instance, Larson, H. J., Introduction to Probability Theory and Statistical Inference, Morterey, California: John Wiley and Sons, Inc., 1969, pp. 210-211 for a proof why the divisor should be $T - 1$ rather than T.

Similarly, the sample covariance given X_1, X_2, ..., X_T and Y_1, Y_{21}, ..., Y_T as the random samples of X and Y respectively, are:

$$\hat{\sigma}_{XY} \equiv S_{XY} = \frac{1}{T-1} \sum_{i=1}^{T} (X_i - \bar{X})(Y_i - \bar{Y})$$

$$= \frac{1}{T-1} \sum_{i=1}^{T} (X_iY_i - \bar{X}Y_i - \bar{Y}X_i + \bar{X}\bar{Y})$$

$$= \frac{1}{T-1} [X_iY_i - T\bar{X}\bar{Y}].$$

Again, this last equation is computationally more convenient.

2. The Market Portfolio Variance: $\hat{\sigma}^2_{r_M}$

As previously defined, the estimate of the market portfolio variance is:

$$\hat{\sigma}_{r_M} = \sum_{k=1}^{n} Z_k \sum_{j=1}^{n} Z_j \hat{\sigma}_{jk}$$

This is illustrated by Table 2 below.

Table 2

1	$Z_1[Z_1\hat{\sigma}_{11}$	$+ Z_2\hat{\sigma}_{12}$	$+ Z_3\hat{\sigma}_{13}$	$+ \cdots +$	$Z_{72}\hat{\sigma}_{172}] +$
2	$Z_2[Z_1\hat{\sigma}_{21}$	$+ Z_2\hat{\sigma}_{22}$	$+ Z_3\hat{\sigma}_{23}$	$+ \cdots +$	$Z_{72}\hat{\sigma}_{272}] +$
3	$Z_3[Z_1\hat{\sigma}_{31}$	$+ Z_2\hat{\sigma}_{32}$	$+ Z_3\hat{\sigma}_{33}$	$+$	$Z_{72}\hat{\sigma}_{372}] +$
.	.	.	.		.
.	.	.	.		.
.	.	.	.		.
72	$Z_{72}[Z_1\hat{\sigma}_{721}$	$+ Z_2\hat{\sigma}_{722}$	$+ Z_3\hat{\sigma}_{723}$	$+ \cdots +$	$Z_{72}\hat{\sigma}_{7272}] = \hat{\sigma}^2_{r_M}$.

3. The Covariance of the Return of an Asset j with the Market Return r_M

The covariance of the return of an asset j with the return of the market portfolio r_M as previously defined is:

$$\hat{\sigma}_{jM} = \text{cov}\,(r_j, r_M) = \sum_{i=1}^{n} Z_i \,\text{cov}\,(r_i, r_j).$$

The sample covariance is:

$$\hat{\sigma}_{jM} = S_{jM} = \sum_{k=1}^{n} Z_k \hat{\sigma}_{jk}$$

For example, for $j = 1$, $\hat{\sigma}_{1M}$ is:

$$\hat{\sigma}_{1M} = Z_1\hat{\sigma}_{11} + Z_2\hat{\sigma}_{12} + Z_3\hat{\sigma}_{13} + \cdots + Z_{72}\hat{\sigma}_{172},$$

which is the sum of row 1 in Table 2 above not premultiplied by Z_1.

4. The Data

Monthly data[10] are available for a total of 72 stock securities for the entire period of 1976-1979. If the time period were further extended into the past, the number of securities that can be included is reduced since some securities are newly listed. Other securities are also

[10]The monthly data were taken from the "Manila Stock Exchange Monthly Review," published by the Manila Stock Exchange Research and Publication Department, Manila.

delisted through time so that this further reduces the number of securities. The total of 72 is, therefore, the maximum number of securities that can be included for the 48-month period. Besides, the period from 1965-1975 has been covered by a related study.[11]

According to the Manila Stock Exchange classification, the 72 securities included in the analysis are broken down as follows:

Classification	Number of Securities
I. Banks	4
II. Commercial, Industrial and Investment	14
III. Mining	19
IV. Small Board	35
T O T A L:	72

The monthly data consist of the following specific information, among others, for each security:

1. The number of outstanding shares;
2. The highest and lowest prices registered for each month;
3. The number of shares traded;

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[11] Errol B. Perez, "Systematic Risk and Levels of Unsystematic Risk in the Philippine Capital Market: A Modified Capital Asset Pricing Model?," Thesis, Ph.D., College of Business Administration, University of the Philippines, 1979.

4. The total value of shares traded; and,

5. Cash and stock dividends issued.

5. Validation of Data

1. P_H and P_L is the range of P_t.

Monthly data for the 48-month period for the 72 securities were placed in the Hollerith computer cards. To ensure that the data that were punched are correct, aside from the visual and preliminary inspection of the "card-to-print" list that could reveal simple and obvious errors, a computer program was written to validate and ensure that the monthly prices used to compute the monthly rates of return are accurately punched from the reports.

The prices used are the monthly average prices calculated as the total value of shares divided by the total number of shares traded. Data on the following were punched in the cards.

P_t^* = as per our record;

N_t = the number of shares traded for month t;

V_t = the total value of the N_t shares traded;

P_H = the highest price registered for the month; and,

P_L = the lowest price registered for the month.

$P_t = V_t/N_t$ was calculated from the punched cards. To validate, the following relationship must hold:

$$P_H > P_t > P_L \; ; \quad \text{also that} \quad P_t^* = P_t .$$

A number of errors were caught and corrected by this validation.

6. The Case of No Trading for a Given Month

If no trading occurs for the month, the average price of the previous month is used. Perez (1979), committed a serious error here by assuming the price as zero. Thus, even if there are dividends issued, the rate of return is ∞, in which case he sets the rate of return equal to zero. The author claims that this is an error in the computer program.

7. The Cases Where P_H, P_L or Both are Incorrect

If either P_H or P_L or both are incorrect, the relationship above may still be satisfied and the basis for validating the accuracy of P_t do not hold. Thus, in the computer validation program, preliminary calculations of the monthly rates of return, their means and standard deviations, annual and for the entire period, were included. Investigation of the relatively large standard deviations indicated the correspondingly large monthly rates

of return. These monthly rates of return are then checked for the price charges that generated these relatively large rates of return.

8. The Case of a Stock Split

Three validation computer runs were made. The first indicated most of the errors. The results of the second run were compared with the first and some errors were further noted. Among the errors noted in the second run is the case of a stock split. This case was observed only for security number 28 for the month of November, 1977. We had, for example, the following stock split for one security.

Year/Month	Nr. of Outstanding Shares	P_H	P_L	Nr. of Shares Traded	Value of Shares Traded	P_t
1977 Sept.	2,019,103	.7	.7	1,000	700	.7
Oct.	2,019,103					.7
Nov.	201,910,300					.7
Dec.	452,306,620	.006	.006	200,000	1,200	.006

Based on the above data, the uncorrected and corrected rates of return are shown in Table 4.

Table[12] 4

Year/Months	Uncorrected Rates of Return (Effective Annual) Arithmetic	Geometric	Corrected Rates of Return (Effective Annual) Arithmetic	Geometric
1977 Sept.				
Oct.	0.0	0.0	0.0	0.0
Nov.	0.0	0.0	0.0	0.0
Dec.	-11.8971	-57.1118	-1.7143	-1.8498

9. Calculations Based on the Computational Format

A much larger computer program was written based on the computational format required by the model. More specifically, the program was designed to compute the following:

i) the monthly rates of return, arithmetic and geometric;

ii) the weight of each asset;

iii) the mean and the 72 x 72 variance-covariance matrix for each of the years 1976, 1977, 1978, 1979 and for the 4-year period 1976-1979, or a total of five (5) 72 x 72 variance-covariance matrices;

iv) the "trading statistics" for each year and for the period 1976-1979, which include the number of trading

[12] See Francis and Archer, 1971, p. 49 for more discussions on the case of stock split.

months and the ratio of this number with the total number of months for the period under consideration;

v) the covariance of each of the asset with the market variance for each year and for the entire 4-year period;

vi) the market variance for each year and for the 4-year period;

vii) the Beta or "systematic risk" of each security for each year and for the 4-year period.

Moreover, the computer program was expanded to make a scatter plot[13] of the mean versus variance as well as the Beta versus the mean for each year and for the four-year period. In effect, there are a total of ten (10) scatter diagrams contained in the computer print-out. The purpose of expanding the program to print scatter plots aside from its usual graphical usefulness is to serve as a starting point for the construction of the efficient frontier[14] in the case of the mean-variance scatter diagram, and, to serve as a space on which the results of the linear regression between the r_js and the β_js can be conveniently plotted.

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[13]The sub-routine "plot" of the UP Computer Center was used here. However, there is an error in the logic of the program resulting to an inverted data print-out in the vertical axis. More specifically, the values are printed in descending order reckoned from the origin.

[14]The $(n + 1)^{\text{th}}$ observation is (r_M, β_M), where $\beta_M = 1.00$.

CHAPTER 6

Efficient Frontiers and Yield-Risk Behavior of Equities

The preceding chapter presented some basic information on the stock market and the results of the preliminary test of the capital asset pricing model. The chapter ended speculating why the market behaved as it did, that is, the yield on securities fluctuated too wildly from month to month over the four-year period studied; there was no significant relationship found between the risk and yield of securities, and there was no apparent adjustment to equilibrium pricing over time. Imperfections in the market, particularly imperfect information and indivisibility, were suggested to lead to portfolio behavior that would not necessarily be like the optimization assumed by portfolio selection theory. Many possible decision criteria may be used by investors which are more reasonable and practical to apply in an imperfect market than the neat but otherwise strict perfect capital asset model.

In this chapter, we examine further the yield-risk distribution of the 72 securities and derive the efficient frontier of all available assets with positive returns. We try to see whether this frontier dominates the efficient frontiers of subsets of securities. These subsets are considered the sets selected by satisfiers. The estimation of the frontiers allows the identification and comparison of the securities in the market portfolio and in the three frontiers. Capital asset pricing model argues the market portfolio is on the efficient frontier. This is to be tested by a comparison of the portfolios on the frontiers and the

market. In addition, we hope to find a pattern of risk and yield reflecting satisficing behavior in an imperfect market. For this chapter, therefore, we derive alternative efficient frontiers -- one from the whole set of available securities, one on the top 20 earning securities, another on the big board which includes blue chips and large mining issues. We try to see to what extent the behavior of yield and risk of securities on the frontiers differs from the rest and whether it approximates that of a perfect market. The following sections successively discuss these topics.

1. Efficient Frontiers

Portfolio selection theory argues that in order to maximize utility, U, from a portfolio of assets where $U = U(R_p, V_p)$, $\partial U/\partial R_p > 0$ and $\partial U/V_p < 0$, choice of the portfolio must be made along the efficient frontier as illustrated below. Portfolios along this frontier give the highest return at every level of risk, or the lowest risk at every level of return. Under capital asset pricing model, assumptions: equal distribution of information, perfect divisibility of investment, etc., investors face homogeneous market opportunities or the same efficient frontier. At equilibrium, asset prices will so adjust to demand by different individuals so as to bring the market portfolio at the tangency of the market line and the efficient frontier of risky assets at E. Call this equilibrium portfolio. (Please see Chapter 4.)

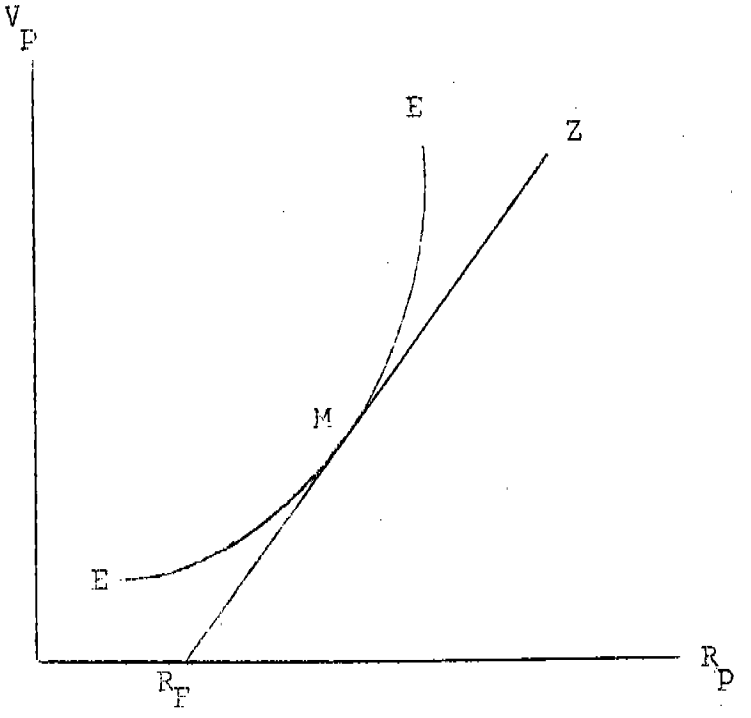


Figure 6.1

At M all available securities in the market will be in the equilibrium portfolio, each with a share equal to its market share. At other points, portfolio holdings of individuals will not be optimal since they can be improved by choosing the equilibrium portfolio on the market line $R_F Z$.

We estimated a few points of the efficient frontier of all securities that have positive returns by quadratic programming. We assumed

the securities with persistent negative returns would not be included in the choice set by most investors. Also, including them in the program would have raised program cost beyond our budget. These numbered 40 out of the total 72 traded. To obtain points on the efficient frontier the following problem was solved.

$$\text{Min} \quad V_p = \sum x_i \sum x_j \quad \text{cov}\,(R_i R_j)$$

$$\text{s.t.:} \quad x_i \geq 0$$

$$\sum_{i=1}^{40} x_i \leq 1$$

$$R_p \geq \sum_{i=1}^{40} x_i R_i$$

where V_p = portfolio variance

R_p = portfolio returns (in hundredths)

x_i = weight of security i in the portfolio

i = 1, 2, ... 40 securities

The program was applied to selected values of R_p: .10, .15, .20, .25, .30, .40, .45 and .50.

The computer program developed by Bates (1975) was applied limiting the iterations to 5,000. Except in three cases, the solution was reached

Solution Weights for each Asset for Given R_p

Security Number and Name	Market Weight	40 SECURITIES .10	.15	.20	.25	30	.35	.40
1. Oriental 'B'	.0049	.0001	.0001		.0018	.0127	.0165	.0342
2. China Bank	.0256	.0212	.0318	.0360	.0647	.0822	.0923	.0753
3. Consolidated Bank	.0233	.0312	.0482	.0643	.0862	.1000	.1133	.1710
4. Globe Mackay	.0082	.0252	.0377	.0509	.1011	.1613	.2324	.3131
5. Engineering Equipment	.0324				.0084	.0167	.0318	.0778
6. Landoil Resources	.0094							
7. Landoil Resources 'B'	.0043	.0028	.0042	.0077				
8. Manila Mining Corp.	.0007	.0565	.0847	.0970	.1308	.1381	.1300	
9. PLDT Common	.0460	.0240	.0361	.0470	.0588	.0603	.0398	.0567
10. SMC 'A'	.0756	.0076	.0114	.0128	.0304	.0462	.0675	.0760
11. BF Goodrich	.0206	.0073	.0109	.0141	.0472	.0702	.1139	.0936
12. Benguet Consolidated 'A'	.0169							
13. Oriental	.0247				.0073	.0173	.0350	.0450
14. Bank of PI	.0283	.1089	.1633	.2178	.2212	.2124	.1541	.1768
15. Banco Filipino	.0041	.0213	.0320	.0321	.0345			
16. Lepanto Consolidated Mining	.0256						.0021	.0035
17. Lepanto 'B'	.0172							
18. Phil. Overseas Drl. & Oil C.	.0118							.0037
19. Basic Pet 'A'	.0050	.0069	.0104	.0128	.0138	.0104	.0025	
20. Trans-Asia Mineral	.0039							

Table 1 (Cont'd.)

Solution Weights for each Asset for Given R_p

20 SECURITIES							Big Board: Blue Chips and Mining							Security Number
.20	.25	.30	.35	.40	.45	.50	.10	.15	.20	.25	.30	.35	.40	
.0004	.0005	.0096	.0194	.0294	.0395	.0427								1
.0680	.0850	.0836	.0742	.0601			.0325	.0487	.0588	.0905	.1126	.1059	.0766	2
.0773	.0966	.1041	.1038	.0997	.0396		.0308	.0462	.0652	.0817	.1037	.1129	.1053	3
.0612	.0764	.1502	.2312	.3153	.4225	.5332	.0361	.0541	.0721	.1243	.1872	.2740	.3738	4
.0005	.0007	.0146	.0315	.0498	.0674	.0878	.0036	.0054	.0078	.0162	.0263	.0442	.0657	5
.0022	.0037													7
.1151	.1439	.1483	.1337	.1076	.0432									8
.0759	.0948	.0773	.0407				.0315	.0473	.0552	.0823	.0950	.0635		9
.0213	.0267	.0466	.0665	.0858	.1024	.1245	.0068	.0102	.0127	.0293	.0476	.0707	.0964	10
.0257	.0322	.0699	.1115	.1537	.1780	.0699	.0188	.0283	.0350	.0741	.1141	.1667	.2236	11
.0008	.0010	.0155	.0327	.0509	.0804	.1414								13
.2279	.2849	.2282	.1335	.0203			.1031	.1547	.2072	.2120	.2059	.1192		14
.1085	.1356	.0330					.0410	.0615	.0765	.0836	.0677			15
			.0021	.0089	.0147					.0105	.0258	.0429	.0586	16
.0145	.0181	.0192	.0191	.0183	.0120									19

Table 1 (Cont'd.)

