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SOME INTERNATIONAL COMPARISONS OF INDUSTRIAL
FINANCING : A STUDY OF COMPANY ACCOUNTS IN THE
U.K., U.S., JAPAN AND ISRAEL

MEIR TAMARI

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to the City University

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Department of Social Science and Humanities

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PREFACE

This study is the result of many years of research into problems of corporate finance. Initially, I was convinced that corporate behavior in Israel was the product of the special conditions under which the Israeli economy operated and this thesis was undertaken to discover whether this was indeed so. In the course of the preliminary research, however, I found that in some respects firms in various countries behave in a similar way despite the differences in their social and political structure. In others, the differences in behavior are explained not by these socio-political differences but rather by economic variables. I think that the results of this study will be of assistance to those engaged in studying or directing corporate financial behavior in all countries.

I am greatly indebted to the Governor of the Bank of Israel and [REDACTED] Head of the Research Department of the Bank, for encouraging me to pursue this study and for making the facilities of the Bank available for this purpose.

The study would not have been possible without the assistance of the staff of the Bank of England, the Federal Reserve Bank of New York, and the Bank of Japan, especially the members of their research departments.

In the course of my research work I benefited greatly from my discussions with the faculties of various universities, especially Professor [REDACTED] (Lehigh University) and [REDACTED] (Wharton) in the U.S.A., Professor [REDACTED] (Nottingham) in the U.K., [REDACTED] (Copenhagen) in

Denmark and Edmund [REDACTED] (Scientific Director of C.N.R.S.) in France. These discussions regarding the results of my various studies stimulated me to develop the ideas dealt with in this thesis and I am deeply grateful to them.

Over the years, my colleagues in the Research Department of the Bank of Israel and in the Economics Department of Bar Illan University, have read and commented on various aspects of the thesis and I would like to thank them for their helpful criticism.

I should also like to thank Leon [REDACTED] for his assistance in editing the final manuscript and Roza [REDACTED] for her careful typing of the thesis.

In conclusion, I would like to express my gratitude and appreciation to Professors C. D. Harbury and S. J. Prais of City University, for the many hours spent in discussing the results of my research with me and their supervision of this thesis.

ABSTRACT

The study of financial accounts is usually devoted either to analyzing the behavior of the individual firm or to the macro-economic aspects such as total capital raised, flow of funds accounting or analysis of problems of investment, etc. However, this study relates the structure of company accounts of the four countries surveyed, to the particular financial and socio-economic framework within which they operate.

The results of the study show that the degree of gearing with which firms operate varies from economy to economy. Other aspects of corporate behavior, however, such as the effect of monetary policy on the firm, the use of financial ratios to forecast bankruptcy, and the pattern of profit distribution, seem to follow a common pattern in all the economies, despite the manifold differences between the four countries.

The international differences regarding the use of borrowed funds relative to shareholders equity can be explained primarily by the overall growth rate of the economy and by public policy as expressed by the existence of non-economically motivated lenders and the degree of government intervention in the capital market. Other factors related to the performance of the firm such as profitability, size or industrial group seem to have little effect. This would suggest that the importance of the cost-of-capital, profitability, and measurements of uncertainty in determining the degree of gearing in the individual firm, may be highly overrated compared with these factors.

On the other hand, as there are no major differences

in the forms of ownership prevalent in the economies surveyed nor in their corporate tax structures, the forms of profit distribution follow a common pattern. In all the economies, profits are distributed both as dividends and in non-dividend forms (owners' salaries, interest-free loans, personal expenses paid for by the firm, etc.) depending primarily on the form of ownership of the firm. Furthermore, the economic variables determining non-dividend forms of profit distribution are similar to those shaping dividend policy.

Despite the international differences in the banking system and the role of the central bank, the effect of changes in commercial bank credit on the investment policy of the firm is similar in all the countries surveyed. These changes are primarily related to the inventory of raw material of the individual firm and its investment in fixed assets. The non-bank funds used by the firm are not substantially related to the changes in bank credit received by it.

Financial ratio analysis is shown in this study to be an analytical tool which, with slight modifications, can be used to forecast bankruptcy in all the countries surveyed. This would suggest that factors such as low profitability, over-use of gearing, illiquidity, are meaningful indicators reflecting financial weakness irrespective of the nature of the economic institutions of the particular economy or of its financial system.

CHAPTER 1

INTRODUCTION

1. Purpose and scope of this study

Until recently it was commonly accepted that the behavior of an economy should be studied by examining such aggregates as the labor force, production, and money supply. As a result of recent economic research, described further on, it is now clear that such an examination should also include the financial structure and conduct of the business sector.¹⁾ Measuring changes in the demand for funds, the ways they are invested, and the profits earned on such investments sheds light on the response of entrepreneurs to fiscal, monetary, and other economic policies introduced in the past and provides the data required for proposing modifications in the future. Numerous aspects of corporate financial behavior are important for understanding macro-economic developments, but we shall limit ourselves here to four areas that reflect substantially different types of economic policy changes.

a. Evaluating any proposed change in either corporate or personal taxation requires data on past earnings and recent profit trends, as well as information on the behavioral pattern of firms regarding income retention, dividend policy, etc. By analyzing such data one can gauge the effect of fiscal changes on business savings, personal income, and investments.

b. A knowledge of the financial behavior of firms

¹ The same conclusion applies to households as well, but a discussion of this sector is beyond the scope of this study.

under different monetary conditions is essential for the implementation of the central bank's monetary policy. Business sector reactions to changes in monetary policy influence the demand for goods and services and the money supply and its velocity as well as the level of economic activity. For example, if in the face of a tight money policy, non-banking firms resort to borrowing from one another, they will blunt or completely negate such a policy's effectiveness in limiting the output of goods and services. Financial data showing the influences of changes in monetary policy on trade credit and investment in inventories enable economists to determine whether such non-bank borrowing has in fact taken place.

c. Information regarding the financial relationships between various sectors of the economy (corporations, banks, the public sector, households, etc.) is important for many aspects of fiscal and monetary policy. By analyzing the inter-sectoral flow of funds one can measure to some degree the effects of an incomes policy, fluctuations in the supply of money and credit, and changes in government budgets.

d. The aggregate figures of the business sector tend to be heavily influenced by large firms with financing patterns that are often markedly different from that of smaller firms. These differences include the degree of recourse to the stock exchange, the kind of treatment accorded by commercial banks, and the extent to which ownership and management are separated. In not allowing for the effect of firm size the aggregate figures may conceal important changes in business concentration or the

rate of innovation and profitability. In addition to their economic significance any such changes would have far-reaching social and political implications. Data showing the effects on financing methods and corporate profitability of size, type of ownership, and industrial classification can therefore make a signal contribution to the analysis of economic trends.

A study of corporate financial behavior as described above is largely dependent on data drawn from corporate financial statements (balance sheets and profit and loss accounts). Although these statements are primarily used to measure the performance of the individual firm, researchers are now able to use such data to analyze the effect of general economic trends on corporate financial behavior and to construct financial theories of the firm.

Research based on corporate financial statements has been devoted primarily to explaining inter-firm differences in financial behavior or changes over time within the individual firm, regarding firms operating within a given national economy. The purpose of this study, however, is to discover whether the observed financial behavior of firms, as reflected in their financial statements, differ from one economy to another. To the extent that such differences are to be found, the study will examine the degree to which the socio-economic outlook and priorities of the country in which they operate, determine or affect corporate financial behavior.

The assumption is that this behavior is not simply a result of management decision within the individual firms but also reflects the overall business, moral and

financial framework of that particular economy. It is suggested here that the general economic conditions of the economy, together with the moral and social values, the accepted business practices of the particular national economy, and the institutionalized structure of the money and capital markets, constitute a limiting framework beyond which management of the individual company is not able to operate; even if this were to be in the interests of the individual company.

The role of the state in the capital market, public attitudes towards economic growth and business concentration, fiscal policies, the status of the entrepreneur, norms of business behavior, managerial prerogatives and incentives - are all expressions of differing economic philosophies. On the basis of their past experience, businessmen develop certain rules of thumb regarding risk, investment and credit policies. Simultaneously, political forces create a fiscal and institutional framework within which these decisions have to be implemented. Religious concepts, moral values, and social habits also influence the nature and degree of entrepreneurial activity, the demand for economic goods, and the economic response of individuals to changes in technology, etc. Since the social, political, and philosophical climate differs from country to country, it may be argued that it is this behavioral framework which ultimately determines the pattern of financing for the individual firm in each country.

Two examples should suffice to illustrate how international differences in the economic environment may affect financial theories of the firm:

a. For the United Kingdom and the United States it has been shown that the distribution of dividends in a given year is a function of the company's profits not only in that year but in the previous year or two as well.²⁾ One of the major reasons for linking dividends to past and present profits is management's concern with shareholders' preferences. It may be argued, however, that in countries where most companies do not raise capital from the general public, dividend policies may be completely different, reflecting differences in the nature of company ownership and in the degree of separation between ownership and management. If this were found to be the case, it could then be argued that the U.K. and the U.S. patterns of corporate dividend behavior are determined not only by financial theory but also by the institutionalized methods of raising capital in those countries and by the forms of ownership which have developed there. This argument would limit the application of such theory to countries possessing similar capital markets and even then only to firms raising capital through the stock exchange.

b. The use of gearing by a firm is generally assumed to depend on the price of different forms of capital, the cost of floating a security issue, and the rates of taxation. It is possible, however, that such subjective factors as

² This basic pattern was set forth by S.P.Dobrovolsky, Corporate Income Retention 1915-43 (New York: National Bureau of Economic Research, 1951); by J.Lintner in "Distribution of Income of Corporations Among Dividends, Retained Earnings and Taxes", American Economic Review (May 1956) - Vol.XLVI, No.2, pp. 97-113, and by S.J.Prais, "Dividend Policy and Income Appropriation", Studies in Company Finance, ed. Tew and Henderson (London: National Institute of Economic and Social Research, 1958), pp. 26 - 40.

entrepreneurial attitudes towards expansion, conventional credit criteria, and the pattern of corporate ownership are more important determinants of the use of external funds. If this were so, then it could be concluded that financial factors per se are of only marginal significance in determining changes in the capital structure of firms. Thus, any economic planner desiring to bring about a radical increase or decrease in the gearing of firms would first have to make appropriate changes in the above-mentioned subjective determinants.

These are only two of many examples which could be cited to illustrate the possible effects of the norms of business behavior, socio-economic priorities, degree of private initiative, etc. on methods of corporate finance.

The purpose of this study is to describe and to analyze to what extent international differences regarding these environmental factors can explain the observed variations in corporate financial methods and behavior in the U.K., U.S., Japan, and Israel. These countries were chosen because - apart from the differences in size, population, natural wealth, and certain other characteristics shown in Appendix A of this chapter, there are also marked variations in their capital markets, social and economic philosophies, and respective rates of economic growth, which are described in Chapter 2.

Some of the widely held theories concerning the financial behavior of the individual firm are reassessed to ascertain whether they are of general validity or apply only to a marginal set of decisions or solely to specific types of firms.

To the degree that, despite differing frameworks, similar patterns of financial behavior prevail in the various countries studied, it can be concluded that the financial theories which explain this behavior are generally applicable to all economies and industries. If, on the other hand, diverse behavior patterns apply to certain spheres, then these theories may have to be modified or restricted to specific categories of firms or to particular economies.

The plan of our analysis is as follows:

In Chapter 2 the financial environments in the four countries are surveyed. Described are the role of the commercial banks, the nature and degree of government intervention in the capital market, the system of financial institutions, and the prevailing attitudes towards competition, entrepreneurship, growth, etc. The following five chapters present the empirical results of our analysis of corporate behavior in the various countries. In each chapter an attempt is made to evaluate the effects of the environmental factors on a specific aspect of corporate finance and to see whether a common pattern of behavior exists despite the environmental differences.

Chapter 3 is devoted to the subject of equity finance and gearing. The relevant data are first examined to see whether there are international differences in the use of borrowed funds in relation to owners' equity. Then the factors which account for any such differences are analyzed according to criteria usually associated with gearing in the individual firm. In addition to accepted "micro" criteria, such as risk and profitability - which

are primarily measures of the performance of the firm - "macro" considerations such as national growth rate, generally accepted credit policies, and the structure of the capital market are also considered.

Profit distribution in the four countries is discussed in Chapter 4. Empirical studies are used to demonstrate that both corporate and personal rates of taxation, as well as forms of ownership significantly affect how profits are distributed. Because in both these respects no major international differences exist, corporations in these countries would seem to operate within a common framework. This common framework permits us to examine the various influences on managerial decisions regarding distributed profits and to see whether they apply generally. In addition to comparing the dividend policies of corporations in the four countries, the chapter also includes an analysis of the factors encouraging non-dividend forms of profit distribution, such as owners' salaries and other benefits, practices which are common to closely-held corporations and small firms in all countries.

Chapter 5 deals with the effects of monetary policy on individual firms. The reactions of firms to changes in monetary policy are analyzed with respect to investment in fixed assets, inventory, and in credit extended to customers. Where the data permit, the study also examines the effect of these changes on supplier credit as a source of funds and on the output of the firm.

Financial ratios as a means of forecasting bankruptcy constitute the subject of Chapter 6. Using ratios calculated from financial statements to determine lines

of credit or to appraise a firm's performance has become an integral part of modern financial management in all countries. At the same time, it is often argued that ratio analysis can only be used with respect to large firms publishing reliable financial statements by financial institutions employing highly sophisticated and capable personnel. The empirical results of research dealing with ratio analysis as a means of forecasting bankruptcy or financial difficulties are described in detail for the various countries. The main purpose of the chapter is to discover whether there are certain specific financial ratios which can be used in all countries to foretell financial difficulties, despite the differences in the reliability of financial statements and in the size of industry structure of the countries concerned.

II. Empirical and theoretical literature on the financial behavior of the firm

The main trends in the behavior pattern of the individual firm may be gauged from the following review of the relevant empirical and theoretical literature. Since the subject of corporate finance has been pioneered and substantially developed by American economists, most of the references are to studies carried out in the U.S.

Academic studies in business finance have their origins in the large scale research projects of the National Bureau of Economic Research (N.B.E.R.) begun in the 1940's. The first stages provided a detailed analysis of the American corporate sector subdivided according to various criteria, including the asset and financial structure of U.S.

corporations grouped according to industries,³⁾ the special characteristics of financing small industry,⁴⁾ and the financing pattern of large corporations.⁵⁾ Subsequently, the methods of financing accounts receivable, inventories, and equipment were also analyzed.⁶⁾ In 1947 Jacoby and Saulnier drew heavily on this research to carry out the first comprehensive study of business financing.⁷⁾

These first stages demonstrated that the different major industrial groups, such as trade and mining, have different financial structures reflecting the degree of risk involved in their operations. It was found that small firms experience greater difficulty in raising funds from commercial banks and have to rely more on supplier credit.

The question of corporate saving and dividend behavior was examined first by Dobrovolsky⁸⁾ and shortly thereafter by Lintner.⁹⁾ The former used income data for manufacturing corporations of various sizes, whereas the latter study was based on interviews with a small sample of large companies. Empirical results showed that firms tend to relate the current year's dividend not only to

³ W.A. Chudson, The Pattern of Corporate Financial Structure: A Cross-Section View of Manufacturing, Mining, Trade, and Construction, 1937. (New York: N.B.E.R., 1945).

⁴ Ch.L. Merwin, Financing Small Corporations in Five Manufacturing Industries, 1926-36 (New York: NBER, 1942).

⁵ A.R. Koch, The Financing of Large Corporations 1920-39 (New York: N.B.E.R., 1943).

⁶ N.H. Jacoby and R.I. Saulnier, Financing Inventory and Field Warehouse Receipts. (New York: NBER, 1944) and N.H. Jacoby & R.I. Saulnier, Term Lending to Business (New York: N.B.E.R., 1942).

⁷ N.H. Jacoby & R.I. Saulnier, Business Financing and Banking (New York: N.B.E.R., 1947).

(SEE FOOTNOTES 8 and 9 ON NEXT PAGE)

current annual profits but also to the profits and dividends of previous years. Since the proportion of taxes paid out of profits is stable, at least in the short run, this means that increased profits lead the firm to retain a greater share of its profits.

The above-mentioned studies described the relationship between the sources of funds and their uses as reflected in the asset structures of various industry and size groups at different points in time. They employed techniques originally developed by accountants for analyzing the individual firm - such as financial ratios, sources and uses of funds, etc. - in order to measure the total demand for capital and to examine the behavior of the financial markets.

The next stage of research focussed on constructing national balance sheets and flow-of-funds accounts based, inter alia, on the combined balance sheets of the corporate sector in the various industries. The two pioneering studies in the field were those of Copeland and Goldsmith. Copeland¹⁰⁾ demonstrates that a set of accounts could be constructed to show the flow of funds among the various sectors of the economy, thereby enabling economists to

⁸ S.P. Dobrovolsky, Corporate Income Retention 1915-43 (National Bureau of Economic Research, New York, 1951).

⁹ J. Lintner, "Distribution of Income of Corporations Among Dividends, Retained Earnings and Taxes", American Economic Review (May 1956), Vol. XLVI, No. 2, pp. 97-113.

¹⁰ M. A. Copeland, A Study of Moneyflows in the United States (New York: N.B.E.R., 1952).

examine the changes in production flows and income transfers in the light of the financial transactions which produced these changes. Goldsmith,¹¹⁾ using balance sheet data, provided information not only on the size of savings but also on their structure and sectoral distribution. He also considered accounting concepts normally not applied to the savings estimates in the national income accounts, such as capital gains and various methods of estimating depreciation. In a later work,¹²⁾ Goldsmith used balance sheet data concerning financial intermediaries to examine their inter-relationships as well as those between the intermediaries and the users and suppliers of funds.

The studies in this sphere were developed to provide a statistical analysis of the sources and uses of funds of the various sectors of the economy.¹³⁾

The importance of the relationship between Keynesian and neo-Keynesian theories and the financial behavior of the firm prompted an analysis of the effects of the business

¹¹ R.W. Goldsmith, A Study of Saving in the United States, Princeton: Princeton University Press, Vols. I and II, 1955, Vol. III (with D.S. Brady and Mendershausen), 1956.

¹² R.W. Goldsmith, Financial Intermediaries in the American Economy Since 1900 (Princeton: Princeton University Press, 1958).

¹³ D. Meiselman and E. Shapiro, The Measurement of Corporate Sources and Uses of Funds (New York: N.B.E.R., 1964); and S. Taylor, "Uses of Flow of Funds Accounts in the Federal Reserve System", Journal of Finance (May 1963), Vol. XVIII, No. 2, pp. 249-258.

cycle, changes in the interest rates, and liquidity preferences on corporate spending and financing,¹⁴⁾ as well as the development of econometric models to determine the interaction of the various financial sectors.¹⁵⁾

Berle and Means in the U.S. and later Sargent Florence in the U.K. dealt with the social and economic aspects of the divorce of ownership and control and the diversification of share ownership.¹⁶⁾ Their work led to empirical and theoretical studies on the development of managerial capitalism and its influence on the investment and growth policies of the firm.

The techniques developed in the U.S. for examining the behavioral pattern of the corporation were adopted by many countries in Western Europe and led to a number of

¹⁴ J.G. Gurley and E.S. Shaw, "Financial Aspects of Economic Development", American Economic Review (September 1955), Vol. XLV, No.4, pp. 515-538; J.G. Gurley and E.S. Shaw, Money in a Theory of Finance (Washington: The Brookings Institution, 1960); W. Braddock Hickman, assisted by Elizabeth T. Simpson, Statistical Measure of Corporate Bond Financing Since 1900 (Princeton: Princeton University Press, 1960); J. Tinbergen, Statistical Testing of Business Cycle Theories, Vol. II (Geneva: League of Nations, 1939); L.R. Klein, Economic Fluctuations in the United States, 1921-41 (New York: John Wiley & Sons, 1950).

¹⁵ F. de Leeuw and E. Gramlich, "The Channels of Monetary Policy": A Further Report of the Federal Reserve - M.I.T. model, Vol. XXIV, No. 2, pp. 265-297; R.H. Rasche and H.T. Shapiro, "The F.R.B.-M.I.T. Econometric Model: Its Special Features", American Economic Review (May, 1968), Vol. LVIII, No. 2, pp. 123-149.

¹⁶ A.A. Berle and G.C. Means, The Modern Corporation and Private Property (Macmillan, New York, 1933); P. Sargent Florence, Ownership, Control and Success of Large Companies: An Analysis of English Industrial Structure and Policy, 1936-1951 (London: Sweet and Maxwell, 1961).

similar studies for the U.K. The first of such studies was initiated by the National Institute of Economic and Social Research; the findings were presented by Tew and Henderson.¹⁷⁾ Later studies such as those of Hart, Singh and Whittington, widened and developed the scope of this research.¹⁸⁾

In the course of such studies it was claimed that the small firms in the economy constituted a special case as regards their financial pattern, research and development, and management. To some extent this argument was probably prompted by political and social considerations in the various countries, but there were also important economic, financial, and legal grounds to justify a separate analysis of the small concerns. The problem of the small firm centers around two main hypotheses: (a) small firms are seriously handicapped in their access to money markets in both the long and short run; and (b) they are a liability to the economy, since they prevent the optimal resource allocation which would result from exploiting economies of scale. Studies have been conducted in many countries to determine whether these hypotheses are valid and what effects they may have on the financial behavior of the firms. Here too, American researchers have paved the way, and the first comprehensive study dealing specifically with the role of small business was conducted

¹⁷ B. Tew and R.F. Henderson (eds.), op.cit.

¹⁸ P.E. Hart, Studies in Profit, Business Saving, and Investment in the U.K., 1920-1962 (London: Allen and Unwin, 1965); and A.Singh and G. Whittington, Growth, Profitability and Valuation (Cambridge: Cambridge University Press, 1968).

by the Federal Reserve System in 1958.¹⁹⁾ This research was followed by numerous other studies referred to in the following chapters.

In the U.K. the small firm was the subject of a special committee of inquiry set up in 1970. Its report²⁰⁾ provided data on the financial aspects of small business and the problems of concentration, research, and innovation, as well as the role of small business in various industries. Like its counterpart in the U.S. the work of the committee was preceded by studies dealing with very limited samples usually restricted to specific aspects of the small firm.²¹⁾ Its report was followed by a more recent study analyzing the development of the small firm over a period of time.²²⁾

Japanese economists and financial analysts have also made a significant contribution to the theoretical and

¹⁹ Financing Small Business (Washington, D.C.: Board of Governors of the Federal Reserve System, 1960).

²⁰ Small Firms: Report of the Committee of Inquiry on Small Firms (London: Her Majesty's Stationery Office, 1971). The present writer contributed Study No.16 as part of the work of that committee (M. Tamari, A Postal Questionnaire Survey of Small Firms: An Analysis of Financial Data (London: H.M.S.O., 1972)).

²¹ J. Bates, The Financing of Small Business (London: Sweet and Maxwell, 1964). The same author also published a similar study of small firms in Ireland (James Bates, Manufacturing Business in Northern Ireland (Belfast: Queens University, 1973)).

²² J. Boswell, The Rise and Decline of Small Firms (London: Allen and Unwin, 1973).

empirical study of the behavior of small firms, which is not surprising considering the importance of small business in that country. Most of the studies are in Japanese, but two publications have recently appeared in English which give a resumé of the major works in this field, one of them by the pioneer of the small business studies in Japan, Tokutaro Yamanaka.²³⁾

The main emphasis in this research has been to explain the role of small business within the capitalist system. In contrast to the U.S. and the U.K. where small business is often viewed as a bulwark of democracy and a source of research and innovation, in Japan it is apparently looked upon either as a tool used by monopolistic capitalism to exploit labor or as an historical anachronism.

III. The nature of the data

As one result of the empirical research referred to above, corporate financial statements (balance sheet and profit and loss accounts) have been systematically collated for many countries - including the four surveyed. The present study is based primarily on data of this sort drawn from manufacturing enterprises. This restriction was introduced not on the basis of any assumed intrinsic difference between the data regarding manufacturing corporations and those in the other industrial sectors but merely

²³ N. Inaba, The Economic Theory of Medium and Small Industries in Japan (Kobe, Kobe University, The School of Business Administration, 1971); and T. Yamanaka, Small Business in Japan's Economic Progress (Tokyo, Asahi Evening News, 1971).

because the relevant detailed information could not be obtained for all the countries concerned. On the other hand, the study is restricted to the corporate sector only, because the financial accounts of non-incorporated firms are not always systematically presented and they cannot be separated easily from the household accounts of the owners. It seems that in many countries the proportion of non-incorporated firms in the manufacturing sector is smaller than in the case of the wholesale and retail trade, services, construction and transport sectors. This is one of the main reasons why the systematic collation of representative data has been more dominant in the manufacturing sector than in the others.