		Market Weight	.10	.15	.20	.25	.30	.35	.40
21.	Apex 'A'	.0019							
22.	Atlas 'B'	.0829							
23.	Marcopper	.1423							
24.	Benguet Exploration	.0004			.0174				.1326
25.	Philex	.0792							.1569
26.	Ayala Fund 'A'	.0025							
27.	Seafront Pet. Mrl. Res.	.0048							
28.	Pioneer Nat'l Res. Corp.	.0019							
29.	CDCP	.0144	.0065	.0098	.0160	.0196	.0372		.1454
30.	PLDT 'A' 10%	.0018	.0519	.0779	.1921	.0294	.0547		
31.	A. Soriano Corp.	.0109							
32.	Phil. Oil Dev. Co.	.0042							
33.	Phil. Oil Dev. Co. 'B'	.0029							
34.	Ayala Fund 'B'	.0009							
35.	PLDT 'B'	.0017	.1020	.1530	.1740	.1271			
36.	Mayon Mineral Exploration	.0009							
37.	Palawan Cons.	.0004	.0020	.0030	.0058	.0454			
38.	Surigao 'A'	.0005	.0016	.0024	.0019	.0020	.0003		
39.	Phil. Oil & Geothermal Energy	.0023							
40.	Consolidated Mines	.0104							
	$\sum x_i$		.178	.717	.9997	1.03	1.02	1.03	1.56
	V_p		.013	.029	.055	.095	.165	.277	.624
	$\sum x_i R_i$		.100	.15	.20	.254	.302	.356	.359

Table 1 (Cont'd.)

20 Top-earning Securities							Big Board							Security Number
.20	.20	.30	.35	.40	.45	.50	.10	.15	.20	.25	.30	.35	.40	
							.0048	.0072	.0078	.0041				24
							.0018	.0026	.0018					26
							.0123	.0184	.0220	.0078				29
							.0492	.0738	.1046	.0360				30
									.0537					31
							.0040	.0073	.0053					34
							.1060	.1591	.2136	.1477	.0142			35
.799	1.000	1.000	1.000	1.000	1.000	1.000	.483	.716	.999	1.000	1.000	1.000	1.000	
.062	.097	.16	.273	.444	.685	1.044	.0158	.0359	.0662	.109	.191	.319	.516	
.1999	.25	.30	.35	.400	.450	.500	.100	.150	.1998	.250	.300	.35	.400	

before this number of iterations was reached. Budget constraint prevented us from going further and we feel the estimates obtained are good enough for our purposes. The 1976-1979 covariance matrix and vector of returns estimated in Chapter 5 were used as inputs to the program. Details of the estimation are discussed in Technical Note A.

The results, together with those for subsets of securities, are given in Table 6.1. This table gives the list of securities included, their yield and the solution portfolio variance, returns and weights of the securities in the efficient market frontier.

We take note of the following results of the market frontier.

a) The market portfolio is off the efficient frontier. For 1976-1979, the average return for the market was .1229 with variance of .726 while the variances for 10 and 15 percent return in the frontier were .013 and .029.

b) Not all securities were included in the efficient portfolio. For .10 and .15 returns, only 17 securities were included. Their shares differed greatly from those of the market and there was a concentration of investment in three banks -- the China Bank, the Bank of the Philippine Islands and the Consolidated Bank, as well as in the Philippine Long Distance Telephone Company, a public utility, and in Manila Mining Corporation. Each of these had at least 5 percent share in the portfolio. In fact,

PLDT and BPI absorbed 15 and 16 percent, respectively, of the total portfolio at 15 percent return. Viewed another way, there are many securities that are excluded in the efficient portfolios. It means that their marginal contribution to portfolio risk is higher than that of other securities. Yet, they have been kept in some investors' portfolios for a fairly long period. It is to be noted that there was trading in these securities and yet their prices did not adjust so as to raise their returns high enough to compensate for their high risk and thus, be included in the efficient portfolios.

c) As the rate of returns increased, the portfolio became less diversified and included high risk-high return securities. At 35 percent returns, for example, only 13 securities composed the portfolio and it included more mining issues. However, there was a number of securities that remained in the efficient portfolios at all the rates selected.

d) Finally, we find wide differences in the weights of the securities in the efficient portfolios. A randomly selected portfolio, each security to be given equal weight that is taken to be efficient in a perfect market, will definitely be inferior to one obtained by actual calculation of the efficient frontier. There is a greater need to solve for the efficient frontier in an imperfect market than in a more perfect one since competitiveness of issues is weaker in the former. We show the gain that can be obtained from the derivation of the efficient frontier by way of a reduction in risk.

These observations and the insignificant result of the test of the capital asset pricing function obtained in Chapter 5 lead to the conclusion that this market operates under conditions different from those assumed by CAPM.

We try next a satisficing behavior wherein investors are assumed to limit their choice set to the top 20 earning securities. Alternatively, we assume some investors confine their choice to the large board which includes blue chips and mining securities. The efficient frontiers for each of these sets is estimated. We try to see then the position of these frontiers relative to the previous one or to what extent the frontiers of the subsets are dominated by the total frontier. The results of the exercise are given in Table 6.1 also. Please note that for these subsets , the results were obtained before the iteration limit was reached. They were, therefore, the solution of the convergence of the program.

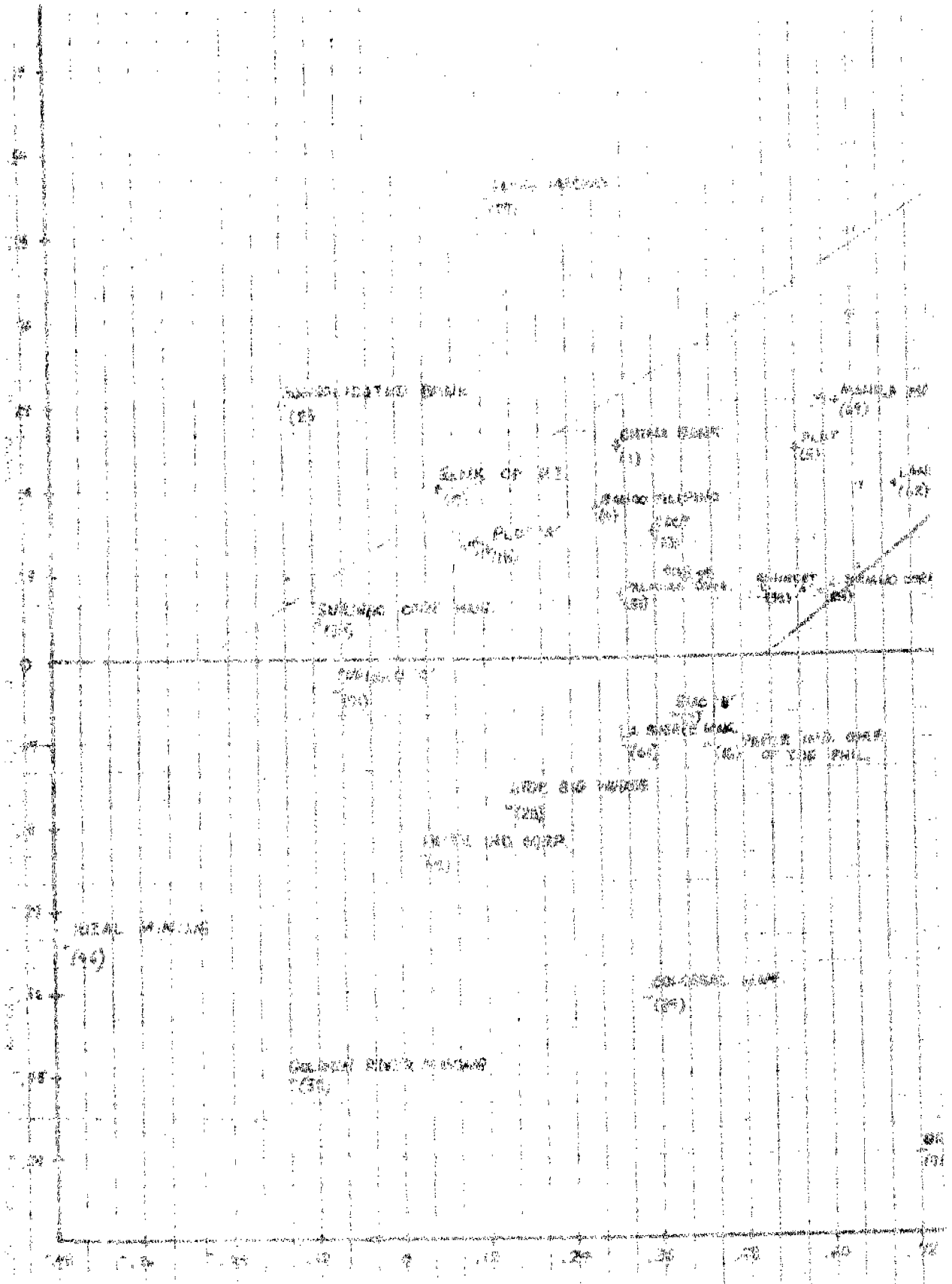
For the top 20 securities, we solved for high rates of returns starting at 20 percent to 50 percent since the lowest returns for the securities in this set is .15 percent. At 5,000 iterations made for the 40 securities, the variances obtained for each rate of return selected were not significantly lower than the variance for the first subset of top 20 securities. The variances of the efficient portfolios of the blue chips and mining issues were, however, significantly higher than those of the 40 and top 20 securities. Apparently, it matters from what set one chooses his portfolio. There are some differences also in the

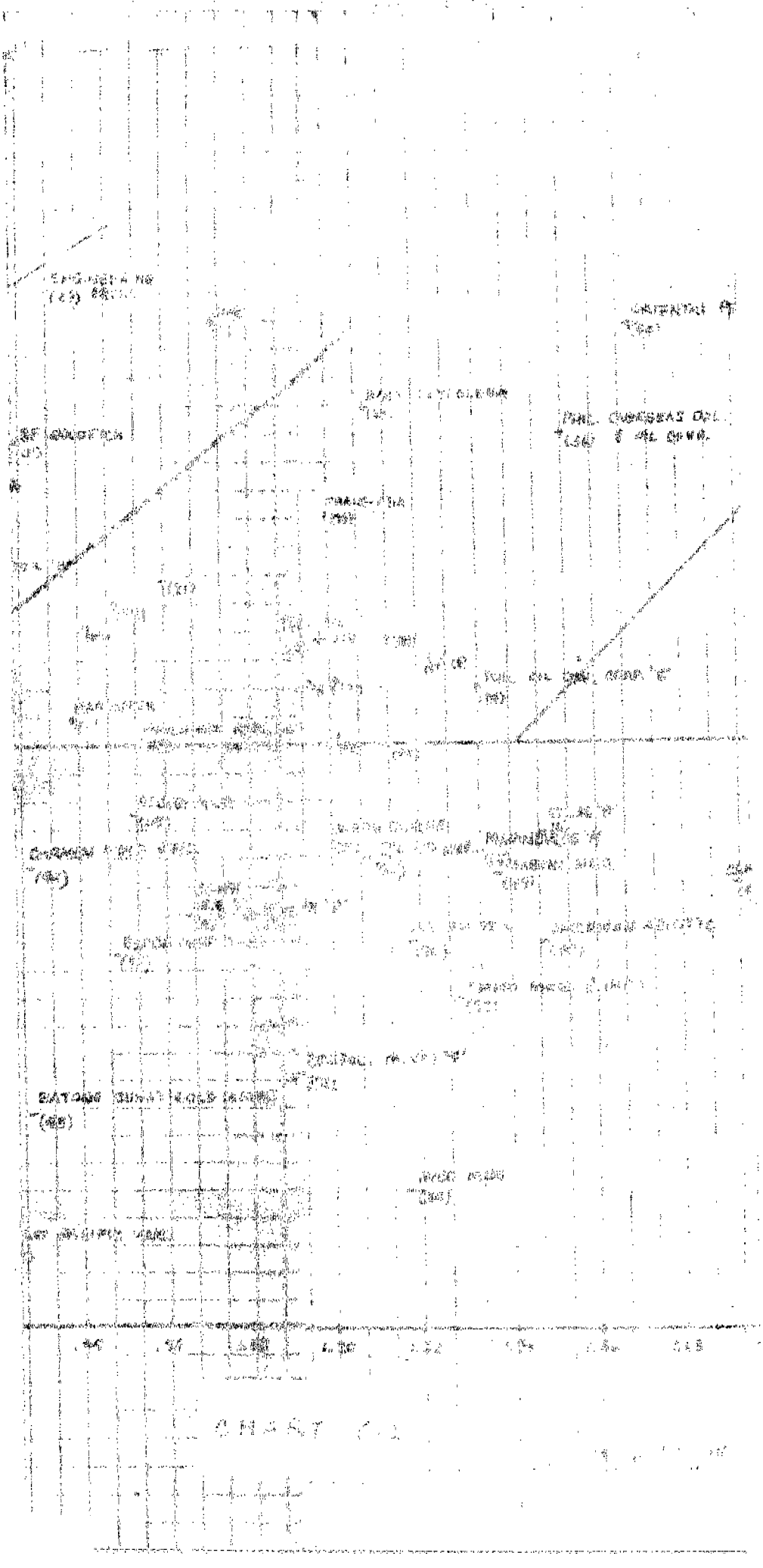
portfolio shares of the securities though in some issues, they were not very substantial. Consolidated Bank and the Bank of the Philippine Islands have large and almost equal share in the efficient portfolios of the three sets. It may be argued that on the whole not much is lost by limiting portfolio choice to the better regarded issues in the big board or to the top earners of recent years.

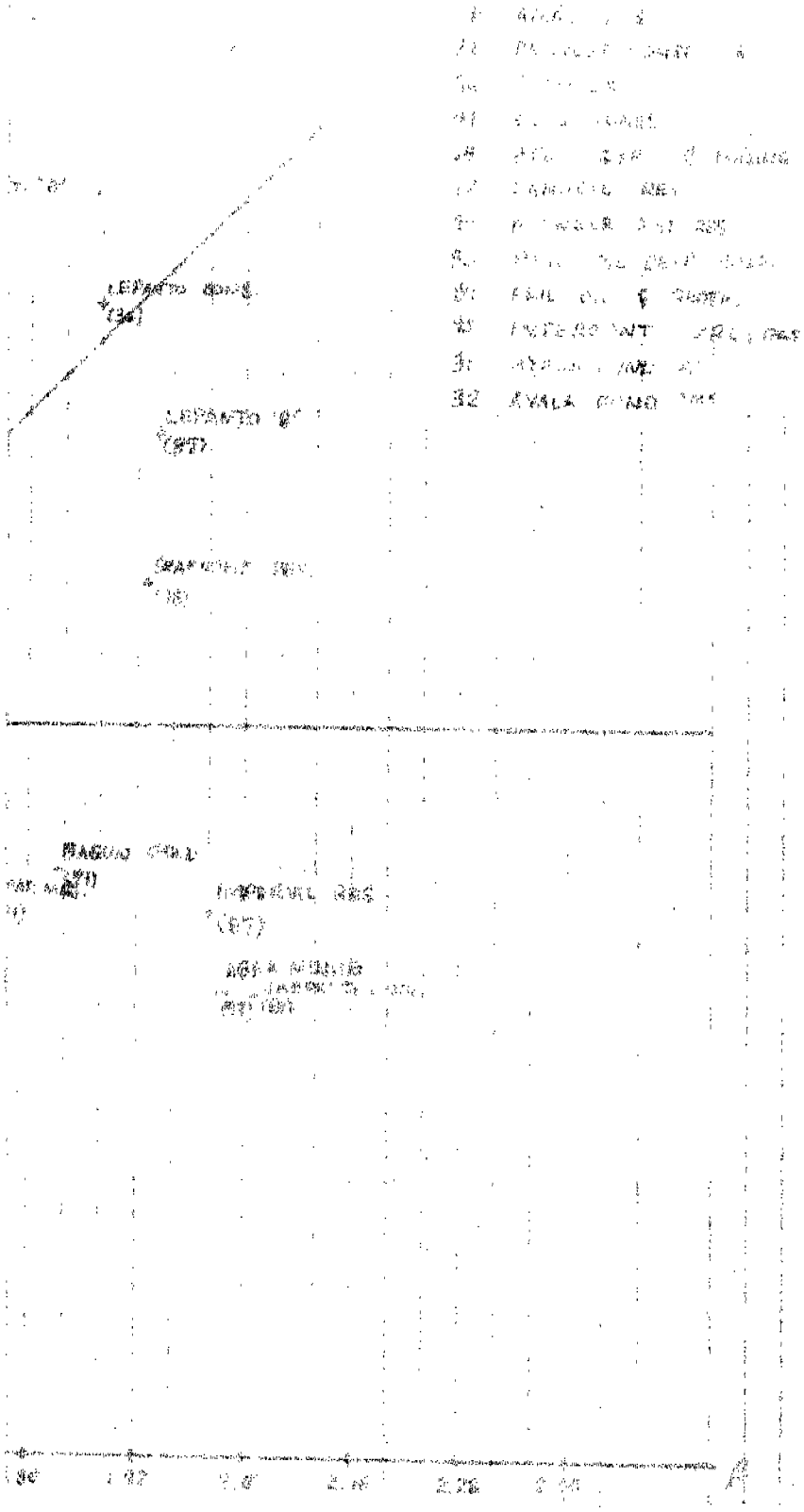
As in the case of the first set, not all issues were included in the efficient portfolios. Most of the excluded issues were also not in the portfolios of the larger set. As shown in the table, these have either or both low return and high own variances. We will try to find some common characteristics of the securities in the frontiers as well as of those that were not in them and those that earned negative returns.