For this study the required information has been drawn from the three main sources detailed below, each of which permits the analysis of different aspects of the subjects under review. It must be pointed out, that as a result, not all the chapters in this study are based on the same data or cover the same time period. However, since each chapter is a self-contained unit devoted to analyzing a specific aspect of corporate financial behavior, this use of different data does not constitute a significant flaw. Throughout the study the source of the data, the nature of the sample, and the period surveyed are given in each chapter.

The three main sources for the data are:

1. Aggregate data for the period 1964-1968

This source comprises the aggregate balance sheet and profit and loss data for the corporate manufacturing sector as published in each of the four countries studied.

These aggregate balance sheets and profit and loss accounts are constructed by simply adding together data from the individual firms. As a rule this information is classified by industry and size group. Unless otherwise stated, the data shown in the text and tables are obtained from reports published for the years 1964-1968.

In Israel and the U.S. only samples are taken and the published data consist of figures extrapolated to represent the total manufacturing corporate sector. The statistics for the U.K. and Japan are aggregates for all those manufacturing corporations satisfying the respective criteria for size and ownership.

In the U.K. the Board of Trade and Industry publishes the information required in the "Business Monitor" which presents aggregate balance sheet figures for quoted companies irrespective of size. Data are also available from the same source for the large unquoted companies. These statistics are based on annual financial statements, but the companies included are not always the same from year to year. While this information is not classified according to any criteria of company size, it is broken down according to the different industrial groups comprising the manufacturing sector. Unfortunately, for the period under review no sales data are available. Wherever possible, this study also refers to the financial data published and analyzed by the Bolton Committee of Inquiry on Small Firms.

In its quarterly, the Federal Trade Commission in Washington provides similar information on the basis of replies from a sample of listed and unlisted U. S.

manufacturing corporations. Although financial statistics cover about 20,000 companies representing all manufacturing corporations irrespective of size, they can be classified according to company size. Furthermore, unlike the data presented by the U.K. Board of Trade, these statistics provide details on sales. For a detailed discussion, however, of operating expenses and interest paid, it is necessary to use the aggregate data provided by the U.S. Internal Revenue Service. This aggregate information is based on annual corporate reports to the income tax authorities and does not represent a statistical sample but rather the sum total of all the returns submitted by a certain date.

The corporate financial data for Japan are prepared and published by the Statistics Department of the Central Bank. Companies are selected in such a manner as to reflect the sales trends in each industry. The survey is limited to companies that publish statements on a semi-annual basis. In this study the statistics refer to 484 large companies. In the main they are quoted companies with assets of over 1 million pounds sterling, but in certain industrial sectors dominant firms are included even if they are not quoted.

In Israel, the Bank of Israel conducts a company finance research project which provides financial statistics on manufacturing concerns irrespective of size. These statistics are reported and analyzed periodically by the present writer in the Bank's "Economic Review". The Israeli data are based on corporate tax returns. As shown by the author's examination of a sample of the financial statements, in most cases these balance sheets and profit and

loss accounts are also those provided by the firm to its bank, to its board of directors, and to other interested parties. Similarly, where use is made of data drawn from income tax reports of other countries, it is assumed that substantially the same reports are available to management, creditors, or investors, i.e. they may be used as a legitimate basis for analysis.

The frequency with which the different countries report the information collated varies considerably. The U.S. statistics are available on a quarterly basis, while those for Israel and the U.K. are drawn from annual financial statements, and those for Japan cover semi-annual corporate statements. In light of the above, only annual data have been used in the study.

Throughout the study it is assumed that the ratios calculated from the aggregate data in each of the four countries represent the financial structure of the average firm in the economy. In both, the U.S. and Israel, the data are based on a statistically valid sample of firms which allows for the systematic inclusion of new firms as well as adequate representation of size groups and industrial sectors. In the case of the U.K. and Japan, the data represent only a partial population of the firms satisfying certain criteria and do not permit any statistical calculation of the degree of which the published figures do in fact represent the average firm. As will be shown in this study, however, on the basis of partial evidence it may be concluded that the ratios of most firms more closely approximate the national average than they do the average of firms in other countries.

It may be argued that such data are unsuitable for international comparisons of the type attempted in the study. Reservations about the data are of a threefold nature:

- (a) The problem of common definitions and methods of presentation

In view of the lack of an internationally accepted accounting code, it may be that differences in the financial structure of companies as shown by the data, merely reflect divergences in accounting practice. However, it would seem that the magnitude of this problem is limited, for three reasons:

- (1) In each of the countries surveyed those compiling the data have rewritten the original financial statements of the firm in accordance with their own definitions. As these definitions are clearly presented, it has usually been possible in this study to convert the balance sheet items in each country to a comparable form.

It should be pointed out that the use of combined balance sheets of a large number of companies within a national economy minimizes many of the difficulties encountered when making inter-firm comparisons within the same economy. The data of the average firm constructed from these balance sheets will suffer less than those of the individual firm from the conflict of interests between management and fairness in reporting as well as from the effect of different accounting principles used by the individual firms. Such differences as do exist, will cancel each other out or mitigate each other when the data on a large number of companies is used. Furthermore, the collation of corporate accounts over a period of four or

five years, will tend to minimize the fluctuations arising in the individual firms, a result of the shifting of expenses or earnings from one period to another, as well as the incorrect or inexact presentation of the individual firms' asset or liability structure in one year's financial statements.

(2) The analysis in this study is primarily concerned with the use of financial ratios showing the relationship of one component of the financial statements with another. The use of these ratios minimizes the effect of differences in financial reporting. For instance, if two companies of two countries use different methods of measuring their inventory of raw material, the internal consistency required by accounting reporting lead to an adjustment being made through the profit and loss account which will be reflected in the total balance sheet figures. This adjustment will reflect the particular method used by each company. The analysis' use of a ratio of raw material inventory to total assets, will therefore minimize the effect of the different accounting methods on the financial results of the two firms or the average national firm.

(3) The financial reporting underlying the corporate financial statements of the four countries does follow a similar pattern. The accounting profession in Japan and Israel has its roots in practices which have evolved in the U.K. and the U.S. Moreover, the widespread use of British and American professional literature together with the participation in international forums for discussion of common problems and solutions has led in recent years to a narrowing of any such differences as may have existed earlier.

(b) The responsiveness of financial reporting
to inflation

Some items in the balance sheet of a firm, such as the fixed assets or share capital, represent historical values whilst others, like current liabilities, inventory or debtors, are represented primarily by current prices. Furthermore, the profit and loss accounts are constructed, with the exception of depreciation, on the basis of current costs. The ratios drawn from the financial statements of the firm are therefore heavily influenced by the inflationary trends. One example of this influence should suffice to illustrate the problem. During periods of rapid inflation, all those ratios based on equity will be distorted, owing to the under-valuation of the share capital appearing in the firm's accounts in historic values.

The distorting effects of inflation on the financial statements of the individual firm will obviously be reflected in the aggregate data of each country. It follows, therefore, that if the national rates of inflation vary significantly, then international comparisons of financial ratios may be of only limited significance. In this respect it should be pointed out that during the four years prior to the period under review (1964-1968), the average annual rate of inflation did not vary markedly in the four countries studied.²⁴⁾ While this similarity in price trends does not solve the problems posed by the cumulative rates of inflation which did vary substantially prior to

²⁴ During the period 1964-1968 the average annual national rate of inflation in these countries ranged from 3.5 percent to 5.5 percent. Source: International Financial Statistics - International Monetary Fund, Vol. XXIII, No.12, Washington, 1970.

1960, it does mitigate their effects at least as far as the current items are concerned. In those chapters in this study where the problems raised by inflation are relevant, such as that discussing gearing, its effect on the empirical findings is analyzed in detail. Whenever possible the financial data used in the study have been deflated by changes in the price level.

(c) International differences in the general economic structure

The overall economic conditions prevailing in the four countries surveyed in this study, are substantially different. These differences in the economy affect the expected rate of return on investments, the cost and availability of capital, the size of the average firm, etc. It may be argued, therefore, that they also affect the comparability of the aggregate data.

However, this is not a flaw in the data but rather a hypothesis to be tested. Where the data show that no important international differences exist, this indicates the existence of universally applicable principles of corporate finance. Those aspects of financial behavior which vary from country to country may be explained either by social and political factors or by the above differences in economic conditions. If it can be shown that the economic variables alone are able to explain the international differences in this behavior, then it can be assumed that the introduction of similar economic conditions will lead to common patterns of corporate finance despite the sociopolitical differences between countries.

In summation of this section it is acknowledged that the corporate data of the four countries suffer from certain flaws and that one may have reservations regarding the comparability of these aggregate financial statements. Nevertheless, it is submitted that the above discussion has shown that such data can be used as a valid basis for this study.

2. Financial statements of individual firms

In this study financial data of individual corporations engaged in manufacturing are used in addition to the aggregate data described in the previous section. On the one hand the aggregate type of data are required for analyzing the average firm in an economy, size group or industrial branch. On the other hand, the former type of data are required for a more complete understanding of corporate financial behaviors especially when items in the flow of funds and their uses are analyzed. Furthermore, most statistical methods require few more observation points than those provided by the available aggregate data.

The major areas of research for which data on individual companies are relevant in this study, are those dealing with forms of ownership and the effects of changes in bank credit on the firm. Suitable financial data are available in this respect only for the U.K., Israel and Japan. Although financial reports exist for individual companies in the U.S., the form in which they are published does not provide the specific information required in these areas.

A sample of 100 companies was drawn from the 1000

largest U.K. manufacturing firms listed in the Financial Times. The sample was drawn so as to allow equal representation of firms of all sizes and industrial sectors. The data used in this study are drawn from financial reports of quoted companies as published by Moodys Financial Services Inc. These reports present the annual balance sheet and profit and loss accounts of these firms from 1968 to 1973. Information on Israeli firms is taken from the 1960-1970 financial statements of 400 firms included in the Bank of Israel corporate research project. These 400 companies include firms of different size and forms of ownership operating in all the industrial groups of the industrial sector.

Data on Japan was drawn for a representative sample of 120 quoted companies from their financial reports as published by the Ministry of International Trade and Industry.

These reports represent the financial statements of these firms from 1968 to 1973.

It should be pointed out that the data available for the Israeli companies do not cover the same period as for the U.K. and Japan. However, this does not present a serious flaw in the data as the use of similar calendar periods for different countries does not anyhow ensure comparable economic conditions.

The use of financial reports for individual companies minimizes many of the limitations of the aggregate data in both countries. Since the cross-section analysis on this data is performed for each country separately, the effects of differences in definitions of size groups, accounting practices, and forms of ownership are considerably reduced.

In addition to these two sources of financial statistics on individual corporations, the writer has also gathered data through interviews and correspondence with manufacturing firms and financial institutions in the four countries. The veracity of this data cannot be checked, nor is it possible to estimate to what extent the firms included are representative ones. It is suggested, however, that since this information is used only to present auxiliary findings, its analysis may be indicative of trends and patterns, even if the data were not collated on any sort of statistical basis.

3. Empirical studies

In each of the countries included in this survey empirical studies have been conducted regarding the financial behavior of the firm. The results of these studies have been used throughout the survey and the sources are noted in the text. In some cases the actual tabulations and statistical results are presented in addition to a summary of the findings.

Two reasons explain the use of such published material.

Firstly, the authors of these empirical works had access to data far more detailed than that available to the author of this study. This enabled them to analyze certain aspects of corporate financing, in a more sophisticated and statistically sound manner than was possible within the scope of this work.

Secondly, the empirical results of these studies are sufficiently well founded to enable us to use them as

assumptions in the present study. To repeat similar analysis, even where possible, would simply burden this work with unnecessary repetition.

IV. Summary

Recent research in various countries has enabled economists to develop financial theories of the firm and their implications regarding the overall effect of fiscal and monetary policies on the national economy. This study compares the corporate financial behavior in the U.K., U.S., Japan and Israel as reflected in the financial statements of manufacturing companies in these countries. The purpose of this study is to determine whether there exist financial theories which are equally applicable to different economies.

Where this is not the case, the study will attempt to show that economic variables are able to explain the international differences in behavior, over and above the prevailing socio-political factors.

In order to achieve this purpose, three different types of data are used. Those on individual firms serve as a basis for cross-section analysis of certain aspects of corporate financial behavior, such as the effect of varying degrees of ownership control on the firm, its distribution of profits, the inter-changeability of sources of short-term funds, etc. But the sample of individual companies available to the author was not large enough to justify the use of such data for international comparisons of the financial structure of the average firm; conse-

quently, aggregate data, after allowing for differences in forms of financial reporting, etc., have been used on the assumption that the financial ratios drawn from them do in fact represent the average firm in a particular economy. The results of empirical research in the various countries are an additional source of data.

Whilst it is impossible to forecast accurately the effect of the introduction of common economic variables on the financial behavior of firms in different countries, it is hoped that the results of this study will suggest a possible pattern.

CHAPTER 2

THE FINANCIAL ENVIRONMENT OF MANUFACTURING COMPANIES IN THE U.K., U.S., JAPAN AND ISRAEL

I. Introduction

In every economy the firm operates within a general financial environment shaped by numerous factors: the accepted norms of business behavior; the structure of the banking system; the direct and indirect influence of government agencies; the size of the capital market and the degree of competition within it; the role of financial intermediaries such as the stock exchange, etc. This chapter describes the capital markets, financial institutions, and underlying economic philosophy in each of the four countries studied.

The inter-country differences in the financial environment will thus be made clear, even if it is not always possible to demonstrate statistically the weight of these differences or to prove their effects on the behavior of the firm.

At the outset it should be noted that despite the differences in their social and political development described in Chapter one and further on in Chapter two, the four countries share certain characteristics:

- a) None of them has a rigid, centrally planned economy, and their governments are all of the democratic parliamentary type.
- b) Monetary policy is conducted by a central bank operating through a network of commercial banks and financial institutions.

- c) Although its role and scope varies, a stock exchange functions in each country.
- d) Small firms in all of the countries find it difficult to raise equity or loan capital through the stock exchange, although they can make private placements. Such firms are also at a disadvantage relative to large companies with respect to short-term borrowing from commercial banks.
- e) In the four countries, corporate taxes are levied at about the same rate (45-50 percent). Dividends are not recognized as a deductible expense, whereas interest on loan capital is deductible. (Differences in personal income tax rates are not discussed in this study.)

II. United Kingdom

Since World War I, successive British Cabinets have expanded government activity and influence in many areas of the economy, often through direct government intervention, such as the nationalization of coal, iron and steel, gas and electricity, or the institution of various income and price policies. The financial system and capital market, however, have remained sufficiently fluid to meet demands for corporate financing without undue government regulation. It should be noted in this context that the central bank was formally nationalized only quite recently (1946); for over a century the Bank of England was in some respects regarded by the government as a stumbling block to treasury independence.

Government intervention in the financial system may be gauged directly from the share of the public sector in the securities quoted on the London Stock Exchange and indirectly through its share in the assets and liabilities of

the financial sector. Both indicators show that neither the capital market nor the financial institutions are heavily influenced by government activity. As of March 31, 1971 only 17% of the aggregate market value of the securities traded on the London Stock Exchange (£120,000 million sterling) were issued or guaranteed by the public sector.¹⁾ Most of the direct funds raised by the state are channelled to nationalized industries and to local authorities; the state does not serve as a source of funds for the private business sector.

Apart from their direct intervention in the capital market, governments all over the world may affect the workings of the financial system through various fiscal measures, social welfare legislation, etc. Such action, however, does not necessarily influence the portfolio of the financial institutions or the availability of funds to the individual firm. In the U.K., for example, a growing volume of savings from lower income groups has been stimulated through social welfare legislation over the years. Similarly, higher income tax rates have further increased the supply of funds by raising demand for partially tax-exempt building society shares, life insurance policies, etc. These funds, however, are not directed or allocated by the state, they are placed in financial institutions which, in turn, invest inter alia in the equity or loan capital of the non-financial, private business sector.

¹ Source: London Stock Exchange, Statistics relating to Quoted Securities, March 31, 1971. Public sector has been defined here as the U.K. government, the local authorities, Commonwealth public authorities, and international institutions such as the World Bank.

The following table showing the asset and liability structure of the financial institutions reveals the relative unimportance of the direct role of the public sector in the financial system. In 1970 the financial institutions had assets totaling just over £100,000,000 sterling.

Table 2.1

Assets and Liabilities of Financial Institutions, 1970
(percentages)

Assets ¹		Liabilities ²	
Public debt	17	Public sector ^b	2
House purchases	10	Financial institutions	4
Business	26 ^a	Companies	11
Overseas	22	Others	32
Others	25	Overseas residents	51
	<u>100</u>		<u>100</u>

a. Includes investment and loans to nationalized industries.

b. Includes public sector corporations.

Sources: 1. J. Revell, The British Financial System (London: Macmillan Press, 1973), Tables 4.1, 4.2 and 4.3, pp. 78-80.

2. Bank of England, Quarterly Bulletin (London: September 1971), Table 8 (2).

The limited role of the central government in the operations of the financial system may be one reason why the U.K. has emerged as one of the world's major capital markets. By itself, such non-interference could not produce this result, but together with the size of the local British capital and money markets, the diversity of British financial institutions, and the long tradition of honest and capable

money management, it contributes to the growth of the British capital market. As a result, international transactions, foreign investments, and financial management are important aspects of the British financial system.

Stock exchanges are a major component of this financial system, the one in London being by far the most important. Through such exchanges funds are raised from the public for investments in both foreign and local firms.²⁾ In 1971 capital issues of 1,487 million pounds sterling were made through the stock exchange; over a third were funds raised by U.K. quoted companies.³⁾

It must be stressed that the financial system in the U.K. is based on a number of powerful groups, some consisting of banks with close links to non-banking financial institutions and others comprising financial intermediaries owned by non-financial corporations. These links are expressed in the common social and cultural background of the upper echelons of management, the network of interlocking directorates of banks, insurance companies, unit trusts, and other financial institutions, and the existence of trade associations, pricing arrangements, and other related restrictions on competition in the money and capital markets.

At various times it has been argued that the lack of competition in the financial system prevents it from efficiently satisfying all the needs of the money and capital

² The relative importance of new stock issues for the financing of manufacturing corporations is discussed in Chapter 3.

³ Bank of England, Quarterly Bulletin (March 1972), vol.12, No. 1, Table 15, p. 122.

markets.⁴⁾ In response to this criticism the government and the Bank of England have established over the years special institutions to fill the gaps resulting from the tightly knit, oligopolistic capital market structure. In the 1920's and 1930's the Bank of England helped to establish such institutions as the Agricultural Mortgage Corporation, and, indirectly, the first unit trust - Municipal and General Securities. At the same time direct government subsidies helped to satisfy the demand for housing finance. In the 1940's and 1950's, the government and the Bank of England continued to launch such financial institutions as the Industrial and Commercial Finance Corporation (now the F.F.I.) which supplies funds for medium and small businesses.

There have been instances of government assistance, either direct or through some of these financial institutions, aimed at preventing bankruptcy of large industrial corporations. However, such intervention has not become an integral part of the financial system nor can creditors depend on it to minimize their risk.⁵⁾

Although the above-mentioned special financial agencies are under direct or semi-direct government control, no sector seems to be especially favored in the allocation of capital funds. These agencies have not displaced equity issues as a means of providing risk capital. Furthermore, there seems to be a general consensus that funds should not

⁴ Committee on Finance and Industry, Report 389 (H.M.S.O. 1931) and Committee on the Workings of the Monetary System, Principal Memorandum of Evidence, 1956, vols. I and II. Bank of England, Quarterly Bulletin (June 1971), vol.11, No. 2, "Competition and Credit Control", pp. 189-193.

⁵ E.E. Hagen and S.F.T. White, Great Britain; Quiet Revolution in Planning, Syracuse University Press (New York 1966), pp. 113-114.

be made available by these agencies at interest rates below those prevailing in the market.⁶⁾

Regardless of the effects of these special financial agencies, institutional cartelization has remained. The close relations which developed among the various groups of financial institutions in the form of special financial arrangements, market sharing, or direct ownership have tended to minimize competition. Since 1957, however, the accepting houses, merchant banks, and externally controlled money market has grown rapidly, partly because of the Euro-dollar market, and this growth has led to greater flexibility and competition in the British money market.⁷⁾

1. The Bank of England

Originally the Bank of England was simply one of many ordinary commercial banks; over the years it gradually developed into the central bank even without being formally designated as such. The Bank of England serves as the channel through which monetary policy is carried out. By intervening in the discount market it influences the short-term interest rate, but unlike central banks in almost all other countries, its control of bank lending is highly informal. Although in recent years the measures for supervising the banks have been increasingly codified, they are still based primarily on an unwritten code of understanding.

The central bank restricts itself to implementing an overall monetary policy; it does not intervene directly in the lending policy of the banks regarding individual firms.

⁶ Report of the Committee of Inquiry on Small Firms, H.M.S.O., London 1971, p. 163.

⁷ J. Revell, op. cit., pp. 91-98.

For instance, in 1965 and 1966 controls on lending were re-introduced after a lapse of three years and all banks were asked to restrain their lending to an annual rate of increase of 5 percent. They also received general guidance as to the priorities to be given to the various categories of borrowers. The requests of the Bank of England, however, were not instructions for the direct allocation of credit; that was left to discretion of the commercial banker.

In the U.K. banking system depositors are not insured against losses resulting from the failure of a commercial bank, as they are through the Federal Deposit Insurance Corporation in the U.S. At the same time, the Bank of England does strive to prevent the bankruptcy of any bank and the resultant loss of confidence in financial institutions. These efforts, however, do not include assuming the debts of a bankrupt bank nor underwriting bank loans to a firm in financial difficulty.

2. The main financial intermediaries

a) Clearing banks

The traditional role of the clearing banks has been to supply working capital and interim financing. Most of the financing from this source has been in the form of overdrafts, but recently medium-term loans have also been provided.

The five to eight year loan so common in other countries, seems to be more appropriate than the overdraft system for financing capital expenditure in manufacturing industries; yet, the practical difference for the borrower

between the two types of bank credit should not be over-emphasized. Since the bank overdraft is usually renewed almost automatically, unless serious and sudden changes occur in the situation of the firm, in fact this form of bank borrowing is often of longer duration than the term loan. The main difference between the two types of bank credit is in the attitude of the bank to the structure of the borrower's assets and its appraisal of his future financial development.

The structure of the lending function of the British banks is partly a result of the historical development of the financial institutions in the U.K. For many centuries the demand for capital came from merchant adventurers who later evolved into manufacturers. Their requirements were primarily short term and irregular, a characteristic which led to the institution of the overdraft facility.

Another reason why British banks rely on the self-liquidating loan is the relative absence of credit bureaus and credit intelligence agencies such as those found in the U.S. The training of the bank staff in credit analysis and investment techniques is also deficient in many cases.⁸⁾ Although this factor was mentioned in the Radcliffe Report, more recent observers have noted:

"The assessment of requests for long-term credit might certainly be beyond the capacity of the average branch manager, but even in this case all British clearing banks now possess staff at head and regional offices capable of a rational assessment of long-term trends."⁹⁾

⁸ R. Pringle, Banking in Britain (London: Charles Knight and Co.Ltd., 1973), pp. 3-4.

⁹ P. Nevin and E.W. David, The London Clearing Banks, (London: Elek Books, 1970), p. 241.

Irrespective of the reason behind the attitude of the clearing banks to long-term credit, most of them are increasingly involved in such financing, mainly through the activities of their subsidiaries. With respect to investment in long- and medium-term loans to industry, British clearing banks have radically different attitudes than their European, and to a lesser degree their American counterparts. Unlike British banks, European banks have always been very close to industrial firms and often have large investments in the equity and long-term debt of the manufacturing corporations. The involvement of European banks in the affairs of the manufacturing firms exposes them to greater risks, since the failure of such firms can entail severe losses to the banking system. It is this increased risk which partially explains the reluctance of the U.K. banks to finance long-term projects. Although in recent years there have been signs of a change in the attitudes of the large banks in Britain to financing long-term industrial investment, the capital market still remains a major source of external funds for the manufacturing firm. For example in 1969, the quoted manufacturing firms in the U.K. raised approximately 40 percent of their total external funds from the issue of loan and share capital, 20 percent from the increase in short-term credit owing to banks and 40 percent from increased debt to trade and other creditors.¹⁰⁾

Apart from supplying working capital and interim financing, the banks are an important factor in the market for treasury bills and government stocks. It should be noted,

¹⁰⁾ Business Monitor H.M.S.O. (London 1971; Table 2). It should be noted that the proportion of funds raised from the various sources, is only approximate, as the data in 1968 and 1969, on which the table is based, do not refer to exactly the same number of firms in both years.

however, that their involvement in government financial investments is by choice and not a result of official legislation or regulation except as laid down in the reserve asset requirements. On the other hand, the bank's role in the securities market, either equity or bonds, is negligible.