2. Pattern of Security Yield-Risk Behavior

It is not easy to find a pattern of how security yield and risk behave. As found in Chapter 5, there is no significant positive relation between these variables for the sample of traded securities between 1976 and 1979. The scatter of points given below describes this lack of relationship even more clearly. However, a pattern seems to emerge when we label the observations by their corporate names. It seems the securities fall into three groups which we demarkated by bands. The first band included most of the blue chips and most of the securities contained in the estimated efficient portfolios. Another group consists of high risk and







actively traded mining securities which have positive returns. Among them are the oil companies that recently reported good prospects -- Oriental, Basic, Trans-Asia, Sea-front, Land-oil. Also included here are a few big board mining such as Marcopper, Benguet, Atlas and Lepanto. Below the red line are securities that earned negative returns over the period. They showed no apparent yield-risk relation. Except for four big board companies which experienced unusual difficulties like the weak market for copper, the securities in this group are small and not very active mining companies such as Omico, Samar Mining, Abra Mining, Great Pacific, American Asiatic, Acoje Mining and Atok Big Wedge. (PLease see Chart 6.1.)

The securities in the two upper banks could be considered as two sets for portfolio choices -- one, for the more secure assets; the other, for gambling. The securities in the two sets would not appear competitive with each other if investors behave as if they apportion their wealth to risky and less risky assets and then choose separately a portfolio from each set. When many investors behave this way, the securities in the two sets will be less competitive than the securities in a set. This will be reflected in a yield-risk relation that will be stronger for each set than for the total available securities. In fact, this seems to be the case as shown by the securities in the two bands we drew roughly. There is a positive relation between yield and risk within each band.

Securities falling under the red line is yet another category. We try to understand the nature of securities in this group by looking at the movement of their yield over the four-year period of study and their own variances.

In general, Philippine securities exhibited wide yield fluctuations. Variances of yield range from .139 (PLDT) to 16.51 (Surigao Mines) with their corresponding coefficients of variation of 1.09 and 424.54. This wide amplitude in yield provided opportunity for high capital gains but also risk of high capital loss. For most of these securities the yield was negative for three of the four years. The chances of losses for these issues were, therefore, high. Why did people persist in holding these securities? One explanation might be that they decided to be 'locked-in'. When people get caught in a big price drop selling the losing securities and shifting the portfolio might not prove worthwhile. It is also possible that most of the holdings of the small board were by controlling interest groups or corporate owners.

3. Corporate Performance and Market Yield

Intuitively, one might expect a positive relationship between profit rate and market yield. The capital asset pricing model argues otherwise. Under the assumption of this model, a rise in the profits of a company will be immediately transmitted to the market and quickly acted upon by investors. There will be shifts in their portfolios towards more of the more profitable companies leading to a rise in the price of their issues. A subsequent increase in dividend payments would not increase the yield since the price of the issue would have risen beforehand. In this model, risk explains all the yield differential among assets. Profit rate may raise the yield of a security only temporarily. At equilibrium, the yield of an issue, r_i, depends only on its risk and the price of an asset, P_i, is the reciprocal of the yield $\frac{1}{r_i}$, given the market rates of risky and riskless assets, R_m and R_f. As discussed earlier,

$$r_i = R_F + (R_m - R_f)\ \beta_i$$

We looked into the companies with which there is a regular flow of information on profit rate and market yield. These are the actively traded companies that belong to the largest 1,000 corporations.[15] Profit

[15] Sources of information are the Stock Exchange Monthly Review, daily newspaper report on stock transactions and the Business Day Annual Report on the Largest 1,000 Corporations.

Table 6.2

REGRESSION RESULTS EXPLAINING MARKET YIELD

1. $r_i = a + b_1 S_i$

	1976	1977	1978	1979	1976-79
a	- .0959	.0262	.4470	- .1143	.1366
b	.0003	.0089*	.0041*	- .0001*	- .0004*
R^2	.001	.4277	.1001	.0003	.0045

2. $r_i = a + b_2(I/E)_i$

	1976	1977	1978	1979	1976-79
a	- .2533	.0098	.4499	- .4636	- .0544
b	1.1412*	1.1493*	.7103*	1.5715*	1.0082*
R^2	.2826	.2324	.107	.2005	.1191

*Means significant at 5%. S is sales growth, I/E is profit to equity ratio.

SOURCE: Chapter 4 for yield and the Business Day, 1976 to 1977 Annual Report on the Largest 1,000 Philippine Corporations.

rate-yield relationship was investigated. We also tried to see whether sales growth explained yield assuming that sales growth is used as a basis of expected future performance of companies. Simple linear regressions were run using income to equity ratio for profit rate and sales growth. Data on 24 securities were available from the Business Day Report on the 1,000 largest corporations. Data on yield were from our estimates. The results are given in Table 6.2.

We find that sales growth influenced yield only half of the time. Profit rates, however, persistently influenced market yield positively. Except for 1978, the coefficient of profit rate was greater than unity, meaning that a one percentage point increase in profit rate increased the yield by a little over one percentage point. The persistence of this relationship over four years indicates that operating performance of the corporation was not quickly transmitted to the market or that investors did not respond fast to new information. In this case, it becomes important for investors to take close account of corporate performance and finance in their portfolio decision since yield rises with profit rates. It would not be sufficient to consider information on market yields only as our portfolio selection exercise did.

Conclusion

The chapter shows how a highly imperfect market behaves. Investors hold inefficient portfolios as indicated by the dominance of the portfolios on the solution frontiers over the actual market portfolio. Portfolios on the frontier exclude a fairly large number of securities, meaning that it is not optimal to hold all securities. We also find that information was too slowly transmitted to the market, or if it was transmitted at all, investors failed to respond to it. This was evidenced by the persistent positive relationship between market yield and profit rates. Profit rates should, therefore, be considered in portfolio selection in addition to market yield and risk.

We showed the usefulness of quadratic programming of the efficient frontier. This is a costly exercise, but it is particularly needed in an imperfect market where competition among securities is weak. The high cost and expertise involved in programming and other forms of security analysis point to the need for specialized services such as those found in mutual funds in the United States. Investment managers here should find the program useful. It can be adapted fairly easily to the specific portfolio problems they face.

Security analysis and dissemination of information on the market seem badly needed. The results of our exercises show that one can earn fairly high rates of return at not too high a risk if he knows how to

choose securities correctly. Alternatively, one can do so badly as to suffer successive losses. We also find that gains from diversification are limited to not too many securities and that a random selection of securities would be very inefficient.

The next chapter will apply portfolio selection under indivisibility constraints.

Technical Note on Quadratic Programming

by

Fe Lisondra[16]

Quadratic Programming (QP) is one form of nonlinear programming. It deals with minimizing or maximizing an objective function of quadratic form subject to linear constraints.

A quadratic function contains terms of an order no higher than the second (for example, a single variable x, the highest order is x^2). The general form of such function with n variables $x_1, x_2, \ldots\ldots, x_n$ is:

$$f(x_1, x_2, \ldots, x_n) = c_{11}x_1^2 + \ldots + c_{nn}x_n^2 + (c_{12} + c_{21})x_1x_2 + \ldots + (c_{n-1,\,n} + c_{n,\,n-1})x_{n-1}x_n + c_1x_1 + c_2x_2 + \ldots + c_nx_n + c_0$$

In matrix form, this polynomial function of the second degree order[17] with n terms is:

$$f(X) = C^TX + \frac{1}{2}X^TC_1X + C_0$$

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[16] The writer heads the programming staff of the UP School of Economics.

[17] This quadratic form can be expressed as a product of symmetric matrix (made up of its coefficients) and a given vector represented by variables X_j.

where,

$$X = \begin{bmatrix} x_1 \\ x_2 \\ \cdot \\ \cdot \\ \cdot \\ x_n \end{bmatrix}$$

$$C = \begin{bmatrix} c_1 \\ c_2 \\ \cdot \\ \cdot \\ \cdot \\ c_n \end{bmatrix}$$

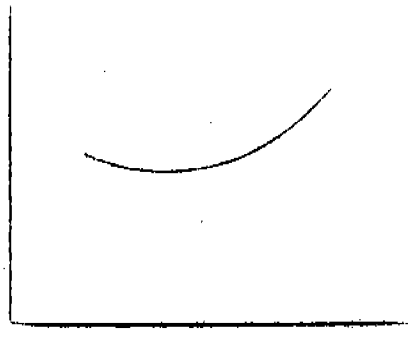
$$C_1 = \begin{bmatrix} c_{11} & c_{12} & \cdots & c_{1n} \\ c_{21} & c_{22} & \cdots & c_{2n} \\ \cdot & & & \\ \cdot & & & \\ \cdot & & & \\ c_{n1} & c_{n2} & \cdots & c_{nn} \end{bmatrix}$$

X^T and C^T are transposes of X and C and C_1 is a symmetric $n \times n$ matrix.[18]

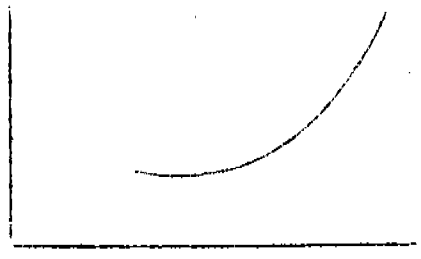
There are four types of quadratic function. The function is said to be:

a) positive definite if $X^T C_1 X > 0$ for all $X \neq 0$ where

[18] If $C_{ij} = C_{ji}$, $C_{ij} + C_{ji}$ term becomes $2C_{ij}$, the function is symmetric. A non-symmetric function, i.e., $C_{ij} \neq C_{ji}$, can be made symmetric by creating new coefficients C'_{ij} where $C'_{ij} = \frac{1}{2}(C_{ij} + C_{ji})$.



a



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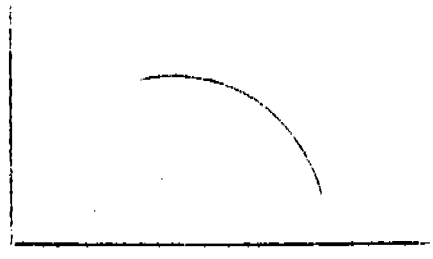

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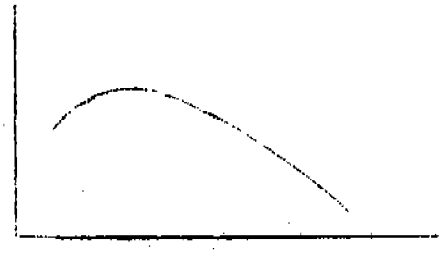

d

C_1 is a square symmetric matrix. A positive definite is always strictly convex. (Fig. 1)

b) positive semidefinite if $X^T C_1 X \geq 0$ for all X. (Fig. b)

c) negative definite if $-f(X)$ is positive definite. A negative definite function is always strictly concave. (Fig. c)

d) negative semidefinite if $-f(\mathbf{x})$ is positive semidefinite. (Fig. d)

Mathematically, a quadratic programming problem can be expressed as:

$$\text{Minimize} \quad f(X) = C^T X + \frac{1}{2} X^T C_1 X$$

subject to linear constraints:

$$AX \leq B$$

$$X \geq 0$$

where B is an $m \times 1$ column vector of scalars $b_i (i = 1, 2, \ldots m)$ and A is an $m \times n$ matrix with coefficients $a_{ij} (i = 1, 2, \ldots m; j = 1, 2, \ldots n)$.

Another way of expressing the above is:

$$\text{Minimize} \quad f(X) = \sum_{j=1}^{n} C_j x_j + \frac{1}{2} \sum_{i=1}^{n} \sum_{j=1}^{n} C_{ij} x_{ij}$$

subject to linear constraints:

$$\sum_i \sum_j A_{ij}x_j \leq b_i \qquad i = 1, 2, \ldots, m$$

$$x_j \geq 0 \qquad j = 1, 2, \ldots, n$$

Maximization may be obtained by simply reversing the sign of each term in the objective function.

There are many methods of solving a quadratic programming problem. One of them is Wolfe's method or the so-called Wolfe's algorithm using a modified simplex method for solving quadratic problems. This algorithm was later programmed by H. T. Bates of Kansas State University.[19] The algorithm proceeds as follows:

1. A basic feasible solution to the constraint set is found such that the resulting values of the state variable are all non-negative.

2. The objective function is separated into its linear and quadratic terms:

$$Z = \sum_{j=1}^{N} C_jX_j + H[X_i, X_j].$$

3. The quadratic function H is decomposed into an

[19] Bates' program was used in this paper.

N X N matrix by inspection or by partial derivatives:

$$H[X_i, X_j] = \underline{X_j}^{Q}\,\underline{X_i}$$

where $\underline{X_j}$ and $\underline{X_i}$ are N element row and column vectors, respectively, and

$$Q_{ij} = \frac{1}{2}\,\frac{\partial H}{\partial(X_{ij})}$$

4. A simplex algorithm then finds the minimum of the augmented tableau.

CHAPTER 7

The Money Market

This market deals mainly in very short-term credit instruments. As such it serves two functions. First, it allows financial institutions to economize on reserves and non-financial business enterprises to minimize transactions balances, Second, it provides saving units one other alternative set of assets in which to hold wealth. Banks and non-bank institutions faced with inadequate reserves or tight liquidity position borrow from fellow financial institutions. Business enterprises usually face uneven cash inflow and outflow. Any surplus can be lent to the market and deficits can be covered by the same source. While the market fulfills the function of serving the liquidity needs of financial and non-financial enterprises, a part of their issues has been bought by saving units. In fact individuals' holding has risen to about 20 percent of total outstanding issues in the last few years. However, financial intermediary transactions still comprise the largest share of the market.

The market offers varied instruments -- ordinary promissory notes, repurchase agreements, trust certificates, certificates of participation (CP) and direct lending portfolios or without recourse papers (WORP). Risk on the papers varies depending on the creditability of the ultimate borrower and on factors determining movement of the cost of capital in the financial system. Both primary and secondary issues are

transacted in this market. Secondary issues of financial institutions are close substitutes of ordinary deposits. Both are direct liabilities of these institutions. Their credit risk is dependent on the probability of default by the intermediaries themselves. In the case of CP's and WORP, investors bear much of the credit risk since financial institutions act principally as brokers without explicit liability in case of default. Actual risk to the investor tends to be lower than credit risk since many broker intermediaries provide an implicit guarantee of the loan portfolio they recommend to investors. Despite such guarantee, a significant premium for risk in the form of interest rate differential is being paid these papers.

The paper describes empirically some major features of this market with the aim of evaluating its role as a purely short-term market and as a channel for savings and investment. The paper also traces the movement of interest rate and compares its level with the rates on alternative assets in the financial system. Finally, we try to measure both credit and market risk. Credit risk is risk of default by the creditor. Market risk is risk due to possible fluctuation in the yield of an asset.

1. Transactions in the Market

The money market started in 1965 as essentially an interbank market. It has since grown rapidly in volume of transaction, number of participating companies and in the variety of assets transacted. Membership in the money market association (MART) rose to 994 by the end of 1979 of which 739 were active members. Each member has to be registered with the Securities and Exchange Commission (SEC) like companies issuing equities. The growth of the money market can be better appreciated if this number of active members is compared to the 72 corporations which are more regularly traded in the stock exchange. (See chapter on the stock market.) Volume of transactions also rose rather phenomenally from ₱101 billion in 1974 to ₱295 billion in 1979.