During the 1960's the importance of the clearing banks in the financial system declined consistently relative to merchant banks, foreign banks, finance companies, building societies, etc.¹¹⁾ After 1971 this trend was reversed as a result of increased competition and changes in credit control introduced by the central bank. The changes in the relative share held by the various institutions comprising the financial system did not, however, substantially affect the methods of financing manufacturing companies.

b) State-owned financial intermediaries

The share of the state-owned financial intermediaries is quite insignificant both in the mobilization of savings and in the channelling of funds to the capital market.

c) Financial institutions

These institutions include insurance companies, pension funds, merchant banks, hire purchase finance companies, investment trusts, and unit trusts, all of which may invest in any form of security subject only to their articles of association or trust-deeds. About two-thirds of all the funds raised by the British capital market flow through these intermediaries, which number several hundred. Together with a large number of private investors, they help to

¹¹ National Board for Prices and Incomes, Bank charges, Report No.34, Cmnd.3292 H.M.S.O. (London: 1967), p. 29.

render the capital market more flexible.

The activities of these institutions are primarily defined by their articles of association and the structure of their liabilities. For instance, institutions with funds in the nature of demand claims will hold a greater share of short-term assets than those employing equity or other long-term funds. All of them, however, share an independence from government directives as to the structure of their portfolios.

III. United States

One of the outstanding characteristics of the U.S. capital market is its size. The volume of funds in absolute terms is enormous - more than that of Belgium, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, and the U.K. combined.¹²⁾ Such a market encourages the development of a wide variety of financial institutions, credit facilities, and fund raising agencies, which in turn stimulates saving by the public and contributes to the efficient distribution of credit.

This huge capital market is predominantly private. It is marked by a comparative absence of government interference and the Federal Government is relatively unimportant as a direct source of funds. In 1965, only about 11 percent of the \$73 billion provided by the financial markets originated from the public sector. There is of course direct government financing, but its share in the total capital market is marginal.¹³⁾

¹² Functioning of Capital Markets, Organization for Economic Cooperation and Development (Paris, 1968), Vol. III, pp. 99- 104.

¹³ Ibid., p. 611.

In the U.S. monetary policy is implemented through the Federal Reserve System. Its operations, however, are generally limited to counteracting undesirable trends in the economy rather than influencing the allocation of credit or determining the interest rates for specific types of loans or securities. In the past, selective controls were applied to stock market, consumer, and real estate credit, but today only margins in stock market transactions are regulated. These government controls obviously affected the ability of firms in these sectors to raise funds through the market, but selective measures were not employed to channel funds to privileged sectors.

Furthermore, the deposit insurance arrangements now in force for commercial banks have largely freed the government from the need to intervene in order to prevent banks from going bankrupt. While the Federal Government has intervened in the lending process to stave off a corporate bankruptcy, such action has been the exception and not the rule. Even these few cases, moreover, such as Penn Central and Boeing, have occurred too recently to seriously affect the capital market.

In discussing the U.S. capital market and financial system it is important to note the American cultural attitudes towards entrepreneurship and economic development. A concise summary of studies of entrepreneurship tend to show that in the past the U.S. has been characterized by the following attitudes:¹⁴⁾

¹⁴ T.C. Cochran, "The Entrepreneur in Economic Change", Entrepreneurship and Economic Development, P. Kilby, ed. (New York: The Free Press, 1971), pp. 95-108. See also J.E. Sawyer, "The Social Basis of the American System of Manufacturing", Journal of Economic History (1954), No.14, pp. 361-379, and J. Fayerweather, The Executive Overseas (Syracuse, N.Y. : Syracuse University Press, 1959).

- a) Financial success is regarded as a measure of social achievement.
- b) Economic behavior is based on market conditions rather than on personal, social, ideological, or political factors.
- c) Individualism, as a basic and positive part of a democratic society, does not prevent cooperation for mutual benefit.

Measuring the inter-country differences in such cultural factors and studying their effect on economic development has been attempted by McClelland and others;¹⁵⁾ it is beyond the scope of this study. It is suggested here, however, that these American cultural attitudes differ radically from those prevalent in Japan and Israel and that these differences may explain, in part, some of the differences in corporate finance between these countries.

1. The main financial intermediaries

The following table (columns 6 and 10) shows that the relative importance of financial institutions has grown gradually since 1900; in 1968 they held some 40% of the financial assets of the American economy.

¹⁵ D. C. McClelland, The Achieving Society (Princeton, N.J.: Van Nostrand, 1961), and S. P. Schatz, "Achievement and Economic Growth: A Critique", Quarterly Journal of Economics, Vol. 79, (May 1965), No. 2, pp. 234-241.

Table 2.2

Structure of Financial Assets, 1900-1968

(percentages)

C l a i m s											
All Finan- cial Assets ^a	Against Non-Financial Sectors					Against Financial Institutions			Corporate Stock		
	All	All	Fede- ral Govern- ment	Other		All ^a	Bank- ing Sys- tem	Other	All	Finan- cial Insti- tutions	Other
(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)	(9)	(10)	(11)
1900	100.0	76.3	52.1	2.2	49.9	24.2	13.8	10.4	23.7	4.6	19.1
1929	100.0	63.0	40.6	3.6	37.0	22.4	12.2	10.2	37.0	4.4	32.6
1952	100.0	83.7	48.8	21.0	27.8	34.9 ^b	17.9	16.9	16.3	3.0	13.4
1960	100.0	77.7	44.4	13.2	31.3	33.3	13.0	20.3	22.3	4.6	17.6
1968	100.0	71.3	38.5	8.5	30.0	32.7	12.4	20.3	28.7	7.4	21.3

^a Does not include proprietors' equities in unincorporated businesses.

^b From 1952 on this includes trust funds administered by commercial banks.

Source: R. Goldsmith, ed. (New York: N.B.E.R., 1973), Table 3-9.

It is commonly argued that such a development should lower the risk to the overall economy, reduce interest rates, and increase real investment, since it introduces economies of scale into the operation of the capital market.

"Financial institutions are in a better position than individuals to bear and spread the risks of primary security ownership. Because of their large size, intermediaries can diversify their portfolios and minimize the risk involved in holding any one security. They are experts in evaluating borrower credit characteristics. They employ skilled portfolio managers and can take advantage of administrative economies in large scale buying and selling." ¹⁶⁾

¹⁶ L. S. Ritter and W. L. Silber, Principles of Money, Banking and Financial Markets (New York: Basic Books Inc., 1974), p. 318.

Various studies have shown, however, that this argument does not always apply.¹⁷⁾ For instance, if the rates of equity appreciation of stocks are used as an indicator of the efficiency of the professional money managers, then the empirical evidence is not at all inclusive. The performance of the trustee funds administered by banks or pension funds does not differ appreciably from the average rates shown by the Dow Jones - or Standard and Poor Indices. The same is true of the mutual funds, apart from the 1965-1970 period when they did perform better than the market average.¹⁸⁾

In this study, however, the effect of these intermediaries on the financial operations of the firm is of far greater importance than the above discussion of their efficiency or profitability.

Financial intermediaries in the U.S. play a far greater role in extending loan capital than they do in providing risk capital. Altogether, they own about 30 percent of all the company shares outstanding and at the end

¹⁷ A Study of Mutual Funds, University of Pennsylvania, Wharton School of Finance and Commerce (House Report No. 2274, 87th Congress, Philadelphia, 1961); and Institutional Investor Study Report, Securities and Exchange Commission (House Document 9624, 92nd Congress, 1st Session, Washington, D.C., 1971); and Peter O. Dietz, Pension Funds: Measuring Investment Performance (Graduate School of Business Administration, Columbia University and Free Press of Glencoe, 1966); and I. Friend, M. Blume, and J. Crockett, Mutual Funds and Other Institutional Investors (New York: Twentieth Century Fund, 1970), pp. 3-4.

¹⁸ M. R. Straszheim, "The Demand for Corporate Stock in the Postwar Period", Institutional Investors and Corporate Stock, R. Goldsmith, ed. (New York: N.B.E.R., 1973), pp. 256-265.

of 1970 this investment formed about 18 percent of their financial assets. The rest of the shares are held by individuals, private financial concerns, and non-financial companies. On the other hand, private investors hold only about 20 percent of the corporate bonds, the rest being held by life insurance companies and pension funds. Commercial banks are not involved in the stock market at all, but they do cover all other aspects of the financial markets.

The large number of individual investors provides the corporate sector with a market in which equity capital can be raised. At the same time, institutionalized investors provide channels through which relatively small sums are raised from numerous private investors and transferred to the business sector in the form of long- and short-term credit. The role of the non-institutionalized investors coupled with the technical know-how of the financial intermediaries definitely encourages the full disclosure of corporate affairs and the high level of management which characterize manufacturing companies in the U.S.

Table 2.3

Percentage Distribution of Financial Institutions According
to Size of Assets
(end of 1972)

All financial institutions	100
Commercial banks	38
Savings and loan associations	15
Life insurance companies	14
Pension funds	9
Mutual savings banks	6
Consumer finance corporations	5
Public sector retirement funds	4
Others	9

Source: Federal Reserve, Flow of Funds Accounts 1945-1972,
August 1973, pp. 76-77.

2. Commercial banks

As may be seen from Table 2.3, commercial banks are by far the largest of the financial institutions. Their assets include investments in all financial markets, except company equity. Business loans, moreover, account for only 18 percent of their total assets, so that their role in extending credit to the corporate sector is fairly limited.

American monetary history reveals a consistent opposition to government intervention coupled with a fear of financial monopolies; the result has been the development of a highly competitive banking system. The federally financed banks set up in 1791 and 1816 were short lived, primarily because of the "state rights" opposition to government involvement in banking. It was not until 1913 that the Federal Reserve System was established to impose some sort of centralized control over the banking system; even then, it came into being only as the result of a series of financial crises and bank failures in the second half of the nineteenth century.¹⁹⁾ The Federal Reserve and Banking Acts of 1933 and 1935 did not greatly impair the independence from central control enjoyed by U.S. commercial banks. Although free banking was abolished in 1935, a dual system was instituted under which banks could be chartered by either state or federal authorities. Another distinguishing feature of the American banking system is that it is a unit banking system, i.e. one in which most banks do not have branches. Although bank branching is permitted in over 30 states, it is usually limited to the bank's home city or county.

¹⁹ M. Friedman and A.J. Schwartz, A Monetary History of the United States 1867-1960. (Princeton: Princeton University Press, 1963), pp. 135-188.

In addition, the legislature has differentiated between the activities of the various types of financial institutions; it has restricted commercial banks, investment banks, saving societies, and other institutions to clearly defined, separate financial functions. In addition, full disclosure is required of any interlocking directorships or integrated ownership of financial institutions and industrial corporations, in order to minimize the anti-competitive effects of such ownership.

"Of the many unique characteristics of American banking, perhaps the most striking is the large number of commercial banks as noted above. At the end of 1960 there were 13,484 active commercial banks in the United States. This may be contrasted with Canada's nine chartered banks, with about 4000 branches, and England's eleven banks which are members of the London Clearing House, with about 9,700 branches in England and Wales." 20)

3. Insurance companies

Life insurance companies are the major buyers of corporate debentures, accounting for over a third of the market. Fire and casualty insurance companies, on the other hand, invest in short-term assets. These opposite patterns of investment flow not from official directives but from the character of the institutional liabilities.

4. Others

Savings and loans associations and savings banks, which together account for one fifth of the financial assets of the financial institutions, are restricted by law in their choice of portfolios. For this reason almost all

20 The Commercial Banking Industry, The American Bankers Association, A Monograph Prepared for the Commission on Money and Credit (New Jersey: Prentice-Hall, 1962), p.33.

their assets are held as mortgages on household residences. The remaining financial institutions are engaged primarily in the field of consumer credit.

IV. J A P A N

The main characteristics of the Japanese capital market are: a high rate of household savings; effective direct and indirect government intervention; and close interlocking relationships between commercial banks and trading and manufacturing firms. Since World War II, the Japanese economy has passed through successive periods of both rapid growth and stagnation. These fluctuations, together with the foreign trade orientation of the economy and the major role of small business in manufacturing, have greatly influenced the development of the capital market.

1. Government intervention

In the immediate post-war period, huge investments in capital assets were needed to rebuild Japanese industry and the economy in general, but neither private industry nor private financial institutions could provide the resources required. The government established, therefore, the Reconstruction Finance Corporation, the Japan Development Bank, and the Import Bank to supply capital to basic industries such as electric power, iron and steel, coal, and fertilizers. The government-administered Trust Fund Bureau was set up to invest both surplus funds from the post-war special reconstruction accounts and the capital accumulated through the postal savings system. State financial institutions were also created to provide finance

in selected areas, such as small business, housing and agriculture.

In addition to providing financial assistance, either directly through the special institutions described above or indirectly through directives to private banks regarding their loan portfolios, the government grants fiscal incentives to industry in order to attain national economic objectives.

The government subsidizes export industries and grants special income tax allowances for industrial research, structural reorganization, and modernization. To encourage firms to increase their equity, taxes on retained earnings have been reduced; and further concessions are granted to firms that raise their retained earnings or redeem outstanding loans.

Moreover, continual informal contacts and discussions between the government and private enterprise play an important role in the formulation and implementation of Japanese industrial corporate policy. Private bank loans, a major source of industrial development credit, are not underwritten by the government, but government officials regularly discuss economic policy with the bankers, so that private credit institutions virtually constitute part of the government-directed industrial development program. There are systematic arrangements by which government and business cooperate in deciding how to attain given industrial policy objectives, or, in some cases, in actually implementing various measures. In the Trade Council, representatives of government and private business discuss means of promoting trade; the National Research and Development

Program coordinates research and development projects carried out jointly by state laboratories and research institutes, private industry, and the universities; and government and business jointly organize survey missions to developing countries to find new sources of primary products for Japanese industry.

Because of the strong demand for capital to finance industrial expansion, private financial institutions have greatly stepped up their lending to industry. In turn, the Bank of Japan extends loans to these institutions in order to replenish their resources. This "overloan" phenomenon continues, endowing the central bank with even greater control over the use of private bank funds.

"The commercial banks of Japan, the major source of loan funds to corporations, are aggressive lenders. Nearly one hundred percent of the deposits of commercial banks are out to debtors. While the banks take some measures to reduce risks through splitting loans among other banks, they are essentially dependent on the central bank, The Bank of Japan, for funds.

The Bank of Japan plays an important role in determining the availability of funds for the loans for commercial banks. In addition to the usual monetary tools such as discount rates, open market operations and variations in legal reserve requirements, the Bank of Japan practically sets the level of loans of commercial banks using a form of moral suasion known as "window operations". Here the Bank imposes penalty rates on the borrowings of individual banks from it which are in excess of the limit the Bank sets."²¹)

Japanese industry has always been almost completely

²¹ J. C. Abegglen, Business Strategies for Japan (Sophia University, Tokyo, 1970), p.5.

protected against foreign competition by quantitative restrictions on imports and controls on the introduction of foreign technology. Competition within the economy, however, has tended to be sharper than in many other countries, because of the large number of extremely small enterprises. In 1965, for example, about nine-tenths of all Japanese manufacturing firms had fewer than 30 employees, and of these more than four-fifths had fewer than ten.²²⁾ In the U.K., by way of comparison, firms with fewer than 30 employees comprised only 75% of the manufacturing enterprises in the same year. The existence of surplus labor, the lack of labor mobility, and the close links between individual banks and allied groups of manufacturing firms, all tend to increase competition. Since the government considers competition detrimental to the rationalization of industry and to the financial position of industrial plants, measures have been introduced in order to restrain competition, such as officially-induced production cut-backs in depressed industries, cartels aimed at the rationalization of industry, price and wage agreements among small firms, and investment coordination among individual firms.

In addition to the financial framework described above, one must take into account the effect of national cultural traditions on industrial policy. The impact of these traditions has been described as follows:

"In this way although Western systems, technology, and thought, etc., have been imported and transplanted in rapid succession, this has not brought

²² T. Yamanaka, Small Business in Japanese Economic Progress (Asahi, Tokyo, 1971), Appendix, Table 2.

about drastic changes in the soil and climate of Japan. This is evident in the fact that within the framework of various Western institutions are to be found in ample degree phenomena typically Japanese - strong attachment and loyalty to the organization to which one belongs, to its country, business, or whatever; the seniority system; the system of life-long employment with the same company; a separate labor union in each enterprise; family-like human relations within business, etc." ²³⁾

One of the results of these phenomena has been a policy in which decisions regarding the various levels of corporate activity, are arrived at through a consensus of the opinion of all the factors concerned.

2. Sources and uses of funds

Household savings are the major source of funds for the capital market and the corporate business sector is the main taker of these funds. In 1970, for instance, the personal sector provided 67 percent of the funds raised by the capital market; a similar percentage of the demand for funds in that year stemmed from the corporate business sector.²⁴⁾ In the Japanese wage structure, increases in "extraordinary" income, bonuses, and other deferred income have outpaced the growth of ordinary wages. Because the propensity to save "extraordinary" income is greater than that for regular earnings, the Japanese worker tends to save a large share of his earnings (18-20 percent in the

²³ The Industrial Policy of Japan, Organization for Economic Cooperation and Development (Paris, 1972), pp. 13-14.

²⁴ L. S. Presnell (ed.), Money and Banking in Japan, Bank of Japan (Edinburgh: Macmillan Press, 1973), Fig. 8.1, p. 105.

years 1968-1970).²⁵⁾ Tax reductions are granted on personal savings and these also encourage the propensity to save. These reductions are constantly adjusted to keep pace with, or slightly ahead of, the average savings per household. For instance, at the end of fiscal 1969 the savings of an average household reached 1.2 million yen, so the ceiling on tax-free savings was raised at the end of 1971 to 1.5 million yen. The ceiling on tax-free savings is also adjusted for changes in the rates of interest. For instance, in 1967 the tax on interest was raised to 15 percent, and consequently savings in all forms of up to 1 million yen were made tax exempt.²⁶⁾ The widespread practice of paying wages and salaries through bank accounts instead of in cash also contributes to a high rate of personal savings.

The main form of private saving is bank deposits. Until quite recently, little interest was displayed in precious metals and jewels, but now they are in demand as an inflation hedge. Small savers generally do not buy stocks and bonds, preferring instead to place their funds in commercial banks and postal savings; these savings are channelled to growth industries through the city banks, and, in the case of post office savings, through the Government Development Bank.

The public sector accounted directly for 17 percent of the demand for funds in the period 1968-1970, while it contributed only two percent to the supply of funds in the financial market.²⁷⁾

²⁵ T.F.M. Adams and I. Hoshii, *Financial History of the New Japan* (Tokyo, Kodansha Int., Ltd., 1972), pp. 326-327.

²⁶ *Ibid*, p. 328.

²⁷ L.S. Presnell (ed.), *op.cit.*, Fig. 8.1, p. 105.

3. Commercial Banks

The importance of the commercial banks may be seen from Table 2.4 which shows the funds supplied to the capital market in 1970 by various sources.

Table 2.4

Fund Volume of Financial Institutions
September 30, 1970

	Number of institu- tions	Fund volume	
		In billions of yen	% of total
Commercial Banks	86	49,340.0	55.7
City banks	15	23,370.3	26.4
Local banks	61	13,564.6	15.3
Trust banks	7	7,182.2	8.1
Long-term credit banks	3	5,222.9	5.9
Financial Institutions for Small Business	1,112	16,004.0	18.1
Mutual banks	72	5,908.9	6.7
Credit associations	505	7,160.0	8.1
Credit cooperatives	534	1,848.6	2.1
Central Bank for Commercial and Industrial Cooperatives	1	1,086.5	1.2
Financial Institutions for Agriculture, Forestry, and fisheries	7,832	10,684.1	12.1
Labor Credit Associations	46	326.6	0.4
Insurance Companies	41	6,290.7	7.1
Government Financial Institutions	11	5,985.8	6.8
T o t a l	9,128	88,631.2	100.0

NOTE: Fund volume: deposits, securities, trusts; for government financial institutions, government loans are included.

SOURCE: T.F.M. Adams and I. Hoshii, op. cit., p. 98.

The above table shows that over half of the funds supplied to the capital market were channelled through the commercial banks. Over 60 percent of the total assets of the commercial banks are invested in loans primarily to the manufacturing sectors, which accounted for just over 40 percent of the bank loans outstanding at the end of 1970.²⁸⁾

As mentioned above, personal savings in Japan are primarily in the form of relatively long-term deposits placed with commercial banks. This phenomenon on the one hand, together with the "mixed" banking practiced by the commercial banks, on the other, are probably the major reasons for the lack of a highly developed capital market in Japan. Until World War II, the banks were engaged both in arranging long-term finance and in extending ordinary bank credit. Although, since the war, the trend has been toward the British pattern of short-term finance, the involvement of the banks in long-term finance still remains; apart from the direct long-term loans made by the banks, over 50 percent of the commercial banks' portfolio consisted of industrial debentures.²⁹⁾ Furthermore, the commercial banks also hold debentures of the long-term credit banks which in turn lend funds to manufacturing corporations. The commercial banks also invest in the shares of non-financial corporations which increase their involvement in the long-term capital market.

Japanese banking like that of the U.K. includes nation-wide branch banking.

²⁸ The Japanese Financial System. Bank of Japan, Tokyo, 1972, Tables 17 and 19, pp. 35-37.

²⁹ L. S. Presnell (ed.), op.cit., p. 165.

In the years prior to World War II, the firms belonging to one of the large Zaibatsu (combines) would rely almost exclusively on funds raised through the financial institutions of that group, which, as a rule, did not resort to the central bank for government credit. Although the Zaibatsu were dissolved during the American occupation, most of the old combines were later restored. Nonetheless, because of the enormous post-war demand for capital, the non-financial firms had to obtain additional finance from other banks, a process that weakened the cohesiveness of the groups. The shortage of funds also induced the banks to play a leading role in the development of integrated groups of enterprises in new industries, such as petrochemicals.

In many instances, banks today form the center of three concentric circles. The first is composed of the leading firms of the bank's group; the second, of other firms belonging to the same group; and the third of those outside companies which obtain most of their funds from the bank. Mutual shareholding and interlocking management of banks and their major clients are very common.

Any evaluation of the role of the commercial banks, or any other financial intermediary for that matter, has to take into account the activities of the Ministry of Finance. The role of this ministry in the Japanese capital market has been described as follows: "The most important institution in the field of banking and credit is the Ministry of Finance which shapes fiscal and monetary policies, supervizes not only all credit institutions but also the financial behavior of all corporations, collects taxes and

customs duties, controls foreign exchange, and has a decisive voice in the approval of foreign investments in Japan and Japanese investment overseas." 30)

The Ministry of Finance strictly regulates the banking system in order to prevent bank failures. It controls interest rates on loans and deposits and supervizes the issue of permits to establish new branches.

In a rapidly expanding economy, moreover, banks have to select growth industries, if they want to maintain or increase their share of the credit market. In financing businesses with growth potential, banks rely heavily on the judgment of the Ministry of International Trade and Industry, and this reliance, of course, extends government influence over the activities of the banks even further.

4. Capital Markets

The trade of both equities and fixed-interest securities has developed very rapidly on the Japanese stock exchange. The majority of the fixed-interest securities, however, are issued by financial intermediaries specializing in long-term loans to industry. This domination of the stock market by the issuers of securities thereby facilitates the implementation of official policies directing capital to specific industries. Such a framework, moreover, permits greater control over interest rates than is achieved in capital markets where the final user raises funds directly from the public. A large volume of funds is raised through new equity issues, but its effect on the

³⁰ T.F.M. Adams and I. Hoshii. op.cit., p. 91.

ownership structure of manufacturing concerns is relatively marginal, primarily because "rights" issues predominate. In 1971, for instance, nearly 76 percent of the total sales of new shares were in the form of "rights" issues to existing shareholders of quoted companies, a percentage which indicates that new firms have only slight recourse to the share market to obtain capital.³¹⁾ Most shares of all types are, in fact, issued by banks and other financial intermediaries rather than by manufacturing companies. The relative unimportance of the share market for raising funds for such companies is reflected by the fact that in 1971, they accounted for only five percent of the new shares sold on the Tokyo Stock Exchange.³²⁾

To ensure a smooth supply of long-term capital and investment in plant and equipment and to eliminate "over-loans" by commercial banks, an institutional distinction has been made between long- and short-term loans. The Industrial Bank of Japan, the Long-Term Credit Bank of Japan, and the Mortgage Bank of Japan were established as private institutions specializing in long-term finance. These concerns, depending solely on private sources, float long-term bond issues, which are purchased, in turn, mainly by commercial or city banks using the short-term funds they raise from the public. In investing their resources, these institutions supply long-term finance in accord with the guidelines set by the Ministry of International Trade and Industry (M.I.T.I.). Foreign investment remains severely

³¹⁾ Memorandum on Japanese Capital Market, The Nikko Securities Co., Ltd., Table I-15.

³²⁾ Ibid, Tables I-14 and III-3.

restricted; both direct investment in Japanese industry and the purchase of securities of Japanese companies are almost impossible for foreigners.