As discussed above, the money market caters mainly to short-term uses of funds while the stock market is considered to be a source of long-term funds. There is, however, much overlap in their function since both markets supply liquid assets to savings units. Moreover, as will be seen later, short-term funds have been used for longer term uses. These money market functions are delineated by segregating the issues that are held by MART members and by savings units such as individuals, pension and trust funds and social insurance companies.

The paper focuses on some special features of the market and tries to explain the average and relative rates of interest. Features

to be noted are the large size of transactions taking place, the fairly wide interest rate differential among instruments and the high rate of renegotiation of loans by borrowing non-financial corporations. We are fortunate to be able to make use of two unpublished sets of data -- the monthly report of MART Monitor and the Central Bank decoded file on individual transactions.

The Money Market Association (MART) agreed to monitor transactions of member institutions and companies. It issues a monthly report to members containing information on each member's amount of borrowing allowed by or registered with the SEC, outstanding balance, availment of credit, and their distribution by type of paper. A complementary report by creditors of each company on the status of its borrowing is also provided. Reporting creditors state how much of the claims they hold are in current, negotiated, overdue and default statuses. It is to be noted that the volume of credit reported by creditors is generally much lower than the total debts reported by the debtor companies. There is a possibility the distribution of total debts by status may not be equal to the distribution as reported by MART creditors. Unfortunately, MART creditor reports provide the only source of information on quality of credit. Meanwhile, we assume the MART creditor report is representative of the total volume of credit.

2. Some Features of the Money Market

Table 7.1 aggregated into four groups of participants -- large non-financial corporations, commercial banks, non-bank financial intermediaries and small non-financial corporations -- the information provided by MART Monitor on the credit permitted by the SEC, outstanding balances, their distribution by type of paper, and outstanding status of credit granted by MART member. (The groups are labeled by MART as CP10, CP20, CP30 and CP40). We find that monthly availment is usually a fraction of SEC-allowed issues with the rate of availment differing quite substantially among financial and non-financial corporations. Monthly availment rate has been highest at betwen 35 to 50 percent for financial institutions and less than 25 percent for large corporations. Small non-financial corporations availed of their money market line at an even smaller rate. This low availment rate for the non-financial corporate sector probably reflects the conservatism of financial institutions in their granting of credit line to ultimate borrowers. Corporate borrowers have to go through a fairly strict and comprehensive credit evaluation to be granted a money market credit line. Consequently, only a small number of registered borrowers could actually borrow. Another consequence is the concentration of lending to prime corporations which absorbed more than two-thirds of credit granted through the money market. In fact, one investment house complains of the fewness of qualified non-financial borrowers. This successful, though not a very large house limits its lending to a surprisingly

Table 7.1

VOLUME OF MM TRANSACTIONS BY TYPE OF INVESTOR (PFS)
(in Million Pesos)

	Investor	1975	1976	1977	1978	1979
	Total	196,278	224,586	275,927	315,821	
1.	Individuals	42,440	41,726	39,406	46,901	
2.	Commercial Banks	60,547	80,529	99,144	105,957	
3.	Rural/Thrift Banks	4,747	5,080	6,910	8,964	
4.	Other Banking Inst.	9,257	7,890	8,235	24,273	
5.	Investment Houses	6,965	5,106	6,421	8,880	
6.	Investment Companies	2,633	1,455	1,584	10,501	
7.	Finance Companies	1,837	2,596	2,844	7,325	
8.	Trust/Pension Funds	5,180	8,088	13,850	15,877	
9.	Government Insurance	469	462	36	100	
10.	Private Insurance Co.	3,089	2,503	2,490	3,316	
11.	Other Government Corp.	13,204	19,277	13,534	7,679	
12.	Other Private Corp.	44,865	38,217	41,679	55,179	
13.	Security Dealers	579	382	264	420	
14.	Lending Investors	208	111	124	573	
15.	National Government	258	-	-	11	
16.	Local Government	-	-	-	-	

DISTRIBUTION OF TRANSACTIONS BY PURPOSE, 1976-79

	1976 (₱ mil)	%	1977 (₱ mil)	%	1978 (₱ mil)	%	1979 (₱ mil)	%
Saving Portfolio (Rows 1 + 8 + 9 + 10 + 14)	51,386	26.18	52,890	23.54	55,906	20.26	66,767	21.14
Corporation Private	44,865	22.85	38,217	17.01	41,679	15.10	55,179	17.47
Public	13,204	6.73	19,277	8.57	13,534	5.0	7,679	2.43
Financial Inst. (Rows 2 + 3 + 4 + 5 + 6 + 7 + 13)	95,511	44.11	114,202	50.85	164,808	59.7	186,196	58.96
Government	208	0.11	-	-	-	-	-	-
Total in percent		100.00		100.00		100.00		100.00

SOURCE: CB Financial Statistics of corresponding years.

few strictly evaluated corporations totalling 30 borrowers. Many of the corporations that obtain a credit line with this house are also in the same list of qualified corporations in other investment houses and commercial banks. (Please see availments, Table 7.2.)

Money market transactions are not clearly delineated as to use, whether for purely short-term or long-term purposes (saving-investment). However, we can infer from the type of investor in the market the distribution of transactions for these two purposes. We consider purchases of money market issues by individuals, trust and pension funds and insurance companies including government social insurance systems to be part of their savings portfolio. On the other hand, security dealers and financial and non-financial corporations purchase money market issues as their stock in trade or to reduce excess liquidity. The proportion of transactions for savings fluctuated around 25 percent of the total over the last five years. This is a rather high proportion going to savings portfolio considering that the greater portion of money market transactions is an interfinancial accommodation for reserve and other liquidity needs. The year-end balance of purchases by individuals and other savings units exceeded the level of saving and time deposits in these years. This fact leads us to conclude that the money market has become a very important savings alternative in the system. Note, however, that the size of individual placement has been large with about 80 percent being of one million or larger in the past five years. (Please see Tables 7.2 and 7.3.)

Table 7.2

SIZE DISTRIBUTION OF MONEY MARKET TRANSACTIONS
(1976-1979)

Size (in thousands)	1976	1977	1978	1979	1976	1977	1978	1979
Totals (in million)	190,449	210,76	235,801	295,489	100.00%	100.00%	100.00%	100.00%
Less than 50,000	860	408	440	216	.45	.19	.19	.07
50- 99	4,576	1,468	1,219	1,122	2.40	.70	.52	.38
100- 199	9,586	5,891	4,539	1,658	5.04	2.79	1.93	.56
200- 299	9,144	10,505	3,196	9,903	4.80	4.98	3.48	3.35
300- 499	12,818	14,167	12,390	11,310	6.73	6.72	5.25	3.83
500- 999	23,225	23,916	22,684	19,977	12.20	11.35	9.62	6.76
1,000-1,999	29,720	27,537	30,065	49,284	15.60	13.07	12.75	16.68
Greater than 2,000	100,521	126,874	156,268	202,012	52.78	60.20	66.27	68.37

SOURCE: Central Bank of the Philippines Financial Statistics.

Table 7.3

MONEY MARKET TRANSACTIONS

		1979	%	1980	%
Value	without tax (in ₱1,000)	5,716,079	66.6	5,810,949	70.2
Value	with tax (in ₱1,000)	2,863,737	33.4	2,466,644	29.8
	T O T A L:	8,579,816	100.0	8,277,593	100.0
		1979		1980	
Number	without tax	5,327		5,525	
	with tax	2,258		1,681	
	T O T A L:	7,585		7,206	

NOTE: This does not include government papers and interbank call loans.

SOURCE: Calculated from the Central Bank computer file; one week, September, 1979; one week, September, 1980.

The importance of this market as a source of long-term fund is also indicated by the volume of renegotiated loans. The MART Monitor reports that of the inventory of papers reported by creditors of large corporations, about 70 percent was renegotiated from month to month. Moreover, the rate of roll-over varied only slightly over the months. This implies that part of corporate borrowing from this market amounted to an issue of perpetual bonds. The roll-over rate varied among non-financial corporate borrowers. It was lower by as much as one-half for small corporations (CP40). According to a dealer, the ability to renegotiate a loan depends on a borrower's ability to meet the obligation at its maturity. This roll-over criterion results in what might be considered a perverse allocation of rolled-over funds since those who do not need the funds obtain them while those who do, do not. (Please see Table 7.4.)

3.1. Risk of Money Market Instruments

We looked at risk from the viewpoint of the investor and estimated two risk indicators -- credit and market risk, the former from the default rates reported in the MART Monitor; the latter from the time series of yields reported in the CB-Financial Statistics. Risk of default on papers issued by a bank or investment house depends on the probability of bankruptcy or failure. This could be taken as rather

Registered Credit, Availment, Balances, Status of Account and Number of Non-Financial Corporations: Members of MART, 1979-80

A. Large Corporations

1979	CP 10 Reported by Registrants			CP 10 Reported by Creditors													
				Inventories				Breakdown by Type of CP									
	Amount Registered with SEC	Avail-ments for the Month	Outstand-ing Balance	Current	Over-due	Default	Nego-tiated	CP 10	CP 20	CP 30	Total	No. of Re-gis-trants	No. Re-port-ing	Inv. + Neg.	Total Inv.	Inv. + Neg.	Inv. / Inv. + Neg.	Inv. Total
Jan.	13,226.6	2,334.8	3,320.6	531.3	13.5	17.2	1,975.1	33.6	474.0	2,029.6	2,537.2	456	379		562	2,537.10	.222	.031
Feb.	13,226.6	1,464.2	2,378.2	597.9	13.5	21.9	1,615.0	34.0	510.8	1,703.6	2,248.4	456	346		633.3	2,248.30	.282	.0346
Mar.																		
Apr.																		
May	11,677.6	1,881.0	2,838.6	726.2	11.6	19.1	1,586.2	39.7	595.6	1,707.9	2,343.1	464	375		756.9	2,343.10	.323	.025
June	9,980.8	1,999.0	2,069.0	642.5	17.9	9.4	2,016.2	19.3	716.3	1,950.4	2,686.0	426	387		669.8	2,686.0	.249	.014
July	9,980.8	2,450.9	3,572.1	657.2	21.9	34.6	2,202.2	118.7	808.2	1,989.0	2,915.9	426	375		713.70	2,915.90	.245	.048
Aug.																		
Sept.	9,942.1	2,456.6	4,765.0	904.9	13.6	42.9	2,533.4	93.0	966.6	2,435.2	3,494.8	411	354		961.4	3,494.80	.275	.045
Oct.	9,942.1	2,403.7	3,533.8	685.5	28.1	55.3	2,427.3	64.5	969.5	2,163.9	3,197.9	411	352		768.9	3,196.20	.241	.072
Nov.	9,942.1	2,281.5	3,975.8	929.2	17.3	78.6	2,763.3	85.0	1,141.5	2,562.0	3,788.5	411	362		1,025.10	3,788.40	.271	.077
Dec.	11,351.1	2,671.1	4,253.4	871.1	11.5	16.1	2,254.1	109.6	1,101.3	1,946.1	3,157.0	465	396		898.70	3,152.80	.285	.018
1980																		
Jan.																		
Feb.	11,351.74	2,755.93	4,250.	808.74	20.68	36.84	2,162.95	19.95	1,026.99	1,982.16		465	396					
Mar.	12,921.92	3,009.77	5,332.15	974.68	27.14	66.44	2,765.18	236.36	1,322.55	2,274.53		496	398					
Apr.	12,921.92	3,289.28	4,967.08	1196.44	18.52	42.84	2,876.82	92.27	1,365.11	2,677.24		496	388					
May	12,921.92	2,565.87	4,143.43	1019.10	16.91	28.81	2,868.02	260.07	1,382.28	2,290.48		496	395					
June	14,257.45	3,112.94	4,997.56	1132.48	18.23	17.43	2,588.68	110.84	1,277.64	2,368.34		512	382					

SOURCE: Money Market Association (MART) Monitor, Computer Print-out for Selected Months.

Registered Credit, Availment, Balances, Status of Account and Number of Non-Financial Corporations: Members of MART, 1979-1980

B. Small Corporations

1979	CP 40 Reported by Registrant: Short Term	Availments for the Month	Outstanding Balance	CP 40 Reported by Creditors: Inventories: Current	Overdue	Default	Negotiated	Breakdown by Type of CP: CP 10	CP 20	CP 30	Total	No. of Registrants	No. Reporting	Total Inv.	Neg. + Inv.	Neg. / Neg. + Inv.	Def / Inv.
Jan.		466.2	510.5	23.8	.3	5.3	9.7		14.3	24.6	38.9	431	234	29.4	39.1	.25	.180
Feb.		579.2	408.9	25.5	1.7	5.5	15.8	.002	24.0	24.5	48.4	431	213	32.7	48.50	.33	.108
Mar.																	
Apr.																	
May		353.6	467.9	36.9	7.1	5.5	5.4	.002	25.4	29.5	34.9	444	258	49.5	54.90	.109	.111
June		877.3	439.8	30.2	.5	2.7	5.2	.002	17.0	21.5	38.5	474	266	33.4	38.60	.156	.081
July		287.9	414.9	45.7	.5	8.1	5.2	.002	33.8	25.7	59.5	474	271	54.3	59.5	.087	.149
Aug.																	
Sept.		285.5	572.1	47.3	3.0	8.7	18.5	.002	44.9	32.5	77.5	463	260	59.0	77.50	.314	.147
Oct.		470.1	686.9	53.7	3.7	8.5	6.3	2.8	41.6	27.9	72.3	463	262	65.9	72.20	.096	.129
Nov.		573.6	906.7	89.8	9.6	11.1	10.9	.002	81.5	40.1	121.6	463	270	110.5	121.4	.099	.100
Dec.		1,116.7	1,010.0	64.8	8.1	21.3	6.7	.002	60.2	40.7	100.9	471	285	100.9	107.6	.066	.211
1980																	
Jan.																	
Feb.		526.75	982.30	75.65	9.58		8.85	.002	68.49	29.95	98.45	471	271				
Mar.		743.55	875.49	112.25	12.48		68.08	.75	85.42	113.23	199.35	483	293				
Apr.		1,026.98	1,135.70	73.89	10.12		54.117	.002	60.07	85.40	145.47	482	283				
May		521.36	670.34	56.75	10.50		4.65	1.45	53.08	25.36	79.89	482	261				
June		429.24	640.62	49.92	20.15		3.25	.002	47.49	35.26	82.75	483	273				

SOURCE: Money Market Association (MART) Monitor, Computer Print-out for Selected Months.

large considering the series of failures of major borrowers from the market that weakened the position of major houses. In addition, a large house was reported to have engaged in anomalous deals.[20]

Reported default rate showed a declining trend up to 1980. Even for large corporations, the rate averaged about 9 to 10 percent from 1977 to 1978. (Please see Table 7.5) The rate fell quite substantially to less than five percent in 1979. The decline continued on reaching less than 2 percent in 1980. Default rate by small corporations was, in general, much higher than by large corporations, ranging from seven percent to 21 percent, with an average of 12 percent for the last nine reporting months of 1979. Official report on the recent failures is not yet available but these might involve billions of pesos worth of uncollectible money market accounts, thus, raising their default rate.

We measured market risk from monthly fluctuations of yield assuming that investors hold their money market papers beyond their maturity. Since it is not clear whether investors consider a portfolio of money market papers or hold only one paper at a time, only the own variances were calculated. Yield and risk were estimated for the market portfolio

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[20] Manotoc securities which failed last year contributed less than 5 percent to the total financial and corporate money market transactions. Genbancor was also relatively small, ranking 17 among 29 private domestic commercial banks when it failed. The two other banks that failed did not have money market desks at the time of bankruptcy. The failure of Manotoc Securities and Genbancor was not due to default by either borrowers but by mismanagement of liquidity and investments. It is alleged that both invested short-term funds in real estate and other long-term capital of affiliated enterprises.

Table 7.5

ROLL-OVER AND DEFAULT RATES OF LARGE AND SMALL NON-FINANCIAL CORPORATIONS, 1979-1980
(in percent)

	LARGE		SMALL	
	Default	Roll-Over	Default	Roll-Over
1979- 1	3.1		18.0	24.8
2	3.5	71.8	16.8	32.6
3	-	-	-	-
4	-	-	-	-
5	2.5	67.7	11.1	9.8
6	2.4	75.1	8.1	13.5
7	4.8	75.5	17.2	10.0
8	-	-	-	-
9	4.5	72.5	14.8	23.9
10	7,2	75.9	12.9	10.3
11	7.7	72.9	10,1	9.0
12	1.8	71.5	22.6	6.6
1980- 1	-	-	-	-
2	4.3	71.4	4.8	9.0
3	6.2	72.1	5.0	34.2
4	3.4	69.6	8.0	37.2
5	2.7	72.9	10.6	5.8
6	1.5	68.9	11.9	3.9

SOURCE: Money Market Association (MART) Monitor.

of papers that were not exclusively or mainly held by financial institutions. Excluded were interbank loans and government securities. Included were promissory notes, repurchase agreements, certificates of participation, and commercial papers which are held by all groups of investors.

The estimated yield and market risk for each paper and for their market portfolio for 1976 to 1979 are presented in Table 7.5. Except for certificates of anticipation and participation (CA and CP), yield fluctuations were relatively small (vis equities), with coefficient of variation ranging from .04 to .16. CAs and CPs exhibited much higher fluctuation, with a coefficient of variation as high as 1.93 in 1976.

The market portfolio was highly concentrated in promissory notes and repurchase agreements. Their yields moved closely together over time except in 1979 as shown by their high correlation coefficients. Such a high positive correlation weakens the need for so much diversification of money market portfolio. In 1978, for instance, a one-asset portfolio of either repurchase agreement or non-financial commercial paper gave a higher yield and lower variance than the market portfolio. Moreover, the improvement in yield-risk level due to diversification into two major papers (RA and PN) was quite minimal for all years. It would, therefore, be more meaningful to consider either paper as an alternative to other assets in the financial market -- bank deposits and equities -- than as an alternative to each other. Contrast yield

Simple Mean Yield and Standard Deviation of
Money Market Papers and their Market Portfolio, 1976-1979
(in percent)

	Weight 1976-79	1976	1977	1978	1979	1976-79
1. Promissory Notes	.795	13.11 (1.10)	12.53 (1.52)	10.60 (1.05)	12.05 (.58)	12.07 (1.43)
2. Repurchase Agreements	.151	13.57 (1.42)	13.45 (1.34)	11.34 (.65)	13.72 (1.20)	13.02 (1.52)
3. Certificates of Assignment	.001	14.31 (.79)	14.35 (1.22)	11.35 (3.80)	11.95 (18.22)	12.99 (3.68)
4. Certificates of Participation	.002	10.93 (21.06)	10.55 (16.55)	10.25 (.48)	13.52 (1.71)	11.31 (4.38)
5. Commercial Papers (non-financial)	.046	14.09 (1.34)	13.57 (1.79)	11.42 (.46)	14.34 (1.55)	13.35 (1.77)
6. Commercial Papers (financial)	.005	14.49 (1.47)	14.00 (2.28)	11.26 (.62)	15.40 (1.62)	13.79 (2.20)
Market Portfolio	1.000	13.25 (1.12)	12.71 (1.49)	10.72 (.95)	12.50 (.57)	12.28 (1.41)
V_{12}		.934	.993	.861	.215	.834

Note: These are simple average of monthly yield. Standard deviations are in parentheses.

SOURCE: Central Bank Philippine Financial Statistics.

Weighted Mean and Standard Deviation of
Money Market Papers, 1976-79
(in percent)

	1976	1977	1978	1979	1976-79
1. Promissory Notes	13.18 (1.06)	12.51 (1.43)	10.59 (.96)	12.05 (.54)	11.99 (1.41)
2. Repurchase Agreements	13.57 (1.36)	13.46 (1.27)	11.36 (.62)	13.72 (1.11)	13.25 (1.48)
3. Certificates of Assignments	14.13 (.63)	14.86 (1.08)	12.69 (.34)	11.95 (1.19)	14.19 (1.31)
4. Certificates of Participation	14.42 (1.09)	12.81 (1.43)	10.19 (.49)	13.52 (1.55)	12.90 (2.17)
5. Commercial Papers (non-financial)	14.02 (1.31)	13.56 (1.72)	11.42 (.45)	14.34 (1.48)	13.38 (1.71)
6. Commercial Papers (financial)	15.04 (1.54)	14.77 (2.17)	11.37 (.65)	15.40 (1.52)	14.56 (2.22)

SOURCE: Central Bank Philippine Financial Statistics.

movements with the wild fluctuations experienced around 1970 (Clemente, 1975). The narrowing of the fluctuation is a reflection of the growth of the market and its integration into the other segments of the financial market. While money market transactions were mainly interbank accommodations around 1970, they now consist of borrowing and lending by a much larger number and more varied surplus and deficit units -- individuals, financial and non-financial corporations. The rapid growth of commercial bank participation to the point where they dominate the market contributed much to its growth and its integration into the system. This development has two important consequences. One is greater competition in the sourcing and allocation of funds within at least the central city financial market. Commercial banks can borrow in time deposits or money market instruments; they may lend in the form of straight loans or money market arrangements. This greater degree of competition and the large pool of funds collected prevent wide interest rate fluctuation. To be recalled are the related arguments used by Roxas and Tan to explain the wide money market rate fluctuation. Roxas pointed to the lumpiness of withdrawal of funds and lack of secondary reserves which rendered banks vulnerable to sudden reserve deficiency. In a small market, this creates monopoly power for those which happened to be in a surplus position. This monopoly power is necessarily weaker in a large market with many players. Tan pointed to the small size of the market around 1970.

3.2. Average and Relative Money Market Rates

Until July 1976 money market rates were not regulated or directly taxed. Their movement reflected more fully the conditions of supply and demand for funds in this market and possibly the rest of the financial system. The 1976 restrictions consisted of a 17-percent rate ceiling imposed on known money market instruments and a 35-percent tax on the rate paid by ultimate borrowers in the market. At the same time, the ceiling rates on competing debt instruments -- bank deposits and loans -- were raised in order to make them more competitive with the issues in the money market. The effectiveness of these regulations is not clearly evidenced. As observed earlier, the market continued to grow and deficit units did not seem to have been discouraged from borrowing by the 35 percent tax.

Either or both the following might have happened.

The participating units could avoid the regulations by using money market instruments that did not fall under the regulations. It is to be noted that these regulations were imposed on specific instruments. It is not difficult for financial institutions to issue papers with new names or to arrange new means of borrowing or lending that would legitimately avoid the ceiling rate and the tax. Without recourse papers (WORP) and trust certificates are examples of such innovations. It is to be

recalled that the money market itself is a means by which commercial and other banks earlier avoided the interest rate ceiling on bank loans and deposits. It is well-known WORP earn as much as 22 percent, while the general money market ceiling is 17 percent. Apparently, the coverage of the 35 percent tax is even less restrictive. Only 32 percent of the total volume of transactions occurring in one week in September 1979 and another week in September 1980 fell under the taxed category. As a consequence of the uneven enforceability of the regulations, the market probably functioned fairly freely. It could so arrange its portfolio of assets and liabilities so that those of relatively low risk and transactions cost are issued in known money market papers and have rates at or below the ceiling, while those whose market rate is above the ceiling are issued as new papers and, therefore, not covered by the regulations. In this way, a structure of rates can be determined less restrictedly. In this market, we expect the structure of rate to be determined by the relative risk and transactions cost of each paper. In general, risk is higher the longer the maturity of a paper and the less diversified a portfolio. There is more uncertainty about the value of an asset in the far future. A bank or individual lending to one large corporate borrower means a large concentration of his portfolio in this borrower. He foregoes the opportunity of diversifying his credit to two or more smaller borrowers. On the other hand, the cost of processing and collecting information per peso lent tends to be smaller the larger the value of a credit transaction. Information cost tends to be lower the longer established a borrowing

enterprise is. In many cases, credits are secured by liquid assets; some, by a firm's total assets; some, granted on the basis of special client relation. All these factors are expected to influence the relative rate of interest.

The average rate of interest, in contrast, is expected to depend on the overall condition of supply and demand for funds in the economy as a whole and on competing sets of financial assets such as equities, deposits, and loans. The array of assets that may form the choice set of non-financial investor includes cash, deposits, equities, money market instruments and insurance claims. Banks and non-bank intermediaries face an asset choice set of loans, money market papers and equities and a liability (source of funds) set of deposits, money market instruments, discounting at CB and other credits such as foreign borrowing. The factors that influence the relative rates of money market instrument are the same factors that affect relative rates of competing instruments considered as asset (lending) or as liabilities (borrowing). We may thus expect that the average money market rate will depend in part on the average rate of competing classes of assets -- deposits and equities -- from the investor's viewpoint, and on loans and equities, from the financial intermediaries' viewpoint.

Supply and demand condition in the market will determine the average rate of all classes of financial claims. Wealth is a constraint variable.

Given these arguments we hypothesize two functions -- one on average rate, $\bar{R}$; the other on relative rate R_i in the money market, i for money market category.

(1) $\bar{R} = \bar{R}(M, \quad SPI, \quad RD)$

(2) $R_i = R(S_i, \quad T_i, \quad C_{ij})$

$\bar{R}$ = weighted average rate where weights are the volumes of transactions in pesos of each paper

M = change in the stock of money, alternatively, the reserve position of banks as reflected in excess reserves, ER,

R_i = the rate on each money market paper, $i = 1, 2, \ldots 7$

(Please see page 140 for the grouping of transactions.)

SPI = the stock price index as reported by the Manila Stock Exchange

S = transaction size in thousands

C_{ij} = category of paper, $j = 1, 2, \ldots 4$

where 1 Promissory Notes

2 Repurchase Agreements

3 Certificates of Assignments

4 Certificates of Participation

0 Papers subject to tax

T = maturity in days

Data:

Monthly data used in the first set of regression runs explaining the average money market yield were obtained from the Central Bank Financial Statistics. The data on relative rates were obtained from the computer file of an institution. We obtained a new file of individual transactions in the money market taking place daily for one week in September 1979 and another week in September 1980. There were more than 5,000 transactions recorded in each week of 1979 and 1980 with information on type of investor or buyer, type of paper, rate of interest, maturity and value. The data were decoded so that the participating financial institutions could not be identified. A separate analysis was done for government securities and interbank call loans. These serve mainly the primary reserve needs of banking institutions and cannot be considered as close substitutes of the other money market papers. Interbank call loans generally pay relatively low interest rates and government papers are issued on special auctions mostly to financial institutions. The former are very short-term loans of about 24 hours maturity only.

We tested the relative rate hypothesis by both linear and nonlinear and the average rate by linear regressions. The average rate function was tested separately for January 1971 to June 1976 and July 1976 to December 1979 monthly data in order to take account of the effect of the imposition of the 17 percent rate ceiling and 35 percent tax in June 1976. The relative rate function was tested on the 1979 and 1980 cross-section data separately.

The linear test of the average rate function gave mixed results. For the earlier period 1971-1976 during which the rates were free to fluctuate, the results supported the hypothesis. The interbank rate was negatively influenced by both excess reserve position of banks and the stock price index. The rate on promissory notes, R_{PN}, was significantly influenced by the stock price index. Neither excess reserves nor CB loans to banks nor changes in money supply significantly affected money market rates except interbank rates. It is to be noted that during the period most transactions were interbank. In fact up to 1975, the latter composed 70 percent of the total. The effect of tightness of money supply and credit was probably directly transmitted to bank liquidity position and only later to non-bank transactions in the money market.

In the second period, we obtained a perverse, if not an insignificant, effect of credit tightness as reflected in CB loans or excess reserve and generally insignificant effect of the stock price index. We hesitate to interpret these results right now and feel we need more institutional insights to be able to explain the rate movement. There could have been erroneous reporting of interest rate after the ceiling rate was imposed. In such a case, the results would be spurious.

The second hypothesis relates the rate of a money market instrument to its characteristics risk and transaction cost. Risk and transaction costs are both reflected in the size of the paper, with risk

rising and transaction cost falling with size. Risk is expected to increase with maturity and varies with the type of paper -- whether secured or unsecured, and whether granted to old clients, prime borrowers or to new firms or new borrowers. Repurchase agreements, for example, are well-secured papers collateralized by marketable securities.

The transactions were grouped into seven categories and regressions were run on each. This was done in order to isolate the effect of institutional factors that might be reflected in the type of paper or type of transactor. Interbank loans and government securities are mainly reserve assets. Marketing of government securities are more restricted and they are less competitive with other money market papers. Without recourse papers are free of rate ceiling and tax. These three types of papers are thus segregated from each other. Finally, we separated the transactions by type of investor: (a) whether the buyer is likely to be folio managing his savings or his cash flow. Individual buyers and pension funds belong to the former group, while corporations and investment houses belong to the latter category. Thus, we have the following grouping of transactions:

I. Commercial banks buying
II. Investment houses buying
III. Saving units selling, buying
IV. Other financial institutions buying
V. Transactions of private corporations

VI. Transactions of government securities

VII. Transactions of without recourse papers (WORP)

This grouping controls for the influence of purpose of paper in interest rate determination. Commercial bank and investment house buying involves lending to non-financial corporations. Saving units' buying is mainly lending to financial institutions since without recourse papers are excluded as a categoric variable. The categoric variables are type 1, promissory notes; type 2, repurchase agreements; type 3, certificate of assignment; and type 4, certificates of participation; and 0, for paper subject to tax.

Let us focus first on the three groups of buying or lending units -- the two major financial institutions consisting of commercial banks and investment houses (Groups I and II), and saving units (Group III).

For banks and investment houses, transaction cost seems to dominate the cost of risk. The coefficients of transaction size are negative for both institutions. The coefficient of maturity is significant. However, it has the unexpected sign, negative, in both cases. The coefficient for the type of paper reflecting lower risk for repurchase agreement is significant and of the expected sign.

Looking now at savings units, the linear regression gives coefficients that are significant and of the expected sign. Apparently, risk of placing investment in one borrower overwhelms the saving in transaction cost.

Hence, the negative sign of the coefficient of transaction size. When Group III sells, the coefficient turns positive, as is expected. The other variables have significant and expected coefficients.

For 1980, the behavior of saving units with respect to transaction size and maturity and kind of paper is as expected. The coefficients of size and maturity are both positive and of the expected (positive) sign. Risk sharing reflected in certificates of participation and anticipation is paid interest premium so that the coefficients of these categoric variables are positive and relatively larger.

For financial institutions, savings in transactions cost seem to offset the additional risk from large lending as shown by the negative significant size coefficients. More risky type papers 3 and 4 bear higher interest rate than promissory notes and repurchase agreements. Maturity is the significant variable for government issues. It has the expected sign.

The regression runs on money market papers explained in some way the relative rate of interest. For both 1979 and 1980, there was an apparent preference by financial institutions (Groups I, II, IV) for longer term papers charging them a lower rate of interest than short papers. This would be a reasonable response if financial firms anticipated a fall in short-term rate. They would, thus, sell their short-term and buy long-term, making capital gains on the short papers. This decision

Regression Results
ate as Functions of Size, Maturity and Asset Type, 1979

N	COEFFICIENTS				$\bar{R}^2$	F	Number of Observations
	Type 1 Promissory Note	Type 2 Repurchase Agreement	Type 3 Certificates of Assignment	Type 4 Certificates of Participation			
	.3292*	1.1314*			.1030	23.015	768
	(.81)	(2.312)					
		.0382			.1975	46.199	766
		(.818)					
		1.5556*			.2838	14.67	139
		(2.480)					
		.1787*			.1755	8.343	139
		(2.657)					
		2.0923*		3.3848	.3594	486.23	3,968
		(45.185)		(4.2838)			
		.2156		.2800	.2437	256.59	3,968
		(33.222)		(3.484)			
		2.6888*		3.4499	.6192	31.89	96
		(8.0024)		(10.9539)			
		.2106*		.2613	.6135	31.93	96
		(8.0616)		(10.6917)			
		4.9236*			.5019	31.48	122
		(7.0858					
		.4337*			.4314	23.35	122
		(6.0781)					
		.7912*			.3484	68.15	49
		16.0326)					
		.5048*			.8345	61.52	49
		14.9616)					
					.0766	46.47	1,098

Regression Results

ate as Function of Size, Maturity and Asset Type, 1980

ity	Type 1 Promissory Note	Type 2 Repurchase Agreement	Type 3 Certificates of Assignment	Type 4 Certificates of Participation	$\bar{R}^2$	F	Number of Observations
	1.7926* (3.8051)	5.799* (10.5731)	7.0767 (3.9228)		.1961	38.962	779
	2448* 066)	.5313 (10.2112)	.7674* (3.9919)		.1891	37295	779
		- .2517 (-.1495)			.0827	3.455	110
		.0342 (-.2251)			.1274	4.978	110
		2.6598* (30.2717)	3.1210* (13.4151)	3.5996* (2.2931)	.3494	355.892	3,966
		.2105* (32.5873)	.2269* (11.7771)	.1825 (1.3598)	.3248	318.835	3,966
		6.2005* (9.2638)		4.9135* (9.8917)	.8320	62.890	51
		.4257* (10.7894)		.3469* (11.2101)	.8856	97.738	51
		5.8607* (3.7425)			.4931	14.131	55
		.7193* (3.8786)			.3643	8.736	55
		6.2982* (4.6943)			.4954	6.154	22
		.5039 (5.004)			.5376	7.104	22
					.0894	35.857	711
					.3740	213.106	711

would be reflected in observed lower rate for longer maturity papers. It is, however, difficult to explain why the anticipations for a randomly selected week in two separate years would be similar. This leaves us with an unexplained perverse term structure in the money market. Nevertheless, the R^2's are quite high for cross-section data. Type of paper must capture most of the risk-difference. The influence of this categoric variable is strong as well as highly significant.