V. I S R A E L

Although the Israeli economy is served by a stock exchange, commercial banks, development banks, and a variety of other financial institutions, all financial operations should be seen not in the context of a free and sophisticated money market, but rather within a framework restricted and distorted by widespread and constant government control and intervention.³³⁾ The factors which account for this ramified government regulation are numerous and varied; they may be classified into three main groups. The first group is common to many developing countries, the second is the result of prevailing socialist concepts; and the third is specific to Israel.

a. As in many countries, the local population in Israel - in the years both before and after independence - lacked capital funds in order to finance rapid economic development. The immigrants who came after independence did not bring substantial financial resources with them, and the earlier waves of immigrants had not had sufficient time to provide these resources through personal or business savings. The import of capital thus formed the major part of the economy's financial resources, irrespective of whether these imports came from the voluntary donations of world Jewry, foreign governmental sources, or international loans.

³³ H. Ben-Shahar, S. Bronfeld and A. Cukierman, The Capital Market in Israel, ed. P. Uri (Jerusalem: Weidenfeld and Nicolson, 1971), p. 368.

The easiest channels for raising such funds are and have been the public sector institutions.³⁴⁾

For the purpose of this study the public sector is defined as the government, local authorities, state-owned corporations irrespective of the degree of government participation in their equity, the Jewish Agency, the Jewish National Fund and the Keren Hayesod, the trade union movement and the political parties.

b. Since its establishment in 1948, the State of Israel has been ruled by political groups adhering to a radical socialist ideology. Some sort of centralized planning apparatus, first that of the Zionist movement and its affiliated bodies in the years prior to independence and later that of the state itself, was viewed as the ideal mechanism for allocating capital funds in accordance with social and economic priorities. These priorities included the creation of a Jewish working class, the absorption of immigrants, the settlement of the land of Israel, the development of agriculture not only as an economic reality, but also as the realization of a Tolstoyan ideal, and the establishment of cooperative economic and social units.

These goals have created an ideological climate in which concern for the general welfare and the aspiration to achieve an egalitarian society are ever-present factors in current Israeli economic thinking.³⁵⁾

³⁴ D. Horowitz, The Enigma of Economic Growth: A Case Study of Israel, (New York: Praeger Publishers, 1972), Chapter 4, pp. 53-55.

³⁵ M. Halevi & R. Klinov-Malul, The Economic Development of Israel, (Praeger, New York, 1968), Chapter 3, pp. 40-41.

c. The special needs of Israel to absorb mass immigration, assume a heavy defense burden, and rapidly disperse the population, have led to a constant effort to attain rapid economic growth. Although private enterprise was recognized, even in the early years of the state, as having a positive role, government intervention in the capital and money markets continues to predominate. It was and is felt that private entrepreneurship is either incapable or unwilling to finance the socio-political goals detailed above. As a result, economic decisions are often reached on the basis of socio-political factors rather than on purely economic considerations, even at the level of the individual firm. Government investments are often made in order to achieve full employment, advance immigrant absorption or attain other social aims even though profitability in the accounting sense may be negligible at best.³⁶⁾ Furthermore, privately-owned firms which find themselves in financial straits, have in the past been able to rely on the government to prop them up even for long periods of time. Such intervention was prompted primarily by the fear of unemployment or of a reduction in exports.

1. Direct Government Intervention in the Capital and Money Markets

Government domination of the capital market is achieved through both direct and indirect intervention in the raising and allocation of funds. The distinction between direct and indirect forms of intervention is marginal, however, from the economic point of view. So are changes in the relative importance of each of these forms

³⁶ D. Horowitz, op.cit., pp. 113-118.

over a period of time.

The government directly intervenes in the raising of funds through various budgetary measures such as the sale of government bonds and the imposition of compulsory loans on the public and the financial institutions. It also intervenes in the current transactions within the banking system. The ratio between the volume of government funds and the growth of the assets of financial institutions gives some idea of the extent of this direct intervention. For instance, in 1972 government funds raised domestically constituted 25 percent of the incremental assets of the financial and banking institutions. During the period 1966-1971, the share of the government in domestically raised funds fluctuated between 26 and 40 percent.³⁷⁾

The public sector intervenes directly in the allocation of funds by extending credit to banking and financial institutions. Between 1968 and 1972 this government credit accounted for 25 to 35 percent of the total sources of these institutions.

Until 1970, the interest charged on all loans, irrespective of their source, was restricted to a rate fixed by the Finance Minister in consultation with the Governor of the Bank of Israel and the Finance Committee of the Knesset (Parliament). A maximum rate of 11 percent per annum was set on ordinary short-term loans, while loans granted to agriculture and industry were authorized at an interest rate of 10 percent. Industrial and agricultural

³⁷ H. Ben-Shahar, S. Bronfeld and A. Cukierman, *op.cit.*, p. 370, and Bank of Israel Annual Reports 1968-1972, Tables VII-4, XIII-18, XV-4, XV-14, and XVI-8.

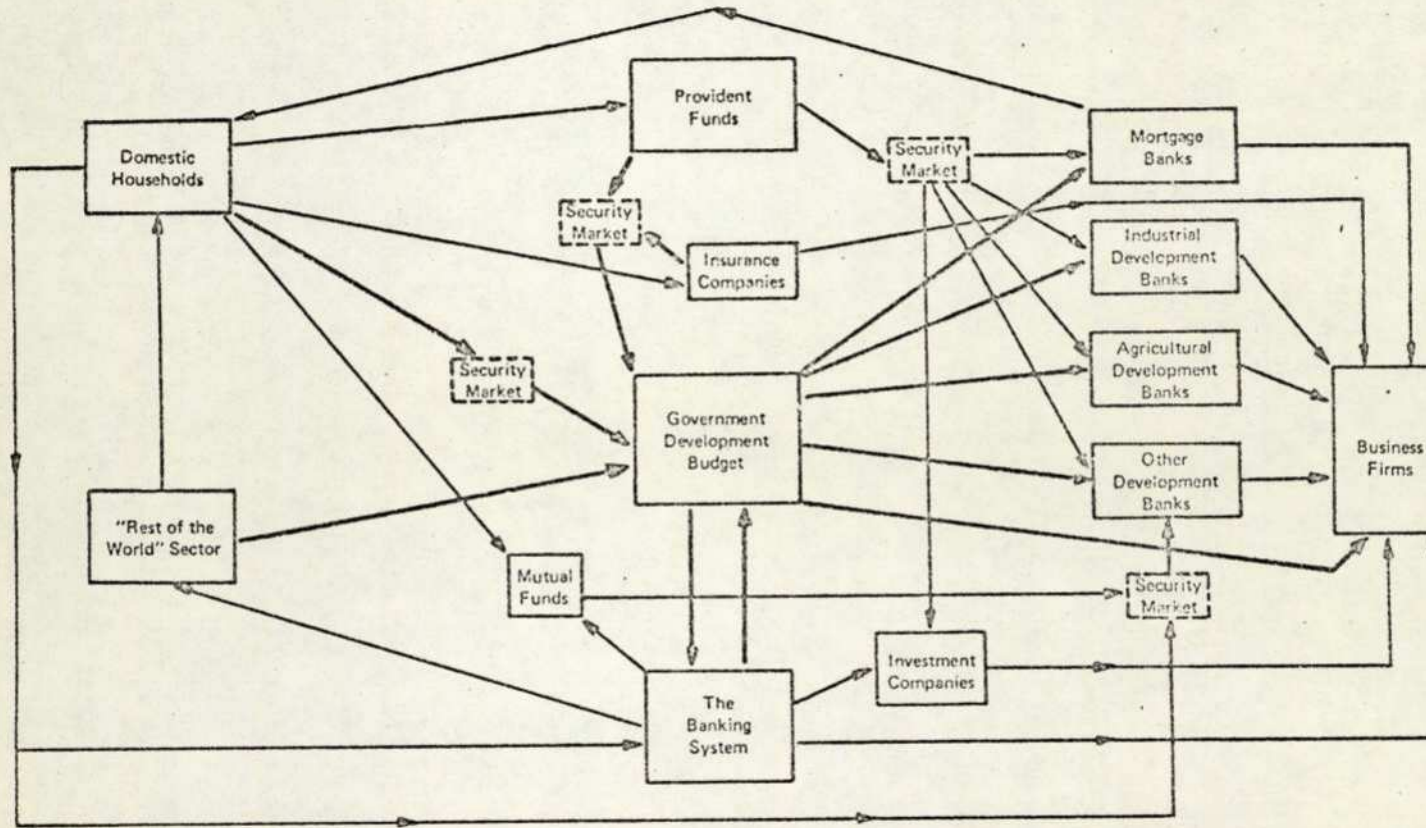
short-term loans provided in accordance with Bank of Israel directives, as explained below, carried interest of either 6 or 9 percent, while the interest on long-term loans was limited to 6-8 percent. Owing to the rapid inflation of the 1950's, these rates meant that manufacturing and agriculture received loans at a negative rate of interest. During the period 1960-1965 the long-term loans were linked either to the consumer price index or to the foreign exchange rate, but from 1966 on the loans ceased to be linked to any index of inflation.

The maximum statutory interest rate on credit maintained in a period of excess demand depressed interest rates below their equilibrium level and spurred the development of a grey market in short-term credit. The effect of this grey market on manufacturing corporations was minimal, however, because they received subsidized short-term bank credit through the banking system in accord with the directives of the Bank of Israel. With respect to long-term credit to manufacturing, a grey market never developed because the main sources of funds were the government development budget and the government-controlled Industrial Development Bank. Neither the subsidized short-term loans to manufacturing corporations nor the long-term development loans ceased with the abolition of the maximum statutory interest rate in 1970.

Of much greater importance to the capital market have been the various forms of indirect government intervention enumerated below. Some of the ways by which funds are channelled by this indirect intervention may be gauged from Diagram 2.1.

DIAGRAM 2.1

FLOW OF FUNDS WITHIN THE FINANCIAL SYSTEM



Source: H. Ben-Shahar, S. Bronfeld and A. Cukierman, "The Capital Market in Israel", in Israel and the Common Market, ed. P. Uri (Weidenfeld and Nicolson, Jerusalem, 1971), p. 225.

2. The Bank of Israel and the Banking System

For the purpose of this study, the Bank of Israel is regarded as being part of the government intervention in the financial markets, since through the central bank the banking system has been made an integral part of the government-directed money market. The directed credit extended under Bank of Israel supervision constitutes about three quarters of the total volume of bank credit received by the manufacturing corporations. This directed credit is given mainly to exporters so that they can extend credit to customers abroad, import raw materials for re-export, or finance that part of their production sold abroad. Granted at rates well below the market rate of interest (6% compared to 18-20% at the time of writing), this credit constitutes part of the overall subsidy given to exporters. Other directed credit is granted at higher rates, but even these rates are below the market level.

This directed credit is financed primarily through the following channels:

- a) The Bank of Israel participates through deposits and bill discounting, in the special funds set up for exporters and for working capital. This participation is made available to the banks at special low interest rates.
- b) That part of the bank's funds channelled into controlled credits is exempted from reserve requirements.
- c) Commercial banks also participate in the special funds described above. This participation may come from the bank's free resources or from that share of the funds raised from the public through the various saving schemes which the banks are required to invest in approved investments.

Some idea of the influence of government policy in the allocation of bank credit may be gauged from the following table:

Table 2.5
Outstanding Bank Credit to the Public by Components
1969 - 1972
(IL million)

	1969	1970	1971	1972
(1) Nondirected local currency credit from the banking institutions	2,217.9	2,634.0	3,051.5	3,601.9
(2) Export and working capital funds	1,117.6	1,236.2	1,636.7	2,218.4
Bank of Israel rediscounts	523.6	580.7	729.8	670.1
Within the framework of liquidity exemptions	199.2	224.9	307.7	428.9
Own resources	335.1	370.2	564.4	1,083.2
Government participation	59.7	60.4	34.8	36.2
(3) Other credit within the framework of liquidity exemptions	250.1	311.6	327.6	45.0
(4) Credit from government-approved saving scheme funds	36.1	26.0	29.9	35.7
(5) Other Bank of Israel rediscounts	170.1	159.4	149.9	188.1
(6) Credit directed by the Bank of Israel (2 to 5 incl.)	1,573.9	1,733.2	2,144.1	2,487.2
(7) Foreign currency credit by banking institutions other than through the export and working capital funds	68.2	309.2	506.7	700.3
(8) Total credit from the banking system to the public (1+6+7)	3,860.0	4,676.4	5,702.3	6,789.4

Source: Bank of Israel Annual Report 1972,
Table XIII-12, p. 348.

Even though foreign currency transferred to Israel by foreign residents or by Israelis entitled to hold special accounts in foreign currency (such as recipients of restitutions from Germany, etc.), is deposited with the commercial banks, the funds are transferred to the Bank of Israel, the banks have no control over this part of their funds. Whether this requirement is regarded as a means of implementing central bank monetary policy or as one affording government control over this part of the capital market, it does offer another example of how the banking system is primarily used as a channel for implementing central government policy.