3.3. Data Description

We find in the preceding section that risk and transaction cost explain only a fraction of the variance of interest rate in the money market. In order to obtain additional insight into the market we present here the weighted mean, standard deviation, and relative frequency distribution of money market rates by purpose and type of transactor which were calculated from the computer file. Table 7.8 shows that the rate paid by the three groups financial institutions: commercial bank, investment houses, and other finance companies, varied fairly significantly with the investment house paying the highest rate; commercial banks, the lowest, with a rate differential of about two percentage points in 1980. Within each group of institutions, the rate also varied significantly as seen in the frequency distribution and the coefficients of variation. Interest rate earned by savings units also differed depending on the type of paper, whether without recourse

Percentage Distribution of Money Market Rates by Investor Type, 1979

		Commercial Bank Buying	Investment Houses Buying	Saving Units Buying	Without Recourse Papers	Interbank Call Loans	Other Financial Inst. Buying	Private Corp. Buying
	< 5	1.562	1.439	1.285	.0	11.355	.0	0
5	- 7.9	9.114	5.755	1.815	.065	2.198	9.836	0
8	- 9.9	3.385	.719	1.209	.0	.732	9.836	77.551
10	-10.9	9.895	2.878	11.442	.130	.366	5.738	16.326
11	-11.9	2.735	.719	30.771	1.043	.366	1.639	2.041
12	-12.9	1.823	1.439	.630	.261	2.198	3.279	0
13	-13.9	2.213		2.394	1.435	1.832	2.459	0
14	-14.9	3.124	2.158	4.713	2.216	.366	2.459	0
15	-15.9	65.234	85.892	45.514	14.798	80.586	64.754	4.082
16	-16.9	.260		.156	31.421			
17	-17.49			.051	16.623			
17.5	-17.9	.260			6.584			
18.0	-18.49	.260			17.666			
18.5	-18.9	.130			5.737			
19	-19.9				1.825			
	> 20				.195			
$\bar{R}$		13.106	14.090	12.794	16.638	13.246	12.958	4.
σ		3.196	2.461	2.414	1.440	3.738	3.179	1.
N		768	139	3,968	1.534	273	122	49
$\sigma / \bar{R}$		.244	.175	.189	.087	.280	.245	.

SOURCE: Money Market Association Monitor, unpublished computer

paper which earned the highest rates or the other. Note that WORP are not subject to interest rate or tax regulations so that we can expect their rate to be higher than that on other papers. This wide rate differential was partly explained by risk and transactions cost. It may be argued that imperfections in the market also account for some of the rate variation. There is little reason, for instance, why the mean and distribution of rates should differ between institutional groups. Thus, the unexplained variance in the regression runs given in the following section may be taken as an indicator of the presence, if not the degree, of non-competitive pricing in the money market.

The reported rates on money market instruments, just like the reported rates on bank deposits and loans, need to be taken with caution. The ceiling rates imposed on these instruments might have led to the underreporting of actual rates. But even taking into account possible underreporting, the reported rates on money market papers are high compared to the rate on bank deposits, their close substitutes. This might account for the rapid growth in money market placement reflecting responsiveness of wealthholders to the rate differential.

However, they cannot be as sensitive to this because of the indivisibility of money market papers. It is suggested that the restriction on placement size be abandoned. With this proposed relaxation, the competitiveness of financial assets would improve and enhance the impact of the deregulation of interest rates. Another concluding suggestion we would like to make is for an official reporting and analysis of the papers transacted in this market.

CHAPTER 8

Finance Choice

This chapter will look into the supply side, i.e., the capital budgeting or finance choice of firms. The Modigliani-Miller classic model (1958) is used as the analytical framework. Finance data from scattered sources including sporadic flow of funds estimates are put together and analyzed using the model revised to suit conditions prevailing here. The chapter proceeds by first presenting the M-M finance model. The empirical analysis follows.

1. Theoretical Framework

Firms face several sources of finance for their capital and current expenditures. Capital expenditures may be funded from internal sources, equity and loans or bonds. Current expenditures may be financed from current income, trade credit and short-term debt instruments. There may be some overlap in the sources of funding capital and current expenditures but we consider the overlap not too important and we assume that long-term sources finance long-term uses only, and short-term sources, current expenditures. The theory has focused on long-term financing. We follow this same focus for this paper.

The Modigliani-Miller (M-M) model developed along the same premises as the efficient market or capital asset pricing model described earlier.

Firm owners are assumed to maximize returns to their investment in the firm. The model assumes similar competitive conditions as in the efficient capital market model such as homogeneity of market opportunities, perfect divisibility of borrowing, and zero brokerage cost. These are not explicitly stated in their paper. It also implicitly assumes that competitive conditions hold in the goods and factor markets. The latter assumption underlies the application of the M-M model to a class of firms which can be treated as homogeneous with respect to real opportunities. Furthermore, firm owners are not distinguished by their controlling interest. They are, thus, taken to be also homogeneous in terms of corporate power and profit share. This implies that maximization of net profits leads to the maximization of returns to equity shares. We will discuss later that this assumption needs to be relaxed in order to consider behavior of controlling interest in corporate enterprises.

Capital budgeting decision takes off from more basic investment decision. It is worthwhile investing or taking on additional capital so long as its present value is positive. The investment may be financed by debt or equity or internal finance. The choice depends on which source will maximize the rate of return to the original equity.

So long as the rate of return on the investment is greater than the yield of the original equity, owners' networth is increased by undertaking the investment. However, the rate of increase in networth depends on the source of funds used whether new equity issue or debt finance. Equity issue will dilute the profits from the new investment, while debt financing will not. In general, debt financing is preferred to equity issue when the differential between the internal rate of return to investment and the loan rate is greater than the additional risk premium of debt financing. In this case, internal finance or retained profits are subsumed in the initial value of equity. In the real world, the opportunity cost of internal finance may be lower than equity yield. It might, therefore, be worthwhile to use it in lieu of loan or new equity issue.

The model involves interaction of financial investors in their portfolio decisions and borrowers in their finance choice. With the above restrictive conditions in all three markets, equilibrium rates of return to equity of firms in a given class are shown to be a function only of the risk premium assigned to equity as against loan financing. This risk is the risk of investment in equity assets in terms of zero or given risk on fixed liability assets like loans. For details of the model, the following is reproduced from the Modigliani and Miller's paper.

In a perfect capital market, the price per dollar's worth of expected return must be the same for all equity shares of any given class. The shares within each class are assumed to have equal risk. In each class k the price of every share is proportional to its expected return. Denote this factor of proportionality as $1/P_k$. Then if P_j denotes the price and $\bar{X}_j$ the expected return per share of j^{th} share in k^{th} class, or the expected profits before payment of interest rate.

8.1) $$P_j = \frac{1}{r_k} \bar{X}_j \; ; \quad \text{or, equivalently,}$$

8.2) $$\frac{\bar{X}_j}{P_j} = r_k, \quad \text{a constant for all firms } j \text{ in class } k.$$

r_k is the expected rate of return of any share in class k, and $1/r_k$ is the price which an investor must pay for a dollar's worth of expected return.

Loans and bonds are fixed liabilities and yield a constant income r per peso loan per unit time. r is the loan rate or the discount rate of a certain stream of income. Default rate is assumed zero.

Let

D_j the market value of debts of firm j

S_j the market value of common shares of j

$V_j \equiv S_j + D_j$, the market value of all its securities or the market value of the firm.

$$8.3) \quad V_j = (S_j + D_j) = \frac{\overline{X}_j}{r_k} \quad \text{for any firm } j \text{ in class } k.$$

Equation 8.3 is M-M's proposition I: the market value of any firm, V_j is independent of its capital structure and is given by capitalizing its expected return $\overline{X}_j$ at the discount rate r_k appropriate to its class. Equivalently, the average cost of capital is $\overline{X}_j/V_j$, or

$$8.4) \quad \frac{\overline{X}_j}{(S_j + D_j)} \equiv \frac{\overline{X}_j}{V_j} = r_k$$

If (8.3) and (8.4) do not hold between any pair of firms in a class, arbitrage will take place and restore the stated equality. Investors would buy and sell stocks and bonds in such a way as to exchange one income stream for another income stream, identical in all relevant respects but selling at lower price. The value of overpriced shares will fall, that of the underpriced will rise, raising the former's rate of return to r_k.

From proposition I, Proposition II is derived. The proposition states that the expected yield of a share of stock is equal to the appropriate discount rate r_k for a pure equity stream in the class, plus a premium related to financial risk equal to the debt to equity ratio times the spread between r_k and the interest rate on debts, r.

$$i_j = r_k + (r_k - r)\, D_j/S_j$$

Define i, expected rate of return to equity in firm j as

$$8.5) \quad i_j \equiv \frac{\overline{X} - rD_j}{S_j}$$

From proposition I equation (8.3), we know that

$$\overline{X}_j = r_k(S_j + D_j)$$

substituting into (8.5) we obtain

$$8.6) \quad i_j = \frac{r_k(S_j + D_j) - rD_j}{S_j} = r_k + r_k \frac{D_j}{S_j} - \frac{rD_j}{S_j} = r_k + (r_k - r)\frac{D_j}{S_j}$$

which is M-M's proposition II.

Equilibrium in the M-M model is obtained by adjustment of demand for equity of the different firms. The decision involved is essentially

a portfolio decision. However, the model contributes to our understanding of a cause for risk variation, i.e., the risk attributed to leverage. The higher the leverage rate, the higher the variation in returns to equity for a given distribution of returns to investment (Philippatoss, 1973, pp. 250-253). It helps us to be aware of the interaction of demand and supply in the financial market and to link the literature on portfolio choice to that on finance or capital budgeting.

Let us consider that loan financing rate is relatively low and firms try to obtain funds through this source. As demand for loans increases, their rate is bid up partly because intermediary creditors have to attract additional funds to meet the increased demand. In the process, interest rate on their borrowing such as bank deposits or bills is bid up. As the rate on these assets rises, portfolios tend to shift toward deposits and bills. The prices of other assets tend to be pulled down and their yield, to be pulled up. The loan rate cannot, therefore, remain low. It will adjust upward until the equity-loan rate differential just equals the risk premium on loans. This would imply an upward shift of the market line for investors. Its intercept is the rate on bank deposit rate. The loan rate may be assumed equal to the deposit rate plus some mark-up by banks to cover their operating cost. Equilibrium in the M-M model means a simultaneous equilibrium in the portfolio of assets and in the sources of finance. If the sources of finance are in equilibrium but the portfolio of assets is not, the latter prices will change leading to a change in their rates which are the relative costs of financial sources. The equilibrium condition in one market, therefore, implies equilibrium in the other.

2. Market Adjustment

The interaction between portfolio and finance decisions (demand and supply of assets) determines the equilibrium of the portfolio and rate of return of the different assets. These are viewed as assets by wealthholders and as sources of finance by firms and intermediaries. If the capital market is not efficient, M-M's Proposition II will not hold. Recall that under efficiency conditions of the capital asset pricing model (CAPM), asset returns will behave as follows:

$$(8.7) \quad R_j = R_F + (R_M - R_F) \beta_j$$

R is returns to asset j, risk-free asset F and the average for risky assets in the market M. β_j is risk of asset j. Obviously, β_j includes the risk due to leverage since leverage rate determines, in part, the variation in return to equity. We expect that people's response to risk due to leverage will be similar to their response to total risk. Under efficiency conditions we expect, therefore, that equation (8.1) will hold. If this holds then M-M's Proposition II also holds. A test of the CAPM also tests Proposition II.

Our test of the CAPM gave very poor results which leads us to think that it is not too meaningful to undertake a separate test of M-M's model. Instead we go into aggregate financial analysis to find how

Philippine firms financed their expenditures. We try to identify the factors that might have influenced the availability and cost of alternative sources of finance and analyze their implication on choice.

3. Sources and Uses of Funds

The observed sources of finance used by firms and households reflect their response to the structure of cost of capital. We argued in the preceding chapter about the segmentation of the market by regulations and imperfections which gives rise to variation in absolute as well as relative cost of finance. Some regulations directly affect the cost and availability of specific credit sources. In some segments or for some groups of deficit units, loans are cheaper than other internal funds. Firms in the developed segment (DC) are usually larger and, therefore, have lower cost of equity financing. The opportunity cost of their internal funds is higher since they are in a better position to place the funds in higher yielding financial assets. They also have better access to borrowing at subsidized rates; they can at least borrow from financial institutions. In contrast, firms and households in the undeveloped segment (UDC) face more limited market opportunities. Their inability to invest in higher-yielding financial assets because of indivisibility, distance, or lack of information, makes the opportunity cost of their internal funds low and limited to savings and time deposits. Many UDC borrowers have less access to subsidized bank loans despite government policy, and have, therefore, resorted to loans from non-institutional sources. For these units, internal sources would be the cheapest sources of funds. For DC firms, loan financing from banking institutions would be the cheapest source of funds.

The response of the different groups of borrowers to the respective financing opportunities they face is, to some extent, reflected in the data. Information on sources of finance is obtained from scattered sources. An ideal source of information on sources is flow of funds statistics. Available flow of funds data were collected in special studies rather than as a regular part of national statistics (Hooley and Moreno, 1950-1965; Moreno and Vasquez, 1969-1973; and NCSO, 1974-1976). We try to put these together to see the trends in the sources and uses of funds. The interpretation of trends has to be made with caution since the estimation methods used were not the same rendering the three sets of information not exactly comparable. The first two used primary data from a sample of firms and households. The NCSO is reconstructed from secondary sources.

Flow of funds table (FOF) traces the sources and uses of funds for one or all economic sectors -- households, business, financial, government, and foreign. The sources for each sector are its income, sale of assets, collection of receivables, proceeds from borrowing, and issue of securities. Uses are current expenses, physical investment, financial investment, and payment of liabilities. This set of information not only traces the sources of saving for investment but it also allows an estimate of funds that are intermediated or channelled through financial institutions via deposits and other financial assets.

Moreover, the time series of FOF shows portfolio changes among alternative financial and physical issues.

The complete (all sectors) FOF tables are available for 1950 to 1965 (Hooley-Moreno) and for 1974-1976 (NCSO). In a complete FOF table, the flow of funds can be traced from spending units (households, business and government) to financial intermediaries and the rest of the world, and back from the latter two sectors to spending units. A separate estimate of FOF for households 1950-1977 was made by Burkner (1979) using secondary sources, and another for private corporations by Moreno and Vasquez (1978). The sectoral FOF are used to supplement the information from the two complete FOF series.

Important changes in the savings and portfolio behavior and in the degree of intermediation are observable. Intermediation has affected portfolio choice by households and consequently, the sources of funds for investment by them as well as non-household or business units. These changes are discussed in greater details below.

4. Household Savings and Portfolio of Assets

Households including unincorporated enterprises contributed the largest though slowly decreasing share in total saving -- 74 percent from 1950-1959, 70 percent from 1960-1969, and 62 percent in the 70s. Corporate saving comprised 11, 18 and 16 percent, respectively, for the

same period. As access to financial assets increased, their portfolio became more diversified and the share of own investment in physical assets dropped. This is shown by a downward trend in the ratio of physical investment to saving given in Table 8.1 (Hooley-Moreno and NCSO). A better picture of the changing portfolio of household asset is shown in Burkner's table, here Table 8.2. We prefer to use this since the Hooley-Moreno FOF seemed not to have captured all the spending units' holding of financial assets. There was no entry on deposits in their use column.

In the immediate postwar when the financial system was still very small most of household saving went to direct physical investment. In the decade of 1950 to 1959, tangible investment absorbed on the average about 83 percent of total saving. This was partly financed by financial liabilities (about 5.8 percent of saving) leaving a net financial investment of about 17 percent. Physical investment gradually fell over the years though at fluctuating rate so that in the next decade, it was 7.2 percent and in the 70s, it was about 57 percent. Household participation in the market, as shown both by their financial investment and borrowing, grew at a fairly rapid rate from 28 to 62 to 74 percent over the same period. Gross financial investment which started at 22 percent in the 50s rose to almost 60 percent in the 70s. Households borrowed more in later years, allowing some of them to be in deficit for building their physical capital.

Table 8.1
PORTFOLIO OF PERSONAL SAVINGS, 1950-1977

	(1)	(2)	(3)	Financial Assets (4)	(5)	(6)	(7)	(8)	(9)	(10)
	Financial Assets	Increase in Liabilities	Tangible Assets	Cash & Demand Deposits	Savings Deposits	Time Deposits	Deposit Substitutes	Securities	Trust Funds	Life Insurance and Employee Benefit Insurance
1950	32.7	- 4.3	71.6	61.1	- 0.9	1.9	0.0	29.6	0.0	8.4
1951	- 2.4	- 3.5	105.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1952	12.2	- 1.4	89.1	- 6.8	18.0	1.3	0.0	36.0	7.9	43.7
1953	20.8	- 0.4	79.6	14.2	24.1	1.9	0.0	18.3	4.3	36.8
1954	22.9	- 0.7	77.7	3.3	20.0	5.8	0.0	22.0	4.7	39.8
1955	23.7	- 9.9	86.2	8.9	15.3	25.8	0.0	15.8	5.2	26.0
1956	24.2	-14.9	90.7	32.7	30.2	-18.8	0.0	26.4	4.8	24.8
1957	26.8	-10.5	83.8	22.5	22.0	3.0	0.0	19.8	4.0	28.7
1958	30.3	- 4.5	74.5	20.7	15.7	3.6	0.0	26.4	3.6	29.9
1959	33.4	- 8.0	74.6	15.5	13.5	2.3	0.0	32.7	3.5	32.6
1960	32.0	- 7.6	75.6	7.0	12.7	1.1	0.0	38.8	4.1	36.3
1961	12.7	-16.7	74.0	5.3	18.0	6.8	0.0	24.2	2.8	26.4
1962	46.2	-15.4	69.3	25.1	19.0	9.0	0.0	19.8	2.7	24.3
1963	51.8	-17.4	65.5	29.6	24.1	6.5	0.0	18.3	2.2	19.4
1964	30.2	-19.2	88.9	-18.4	27.1	5.9	0.0	36.0	5.0	44.5
1965	39.9	-14.5	74.6	17.0	19.0	5.8	0.4	22.8	3.5	31.6
1966	45.3	- 7.4	62.1	11.5	28.2	10.3	2.9	22.1	2.9	22.1
1967	56.6	-18.8	62.3	15.5	32.6	8.0	1.0	20.9	2.6	19.4
1968	50.2	-32.4	82.3	2.9	24.9	- 0.7	7.0	31.9	4.1	29.9
1969	55.0	-17.7	62.7	24.3	21.1	0.6	8.2	20.9	3.2	21.8
1970	54.8	- 7.4	52.6	13.7	30.2	5.0	11.3	16.9	2.9	18.1
1971	57.7	-19.9	62.2	16.6	26.9	10.7	7.7	19.3	0.3	18.6
1972	48.1	- 0.7	52.6	27.2	7.2	15.0	3.4	20.4	0.0	21.8
1973	67.3	-20.3	53.1	9.2	25.7	5.1	22.4	13.7	10.2	13.8
1974	72.5	-30.2	57.7	18.5	12.9	4.7	21.8	20.6	10.5	11.0
1975	58.3	-19.1	60.8	4.0	13.8	11.3	23.6	21.4	9.9	16.0
1976	56.2	-14.6	58.5	12.6	23.0	19.6	2.2	16.7	6.4	19.6
1977	54.0	-14.4	60.4	11.8	-22.0	26.2	6.8	18.9	1.5	17.3

Source: Cols. (1)-(3) T.T.1, p. 279; Cols. (4)-(6) T.5.1, p. 280, Burkner (1979).

Note: Columns (1) + (2) + (3) = 100%; columns (4) + (5) + (10) = 100%.

Despite these trends, the proportion of household savings that became available for business investment remained low. In the 70s, net financial investment was only 40 percent of total saving. Counting investment in unincorporated enterprises does not change the picture very much since the bulk of physical investment went to real estate and consumer durables (90 percent in the 70s).

It may be argued that the segmentation of the financial market has not encouraged financial investment especially by small savers whose opportunities in the financial market are not very attractive. Most financial investments may be said to have been made by large savers and little by small savers. Investment in deposit substitutes, securities and trust funds are made mainly by the central city rich. They have access to these assets and have no problem with their indivisibility. Compulsory and contractual saving forms (employee benefit insurance or social security and other life insurances), on the other hand, are generally held by those with stable income like salaried individuals. They belong to the upper half of the income distribution. Private voluntary life insurance would not give a good return for those with low and uncertain income since the probability of insurance lapses and forfeiture is high. Small savers especially in rural areas are, therefore, left with deposits as the only financial option. We find that their share in deposits has not been large. Only five percent of saving and time deposits in the last three years

Table 8.2

SIZE DISTRIBUTION OF SAVINGS AND TIME DEPOSITS AND DEPOSIT SUBSTITUTES, 1977 (in %)

	(1) Savings Deposits	(2) Time Deposits	(3) Savings and Time Deposits	(4) Deposit Substitutes
₱1,000 & below	7.6	0.4	5.1	
₱1,001-₱10,000	18.0	11.3	15.7	
₱10,001-₱50,000	20.1	16.7	18.9	
Over ₱50,000	54.3	71.6	60.3	
< ₱100,000				0.9
₱100-199				2.4
₱200-2,000				32.2
Over 2,000				64.5
Total	100.0	100.0	100.0	100.0

Source: T. 4.7 p. 293 and T.411, p. 207, Burkner (1980).

was in ₱1,000 or less size, about 15 percent in ₱1.001 to ₱10,000. (See Table 8.2) The average poor would hold less than ₱1,000 deposits. We may also consider the fact that less than five percent of total banking deposits came from rural banks reflecting a low share of rural households in financial savings.

We might argue from the above findings that more savings could have been mobilized from the household sector with a correct policy or correct pricing of assets. Among large savers, direct investment in real estate and consumer durables were encouraged by the unintended subsidy of loans obtained from government and other banks for these uses. These were further encouraged by the low tax rate of real estate. A competitive financial regime combined with a progressive high real estate tax might have reduced their share and directed household saving to financial assets. The funds could have been allocated to more productive uses. More financial savings from low-income groups could also be expected in such a regime. We might support this contention by pointing to the rather large shifts in household portfolios. These shifts might be interpreted to reflect their attempt at finding optimal portfolios. With the rise in the ceiling rates on time deposits in mid-1970s, the share of this financial assets rose. The share of insurance claims declined possibly in response to the high inflation rate which eroded the expected real returns on this form of saving. We cannot clearly support the responsiveness of households to relative rates of return to assets given the difficulties of obtaining fine enough data on this variable.

4.1. Corporate Sector

Incorporated enterprises tend to be much larger than unincorporated enterprises.[21] They also tend to be located in urban centers. All top 1,000 corporations are either located in the metropolitan area or keep their central administrative offices there. They, therefore, have better access to institutional sources of finance than unincorporated businesses. As a whole, the opportunity cost of corporate internal funds is higher and cost of equity issue lower than for the latter small household firms. Nevertheless, corporate financial market opportunities are not homogeneous because of imperfections in the institutionalized financial sector. As discussed earlier, transactions cost differs depending on the size of equity issue and firm regulations. Ability to borrow from subsidized sources depends on many factors, some of which are not necessarily economic in nature. Finally, some corporations belong to financial conglomerates. For these reasons, the relative cost of alternative sources of funds differs even among incorporated firms. Some would find equity issue the cheaper source; others, loan financing. It is not easy, however, to document relative cost and show how choice depended on this variable. One way is to categorize firms by their relative cost and to see how cost determines each category's finance

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[21] The 35 percent ceiling tax rate on corporate income encourages the incorporation of large enterprises.

choice. We may take as one category firms that belong to financial conglomerates. Another category consists of firms which have political and personal influence with government banks. A third category is size. The relative cost of loans will tend to be lower for the first two categories while equity cost will be lower for large firms in general. The first two categories are not readily observable and tend to be confounded with each other and even with size. Testing for their effect is, therefore, not easy to do. In regard to internal finance we expect its opportunity cost to be equal among all corporations though its relative cost vis loans and equity depend on the other factors.

5. The Basis for Conglomeration

We try to provide the basis of financial-non-financial conglomeration. Firms faced with a downward sloping demand for investment funds or goods, like consumers with a downward sloping demand for consumption goods, obtain a suplus in their purchases at a given price. Consider a firm faced with a hypothetical marginal internal rate of return line IOR as in Chart 8.1. Superimpose on the chart a supply of funds curve FF with equilibrium rate at R_m. Assume this rate to be also the market rate. At this rate firm has a net gain, call it producer surplus equal to the triangle $R_M IO_1$. At the supply curve FF, the intermediary has a net gain of $R_M O_1 F$. Without conglomeration, the intermediary gain is the area $R_M O_1 F$. If it is conglomerated with the borrowing firm its owners share in the producer surplus. The intermediary surplus thus increases. Everything else equal (risk, management cost, etc.), intermediaries would prefer to lend to affiliate versus non-affiliate firms.

R, interest rate

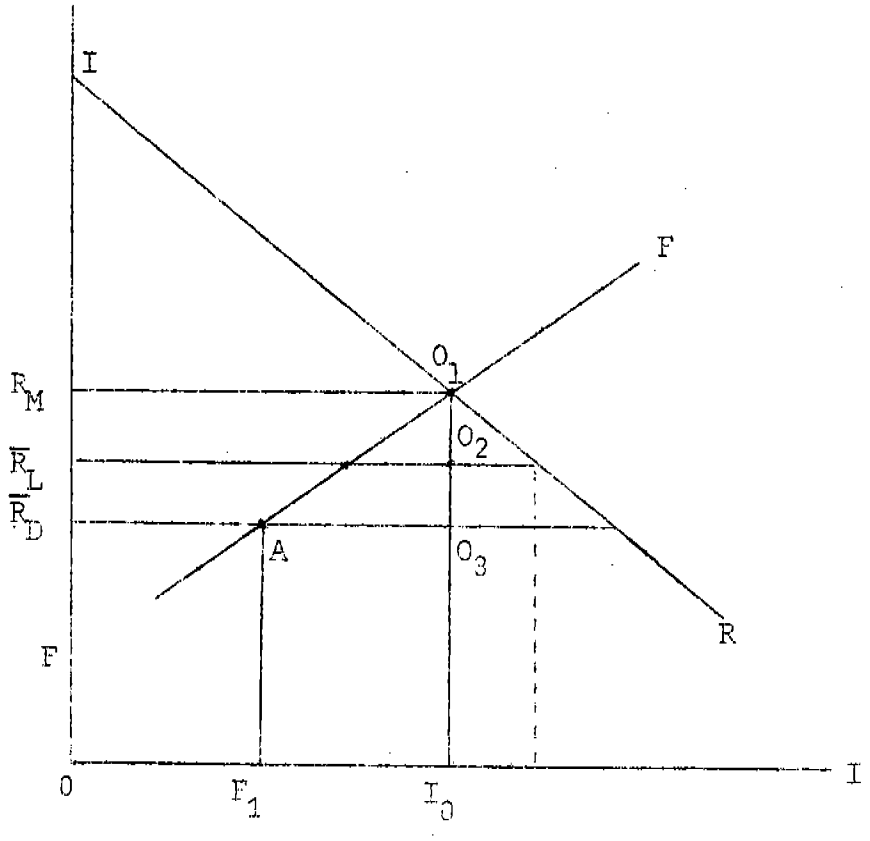

CHART 8.1

Note that producer surplus increases as lending rate decreases. The CB ceiling on loan and deposits rates would tend to encourage conglomeration. The ceiling rates on loans and deposits are reflected in the chart by $\bar{R}_L$ and $\bar{R}_D$, respectively. At the same time, CB credits are granted to intermediaries to supplement their supply of funds at about the rate $\bar{R}_D$ to, say F_1I_0, so that investment remains

at I_0. At $\bar{R}_L$, there is excess demand for loans (as experienced in the country). If the ceiling rate on loan is implemented, producer surplus increases but intermediary surplus decreases. Intermediaries would have a greater incentive to conglomerate so they can share in a larger producer surplus which includes some CB subsidy equal to $\bar{R}_L R_M O_1 O_2$.

Conglomeration is not costless, however. There are usually diseconomies of scale due to the deterioration of the quality of management as enterprise size expands. There may also be diseconomy due to loss of expertise as managers engage themselves in diverse activities. These diseconomies probably dominate possible gains from the reduction in the cost of credit information, collection of payment and transactions between affiliate companies. Thus, society loses from any difference in marginal returns to investment between conglomerated and independent enterprises. Political patronage encourages conglomeration. Special licenses for imports, natural resource exploitation (logging, minerals, oils), public utility (electricity, fuel processing), export trade, and processing of major products (sugar and coconut) have been granted to political interest groups. These licenses create monopolies and guarantee large profits. It becomes worthwhile for financial institutions to conglomerate with these interest groups or for these to take over financial institutions. Such conglomeration concentrates the total surplus in a smaller group of entrepreneurs.

This kind of conglomeration is very much in evidence in this decade (Doherty, 1979).

6. Other Forms of Influence

Personal and minor political connections have influenced the allocation of credit by intermediaries especially the public and publicly-supported ones. Profit rates of firms able to avail of credit from this source would tend to be higher everything else equal. Entrepreneurs possessing political and other kinds of influence over these banks would, therefore, tend to undertake more activities than others. In contrast, independent firms would have to compete with each other in obtaining funds for their investments and, therefore, have to be efficient in order to survive. It is possible that when political firms take over from these competitive firms society loses out. It foregoes higher marginal returns to investment by the unsubsidized firms which political firms replaced.

7. The Relative Cost of Finance

These influences have direct but differing effect on the cost of capital to different groups of borrowers. It is obvious that if there is capital rationing at an artifically low rate, those able to borrow at this rate are favored. The opposite holds for those who are rationed

out of the system. The relative cost of borrowing through loans is lower than that of stock issue and other sources for the former.

Other regulations not directed at specific sources of financing also affect the cost of capital and, therefore, the choice of finance. The ceiling on deposit rate has artificially lowered the opportunity cost of internal finance especially of small household entrepreneurs and other businesses. They have little or no access to high-yield financial assets such as money market placements or a well-selected portfolio of equities. These assets require a large minimum placement and are, therefore, not available to small surplus units. Poor information further limits access to certain assets. Another cause for cost differences is transactions cost. There is usually a large, fixed component of transaction cost in equity issue. It has to be registered at the Securities and Exchange Commission and it also has to be advertised. The average transaction cost, therefore, depends on the volume of funds needed and on the reputation of a firm. It will tend to be relatively high for small and new firms.

We find in the foregoing that far from having a perfect capital market, we have several factors that results in substantial variation in the absolute as well as relative cost of alternative sources of funds. Some sources are not available (or their cost is prohibitively high) to certain groups of deficit units particularly to small firms and to those located in remote areas not serviced by intermediaries.

The relative cost will determine the source chosen. Firms with low opportunity cost of internal finance would rely on this more than on other firms. Those belonging to a financial conglomerate would tend to rely on loans more than internal and equity sources. Financial decision is also colored by the non-homogeneity of equity holders. Many Philippine corporations are effectively controlled by a small group of stock holders. It is possible that the effective rates of return to the equity holding of the controlling interest group is higher than the effective rate on small holdings. Profit share can be paid in the form of directors' and officers' fees in excess of their opportunity salaries. Since controlling interest decides on this matter, the effective dividends can differ. An example of this behavior is that by San Miguel Corporations (SMC) officers. They were reported to have paid themselves a very large proportion of company profits in the form of directors' fees and allowances. Apparently, SMC is not an exception in the Philippine scene judging from the opulence of corporate officers' lives and the relatively low dividend rates paid on most stocks. The case is not easy to support by data since financial reports usually lump together officers' and non-officers' salaries, fees and allowances into the same accounts.

The rise of family corporations can be rationalized by low opportunity cost of internal and loan financing. So long as the cost of internal finance and loans are low relative to the pure equity rates, these

two sources will be used by family firms. They, therefore, would not have any incentive to go public.

We may conclude that the many complexities in the financial market are partly caused by regulations and partly by underdevelopment and imperfections. These give rise to a multiplicity of market opportunities for financial and non-financial investment that differ among groups of decision-makers. It is not easy to document these complexities. Our analysis of flow of funds in the next section helps a little in understanding the financial decisions made by the different units.

8. Corporate Finance 1950-1976

Corporate sources are summarized from the different FOF data in Table 8.3. Corporate saving was a very important source of corporate finance in the early stages of growth with its share in total sources amounting to 44 percent. As size and the number of firms increased in the process of industrialization, demand for external funds increased also. This was met by supply from the expanding financial system especially banks and by other types of credit. Thus, we see the downward trend in the contribution of saving in total corporate finance from 44 percent to about 11 percent in 1974-76. The downward trend was broken in 1972 and 1973 when profits rose increasing savings. While total liabilities were increasing in importance, credit generated by the financial system seemed not to have increased as a proportion of total liabilities. Trade credit increased rather sharply starting at four percent of total sources in 1951-55 and reaching 28 percent in 1974-76. All private spending units, including households, used this source. For the corporate sector, trade credit became as important as loans as a source of funds in the 70s.

We present Table 8.2 in an attempt to see a pattern of corporate financing of capital and other expenditures by different industrial groups. We find tremendous variation in the share of each source among industries. To be noted is the relatively low reliance on funds from financial institutions averaging 18 percent by all corporations with ranges of .6 of one percent for mining to 39 percent for agriculture. Long-term loans from this source were even less important, averaging 7 percent and ranging from .5 of one percent to 27 percent. Non-intermediary sources -- trade credit and other borrowing -- had the largest share in almost all corporations. Looking now at long-term sources, we find just as much variation in the use of alternative sources. Savings varied from 12 to 54 percent; equity, from 25 to 92 percent; loans from financial institutions, from 1 to 46 percent; and other long-term sources, from 0 to 34 percent.

There seems to be no clear-cut pattern in the way the different industries were financed. Credit incentives granted via financial institutions may explain agriculture's high share of long-term financial loans. But then the BOI-registered manufacturing corporations borrowed less than non-registered manufacturing corporations from this source. The former should be expected to rely more on government bank loans, DBP in particular, since they are granted priority status for borrowing from this source.

Table 8.2

PERCENTAGE DISTRIBUTION OF CORPORATE SOURCES OF FINANCE, 1951-76

	1951-55	1956-60	1961-65	1969-73	1974-76	1969	1970	1971	1972	1973	1974	1975	1976
1. Saving	43.7	43.7	35.8	13.0	11.1	12.1	13.9	12.1	25.6	33.1	10.9	11.9	10.6
2. Loans	14.5	14.4	28.1	18.0	36.0	30.7	24.5	29.4	25.0	2.1	37.0	31.2	38.9
3. ST	10.2	4.3	15.0	10.7[a]		18.2[a]	22.5[a]	13.1[a]	27.1[a]	2.1[a]		13.4	
4. LT	11.3	10.1	13.1	7.3[a]		12.5[a]	2.0[a]	16.3[a]	- 2.1[a]	-		17.8	
5. Other Liabilities, ST	9.6	14.9	9.7	30.8	6.7	21.6	16.9	- 2.9	17.0	26.3	2.7	6.9	4.2
6. Other Liabilities, LT						14.9	14.0	21.2	- 0.1	9.6			
7. Total (2) + (5) + (6)	24.1	29.3	37.8	48.8	42.7	67.2	57.4	47.7	41.9	38.0	46.7	38.1	43.8
8. Trade Credit	3.6	6.8	8.8	16.5	27.7	11.9	21.1	36.3	22.6	13.6	21.6	28.7	30.6
9. Total Liabilities	27.8	36.1	46.6	65.3	70.4	79.1	78.5	84.0	64.5	51.6	68.3	66.8	74.4
10. Equity	28.8	20.8	17.6	21.9	18.6	9.0	7.7	4.0	9.9	15.3	21.1	21.4	15.1
11. Total Sources	100.2	100.5	100.0	100.2	100.1	100.2	100.1	100.1	100.0	100.0	100.3	100.1	100.1
12. LT Sources to Investment	82.8	121.9	100.3	129.1		60.7	51.6	73.8	95.7	170.8			

Source: Tables 1-18, Hooley-Moreno (manuscript as of April 28, 1981) for 1951-65; Moreno-Vasquez FOF tables for 1969-73; and NCSO FOF Tables for 1974-76.

[a] Are financial liabilities.

Table 8.3

CORPORATE SOURCE OF FUNDS BY INDUSTRY GROUPING AND FOR MANUFACTURING, WHETHER OR NOT REGISTERED WITH THE BOI
1969-1973 (in (%)

	Agri-culture	Mining & Quarrying	Transpor-tation	Commerce	Construc-tion	Electric-ity	Services	All	Manufacturing: BOI-Registered Under 6135 & 5186	Manufacturing: BOI-Registered Under 5186	Manufacturing: Not Registered	All Corporate Groups
Saving/TS	1.8	4.8	33.6	7.7	13.1	4.6	14.3	7.5	8.9	7.1	4.4	13.0
ST - Financial/TS	11.7	0.1	1.0	15.7	5.5	11.9	4.5	12.5	11.9	7.3	17.0	10.7
LT - Financial/TS	27.2	0.5	8.1	2.9	3.8	8.4	13.4	7.6	6.7	6.0	15.2	7.3
Trade Credit/TS	11.3	8.6	9.0	17.3	9.3	2.4	16.4	20.7	19.2	25.3	21.1	16.47
Other Borrowing/TS	23.8	26.3	32.8	32.3	56.4	26.0	23.0	28.7	33.5	32.7	11.0	30.8
Equity/TS	16.1	59.8	15.5	24.2	11.9	46.8	28.4	23.0	19.8	21.7	31.3	21.9
Saving/LTS	16.7	7.3	53.5	19.8	41.2	7.8	23.6	15.3	19.0	13.6	8.7	20.1
LT - Financial/LTS	46.2	0.8	13.0	7.1	12.0	14.0	22.2	15.6	14.2	11.3	21.3	15.2
Other LT Borrowing/LTS	9.8	0.0	8.9	14.1	9.6	0.0	7.0	22.1	24.8	34.0	8.5	14.7
Equity/LTS	27.4	92.0	24.7	59.8	37.3	78.3	47.2	47.1	42.1	41.2	61.5	44.1
LTS/Fixed Assets	140.9	105.2	105.9	211.7	158.9	78.3	141.4	107.3	93.1	114.1	150.6	129.1
Net Income after Taxes/Equity	12.9	14.9	24.5	10.3	13.5	5.3	5.7	3.3	2.0	5.6	4.2	9.5
Dividends/Equity	5.6	19.0	3.1	8.2	6.0	0.0	4.9	4.7	5.0	2.3	5.1	6.1

Source: Calculated from the balance sheet tables of Moreno, H. and N. Vasquez, "A Survey of the Financial Structure of Philippine Corporations 1969-1970," University of the Philippines School of Economics, 1977, mimeographed.

Note: Registration with the Board of Investment (BOI) means a corporation obtains credit, import and/or tax incentives. The Moreno-Vasquez tables are balance sheet accounts. Savings is saving for each year plus retained profits.

We explained earlier wy Philippine corporations tend to rely on internal finance and to remain as family corporations. This seems to be borne out by the data which show saving as a fairly important source of long-term funds. For such corporations, even equity may be considered as an internal source since it consists of the direct investment of the firm owners. Contrast the case for mining and electricity industries. These are public corporations whose equity shares are marketed in the stock exchange. Both sectors have very high equity shares and low saving and other sources share in their long-term financing.

Finally, we want to note that except for electricity, all industrial groups had more than enough long-term funds for their capital expenditures. If, however, only long-term funds from financial institutions are counted, they would appear inadequate since they covered only 15 percent of total long-term funds of corporations between 1969 and 1973. It is possible that the observation about the short maturity structure of funds (1978 World Bank-IMF-CBP Report, various Central Bank official statements aimed at rationalizing the structure of interest ceiling and the succeeding relaxing of the ceiling) was based on the maturity structure of loans granted by financial institutions. The data show that long-term funds were available but that they came from non-institutionalized sources -- saving, direct investment of firm owners, and other sources. Corporate accounts do not specify what these 'other' sources are. A possible important component of these are purchases of equipment on credit and long-term leases of equipment and other capital expenditures.

CHAPTER 9

Concluding Remarks

The Philippines has come a long way in developing a network of financial institutions which provides the infrastructure for the mobilization of savings and other funds, and the widening of asset choices to wealthholders. The financial asset ratio more than doubled from .20 to .50 over the post independence period. Financial development has indeed been taking place but rather slowly and involving certain structural problems many of which are consequences of the interest and credit policy follows. The finance ratio is about 10 percent of the United States and our M_2/GNP ratio is about a third of Japan. The low financial development indexes reflect the poor mobilization of savings of households especially those in the lower income brackets and those from rural areas. Apparently, financial savings are being done mainly by urban high-income families and businesses. We blamed the low interest rate on savings and time deposits and the inaccessibility of the higher yielding financial assets to small savers as an important factor for the slow rise in financial savings. The generally poor performance of rural banks should also account for this problem.

We find business enterprises to have relied increasingly on external funds. However, they came from non-financial sources. Trade credit and loans from non-intermediary sources accounted for about half of total corporate sources. Financial intermediaries supplied loans

amounting to about 20 percent of total sources only. We might expect unincorporated business to have borrowed even less than corporations from financial institutions. Being small, less informed and located in more remote areas they had less or more costly access to financial institutions. The rise of trade and other non-institutional credit meant that their cost was found lower than institutional sources or that these were not available at the going interest rate. We should expect that if financial institutions were efficiently managed they would have lower transactions cost of credit than non-financial firms. We may therefore argue that the extensive use of non-financial sources reflects some inefficiency in the system.

The study further showed that regulations and imperfections have obstructed the integration of the financial system into one market and prevented competitive trading of available assets and allocation of credit. Interest rates on homogeneous papers like time deposits, or these and their close substitute bank bills differed by as much as four percentage points. Average equity yield varied even more ranging from -.46 to +.68. There was also substantial variation in money market rates. We find that equity yield could not be explained by risk. Reported money market rates were not explained by either risk or maturity. This behavior of interest rate might be interpreted to describe market segmentation.

We explained how segmentation arises as a consequence of indivisibility, imperfect information, physical barriers and the various ceilings on interest rates. With the deregulation of interest rates and the flexibility offered by the universal banking law, financial institutions are expected to behave more competitively. Competition itself is likely to weaken physical barriers as intermediaries try to obtain more funds and to cater to more creditors. It might also encourage some intermediaries to advertise their services and thereby provide information on their papers. In this regard we wish to take note of the need for a more conscious and organized dissemination of information on the availability, risk and yield of alternative assets. The writer feels that poor information is a major cause of the observed segmentation of the market. While the government has engaged in information campaign on population control, good nutrition and agriculture, among other interests, there has not been any education program related to savings and finance. Admonitions to "mag-impok sa banco" (save in the bank) does not do much unless the interest rate on deposits are made attractive and deposits are shown to be a good asset alternative.

The deregulation of interest rate is a very important move for the rationalization of the flow of funds in the financial market. It is a necessary condition for fostering competition. It does not, however, guarantee competition since there are still other serious imperfections and barriers that obstruct competitions. One is oligopoly

power posed by the dominant group of a small number of commercial banks. Their power is exacerbated by their members' conglomeration with other financial intermediaries including insurance companies and investment houses. Even more serious than bank oligopoly power is the extensive and complex package of government intervention in the market via the large public and publicly-supported financial intermediaires, special financing schemes and liberal rediscounting facilities at very low interest rates. This package involves cheap credit source for financial institutions and more particularly for firms and individuals that have access to government intermediaries and special funds. Relatively cheap credit has been generated from monetary expansion via the rediscount window, foreign borrowing, abnormal profits of the monopolized sugar and coconut export industries, and compulsory savings via the social security system. The allocation of funds from these sources has not been based on normal credit criteria. The GSIS funds have financed public corporations such as the Philippine Air Lines and favored firms like the starred hotels, while the PNB and the DBP have financed priority industries as well as specially favored firms. As a whole banks have a continuous cheap rediscounting privilege with the Central Bank, with some banks obtaining special rediscounting privilege. While this privilege helped expand commercial banking as a whole, it provided a crutch to poorly managed rural banks.

The availability of cheap sources of credit has probably permitted financial institutions, especially the public ones, to allocate their loans unoptimally. Moreover, the presence of this subsidy encouraged the development of the present structure of the system, and discouraged its higher rate of expansion as indicated by the slow growth of the financial development index. Among the structural characteristics that might be explained by the policy package are conglomeration of finance and non-finance sectors, closed family corporations, very small securities market, and croninism among the financial, entrepreneurial and political elite.

We illustrated in Chapter 3 how cheap loans to business generated from cheap sources to financial intermediaries increase producer surplus. Banks can capture the surplus by conglomerating with the producing enterprise. In general loans would be preferred to issue of equity for financing investment when loan rate is lower than equity yield. Family corporations can increase their owners equity more by financing additional investment by loans than by equity issue.

The availability of cheap credit encourages croninism. It is profitable for businessmen to develop cronies among politicians and bankers in order to have favorable access to their subsidized credit. Thus we find in the Metropolis a rather closely knit group of political, industrial and financial elite. Their members live in the same villages, play in the same clubs, and have offices in touching distance to each

other. Such a socially close melieu gives the members easier access to each other's privileges.

The structural characteristics in the modern market of the Metropolis have probably contributed significantly to the recent difficulties and failures of major financial and industrial enterprises. A conglomerate bank is vulnerable to pressure by the officers of the affiliated companies. The discussions and news report of the causes of the difficulties of Philfinance, Atrium and earlier, Philcapital, point to the liberal granting of loans by these intermediaries to their affiliated companies. Croninism is exemplified by the Dewey Dee and other similar cases. Dee could not have been lent so much if his loan applications underwent normal credit evaluation process. Apparently, a friendly socially close atmosphere in the city developed a euphoria of trust that made financial companies dispense with regular credit evaluation of their friends' loans application. This is evidenced by the rather high proportion of uncollateralized loans (50%) granted by the banking system. This reversed the earlier practice of strict collateral requirement among lending institutions.

In summary we wish to argue that the above structure and its consequences would not have developed under competitive conditions. Conglomeration would be based on economies of scope and not on the presence of privilege. There would be no reason for croninism since friends would not have gifts to offer. Security issues would be

competitive with loans as a source of funds. Firms investment decision and management would reflect the true scarcity value of capital.

It is not easy to assess the strength of oligopoly power of commercial banks. In fact it did not surface until after the deregulation of interest rates which took effect on July 1 (1981). There was no need for collusion on interest rates before deregulation since the ceiling on deposits worked as a monopsony price. Two meetings of the Bankers Association of the Philippines (BAP) took place in the first ten days of July to obtain agreement on saving deposit rates. Commercial banks agreed to follow an interest rate schedule for savings deposits starting from the old ceiling rate of 9 percent for small deposits and 10 percent for ₱10,000 or larger deposits. There has not been a discussion on other rates. The BAP is a ready organization and might be an effective one for arriving at collusion on interest rates and other terms for their services by the small group of commercial banks. It is doubtful, however, that it exercises cartel power. It does not seem likely that all members will follow cartel rule. Secondly, this sector faces competition from other institutions and other segments of the market.

BAP's strength will depend on the competition posed by the public sector and the many small unit banks. The public sector is quite large in terms of its share in the assets of the total financial system. However, its two major components -- the PNB and the DBP -- have a

rather small network of branches as compared with that of private commercial banks. Moreover the publicly-supported rural banks have not been well managed and have remained a very small segment of the market (5% of total assets). Instead of posing a threat to BAP members, they face the likelihood of being absorbed by them. In order for the public intermediaries to become a serious counterveiling power to the BAP, it must operate under competitive conditions. It must compete for funds via interest rates and other services. The PNB and the DBP, together with rural and private development banks will not be pressured to offer competitive rates if they can continue relying on cheap sources of funds from rediscounting and other cheap non-deposit sources. Competition may also come from the market for other instruments. The government should consider issuing substitutes to deposits such as small denomination bonds and bills, and developing their secondary market. Needless to say, their terms must be competitive. Premyo savings bonds which offer lottery winnings and similar gimmicks should be abandoned and replaced with papers that are simple to understand and whose yields are easy to calculate.

It is expected that as competition develops in savings deposits and government bonds and bills, it will spread to other financial assets in the system. Time deposits, money market instruments and private securities will become closer substitutes of each other. Their markets will become integrated into one. Competition for funds will likely

lead to financial institutions reaching out further to rural clientele, hence also weakening physical barriers to financial flows.

The foregoing leads to the following specific recommendations which are all aimed at fostering competitive trading in the financial market:

1. Limit the use of rediscounting facilities to meet target levels of money supply. Their use for financing special projects including development of certain financial intermediaries should be stopped. Other credit facilities such as those from foreign borrowing are to be granted on a competitive basis. The rediscount rate should be set at competitive level also at either the inter-bank borrowing rate or at prime commercial paper rate. These sources will thus be used sparingly.

2. Develop the market for government securities. Small denomination bills and bonds of say ₱200, ₱500, ₱1,000, and higher may be floated at rates competitive with money market rates. It is expected that the smaller denomination papers will have a lower yield to cover for increased transaction cost.

3. A program for developing a secondary market for these securities is to be initiated. Private banks are to be encouraged to trade in the securities and as an incentive they may be allowed to use the proceeds as a source of funds.

4. Funding for special projects should come from the proceeds of government issues which, as suggested above, are to pay competitive rates. In this way the project costs are estimated more accurately. Or they may be financed by taxes.

5. Foreign loans for industry should be granted at competitive rates. An inflow of capital increases fund supply and will tend to lower the domestic rate. The Central Bank is to be permitted to earn profits in managing external sources of funds.

6. GSIS and other employee savings placed in government agencies should earn competitive yield, or at least the rate on long-term bank deposits. In this way, the GSIS and other agencies will be forced to invest the funds in profitable enterprises. This holds true for the Pag-ibig funds.

Much was left out in this study. It seems that we barely scratched the surface of the issues that impinge on the efficient functioning of the financial market. There is a need to understand more fully corporate financial decision and the saving and portfolio behavior of the non-modern sectors — low income groups, the agricultural sector which faces great income uncertainty and the unincorporated service and industrial sectors. How do they relate to this imperfect financial market. What is their demand function for financial assets and for sources of credit?

It is to be noted that this paper is written at the time of transition from the regime of regulated rates and specialized role assigned to intermediaries to a regime of liberalized interest rate and intermediary portfolio. Later works will be able to compare the outcomes of the two regimes.

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