Nevertheless, the range of activity of the Israeli commercial banks is unrestricted, and they fulfill a number of functions not normally handled by regular commercial banks. Israeli commercial banks serve as security analysts and advisers to the public, as well as underwriters, and stock and investment brokers. They are the major issuers of share capital and debentures of quoted firms and manage the sale of government bonds and short-term paper. The banks also monopolize all foreign currency transactions. They are important institutional investors, either directly or through the investment companies, insurance houses or savings schemes under their control; these financial companies constitute the major financial intermediaries in Israel.

It is suggested that the government and public sector intervention in the commercial banking system is, inter alia, a major cause of the business concentration characteristic of the Israeli commercial banks. In 1972 over 80

percent of the deposits from the public and the loans to the public were accounted for by the three big banks or their subsidiaries.³⁸⁾ Of the Big Three, the largest one, Bank Leumi, is controlled by the Jewish Agency, which is its major shareholder. Of the other two, Bank Hapoalim, is owned by the Histadrut (General Confederation of Trade Unions) and the other, Israel Discount Bank, is a privately-owned, quoted corporation. All three participate actively in the Advisory Board of the Bank of Israel, with whom they maintain close consultative relationships.

This tendency towards increasing concentration is to be found in other countries, too, partially as a result of economies of scale. In Israel, however, almost all of the bank takeovers have resulted either from actual bankruptcy or of impending failure. All of them have been conducted under the auspices of the Bank of Israel and/or the Ministry of Finance. Furthermore, the share of the Big Three in the guided funds is even greater than their share in the undirected credit, and it is reasonable to assume that the advantages accruing both to the lender and the borrower from these funds must contribute to the further growth of the Big Three.

3. The financial intermediaries

One of the most important characteristics of the financial intermediaries in Israel is their role as an auxiliary to the government in raising and allocating funds. The social insurance funds that raise funds from the household sector are required to maintain approximately 80 per-

³⁸ Bank of Israel Annual Report 1972, Table XIII-19, p.362.

cent of their investment portfolio in government-approved investments. Insurance companies are also required, although to a lesser extent, to invest in government-approved bonds or investments. In practice, over half of their total assets are invested in government and public sector bonds.

Government development and mortgage banks are the predominant financial institutions. Even in the private financial institutions, however, there are varying degrees of government intervention. In 1972, about one half of the assets of the financial institutions consisted of loans made from government or public sector deposits.³⁹⁾ Such loans may be considered controlled credit, since they may be granted only with government approval and in accordance with government directives. This control applies not only to the allocation of credit but also to raising funds. The equity of the financial institutions is partially owned by the government and partially raised abroad with government approval. Their bonds, like all other bonds issued on the stock exchange, are subject - if not always formally then at least in practice - to the approval of the Ministry of Finance. Furthermore, a major part of their liabilities consist of public sector funds earmarked for loans.

4. Debenture market

The medium- and long-term capital market is even more subject to government control than is the short-term credit market. Industrial and commercial firms are not able to issue bonds to the public, and as a result this form of

³⁹ Bank of Israel, Annual Report 1972, Table XV-4, p.396.

raising loan capital is reserved for the government, public institutions, and the financial intermediaries. Furthermore, the non-state issuer may either use the funds for officially-approved investments or deposit them with the Finance Ministry, and then use part or all of the deposit for making loans to those firms which receive permission to borrow.

The government also regulates the raising of funds from the public through compulsory loans and by its control over the foreign currency accounts of local residents. Moreover, in order the social insurance funds and bank-operated savings schemes to be authorized to purchase a given bond issue, the issue has to acquire from the government the status of an approved investment; receiving that status is also dependent on the use for which the money is raised.

Manufacturing and commercial firms receive all their long-term funds, therefore, either from the state budget or from the financial institutions, which, as has been explained above, are either state-owned or whose loan policy is state directed.

Although in theory the stock exchange as an equity market is open to manufacturing and commercial firms, in practice this is not the case. On the one hand, for various reasons the share market is narrow and underdeveloped; on the other, the provision of cheap, subsidized long-term credit from public sources militates against firms turning to this market for raising funds.

5. Law for the encouragement of capital investment

Under the provisions of this law, firms may receive

the status of an approved enterprise provided they export more than a certain minimum percentage of their output, produce import substitutes, or establish themselves in development areas. Such approval may apply to the entire enterprise or only to part of it. At present having the status of approved investment or approved enterprise reduces the tax liability of the firm from 52% to 28%, frees the income from interest, dividends from personal income tax, and authorities accelerated rates of depreciation. Furthermore, the status of approved enterprise entitles the firm to receive long-term credit from financial institutions or from the government budget. It should be recognized that, quite apart from the subsidized interest rate, the availability of such credit in a market where no other source of long-term funds exists, determines the development of the individual firm in no small measure.

VI. S u m m a r y

We may now summarize the distinguishing features of the four capital markets surveyed.

The U.S. has the largest capital market, a long tradition of anti-monopoly legislation, and a minimum of central government intervention. In the U.K. the capital market, though much smaller, does seem large and flexible enough to meet the demand for funds (it may not, however, fully satisfy the demand from smaller firms). Although the British financial system has strong inter-institutional relationships, government influence is not predominant.

In both these countries the government has tended not to intervene to stave off bankruptcies or to prevent

losses to investors or lenders involved financially with failing firms. Furthermore, although institutions exist to provide funds to special industries or sectors, they play only a marginal role in the capital market.

The capital markets of both countries today are the result of centuries of economic activity during which privately-owned financial institutions developed, non-government sources of capital also grew, and some balance between public supervision and private initiative was established.

In Japan the desire to repair the economic dislocation caused by World War II led to an emphasis on growth and the capture of export markets. Traditional social patterns, reflected in the pre-war tendency towards cartelization and integration, significantly influenced the post-war economy which developed through an interlocking network of financial, commercial, and industrial concerns. At the same time, state intervention and control, originally introduced to break up the great cartels, was intensified both in order to cushion the economy against the fluctuations of the post-war period and to ensure the success of the export drive. These factors led to both direct and indirect financing of industry by the central government and the banking system.

Due to ideological and historical factors, the Israeli public authorities exercise complete de facto control over raising capital, both internal and external, and allocating it to the various industries and individual concerns. The major considerations behind the allocation of funds are social and political. They include the

commitment to full employment, an extensive social welfare structure, the dispersal of population for social and military reasons, and the state's obligation to absorb unpredictable waves of immigration. Normal market considerations such as profitability and risk have been consistently rejected whenever they conflicted with these socio-political factors.

In each country the social, ideological, and political factors mentioned help to create the economic framework - the cost and availability of capital, the rate of profitability, the degree of risk facing entrepreneurs and suppliers of capital, etc. In the following chapters, we analyze inter-country differences in the relative influence of these factors and of market forces on the financial behavior of firms. If the latter are dominant, we may conclude that international differences in corporate behavior stem from economic considerations, as do the inter-firm differences within a national economy. Desired changes in corporate financial structure can then be brought about by changes in the economic variables. If the former are dominant, however, the financial analysis of the individual firm will then have to be based more firmly on behavioral theories than it is at present.

CHAPTER 3

EQUITY FINANCING AND GEARING

I. Introduction

A firm may finance its activities either by means of borrowed funds - such as debentures, bank loans, or trade credit - or by increasing the owners' investment - in the form of shares, loans, undistributed profits, etc. The proportion of owners' equity (in all its forms) in the total funds of the firm, or in other words the use of gearing, varies within any economy from firm to firm at any particular point in time, and it varies for the same firm at different stages of its economic development.

The purpose of this chapter is to ascertain to what extent the use of gearing by firms varies in the four economies dealt with here - the U.K., U.S., Japan, and Israel. An attempt will be made to explain any international differences and examine their implications for the study of the financial behavior of the individual firm within a given economy.

a. As a result of their individual social, economic, and political development, the economies in question have created radically different financial institutions and behavioral patterns which have been described in the previous chapter. Such institutions and patterns express the accepted business practices, morality, social priorities, and value structure of the surrounding society. These as well as the subjective value judgments of the "average" entrepreneur regarding risk-taking and profit maximization

will, it may be argued, affect the operative equity/debt ratio of the firm.

The underlying question, therefore, is whether the international variations in the use of gearing reflect differences in certain economic variables or whether they result from sociological and psychological factors peculiar to each economy.

One way to answer this question is to examine those firms within a particular economy which operate within the same overall sociological and psychological framework but under radically different economic conditions. This paper will show that there is a close similarity between behavior of these firms and the accepted financial pattern in other countries where these "differing" economic conditions are the norm. In this event we may assume that despite the socio-political differences between these countries, the introduction of common economic variables has a similar effect on the use of gearing in all of them.

b. Can one explain the international differences in gearing according to the commonly accepted financial theories of the firm or are there additional macroeconomic factors which in effect circumscribe the freedom of the individual firm to effectively alter its gearing ratios?

This study shows that the major explanation for international differences in gearing are the overall growth rate of the economy, the structure of its capital market, and the real as opposed to the nominal levels of risk. It is suggested therefore, that the effect of the relative costs of capital, profitability, or liquidity on the ability or desire of the individual firm within any given

economy, to alter its debt/equity ratio may be marginal. On the other hand, in analyzing changes in the gearing practices of the individual firm, one would now have to take into account any changes in the key factors mentioned above, within the specific economy.

The international differences in gearing and their causes are discussed in the following order:

The next section, Section II, describes the information available, the limitations of the data, and the definitions used.

Section III presents the equity structure of the corporations in each of the countries concerned including the degree of gearing.

Suggested explanations for the international differences in gearing are given in Section IV, dwelling mainly on the following:

1. Risk: The bankruptcy rate, the size of the average firm, and the breakdown of the industrial groups in the manufacturing sector are used as indicators of the degree of risk in the economy. Apart from the bankruptcy rate, the other indicators are primarily endogenous ones. The assumption to be tested is that in countries where these indicators reflect a high rate of risk the degree of gearing will be lower than in economies with low risk indicators.

2. Profitability: Various indicators of corporate profitability, drawn from the financial data described in Section II, are examined in order to see whether they can explain these differences. The commonly accepted profitability ratios, primarily performance ratios, are presented

here as a reflection of the endogenous factors affecting gearing. In addition, the growth rate of the economy is introduced as an overall indicator of profitability and as a factor exogenous to the firm. The hypothesis to be tested is whether in those countries showing slow growth or low average profits in relation to total assets, corporations operate with less gearing than in countries with generally high profit ratios.

3. Structure of the capital market: The different methods of financing industrial development are taken as representative of the exogenous factors determining the gearing ratio in each country, including the degree of government interference in the economy as well as the historical role of the banking system.

For two reasons it is difficult to form a priori views of the effects of government intervention in the capital market on the use of gearing by the firm. On the one hand, a market-oriented economy should lead to "optimum" private gearing because (a) the firm will tend to operate with the optimal financial structure adopted by a sophisticated management using modern accounting techniques, and (b) the demand for the firm's shares and debentures will be dependent on the judgment of the market investor after he considers the relevant aspects of profitability and risk. On the other hand, non-competitive capital markets might lead to either high or low gearing depending on the policies of the institutional or governmental bodies creating the imperfections.

The findings and their implications regarding further studies in this field are summarized in Section V.

The level of corporate taxation and the marginal personal income tax rate paid by the shareholders are important factors affecting the firm's optimum equity-debt ratio. However, even the effects of taxation are not included in the following analysis for two reasons.

Firstly, in all these countries, interest unlike dividends, is recognized as an expense for purposes of calculating the tax liability of the firm. This reduces the real cost of loan capital relative to equity and serves as an incentive to increase the use of gearing. The similarity in the tax law in this respect between the countries means that this incentive applies equally in all four countries.

Secondly, the nominal rate of corporate taxation cannot by itself be used in analyzing the effect of taxes on gearing. Such an analysis requires data on the average marginal personal income tax rate of a representative group of shareholders of the manufacturing companies in addition to details regarding taxation on capital gains and regular corporate profits. Furthermore the actual, as distinct from the nominal, corporate income tax rate reflects the existence of companies which enjoy special tax status granting them accelerated depreciation, tax rebates or exemptions and lower nominal rates of taxation. The creation of a special tax rate reflecting all these factors and an analysis of its effect on the gearing of the average firm in each economy requires a separate study and is beyond the scope of the present work.

The nature of the data and their limitations is to be found in Chapter one of this study, but for the

convenience of the reader its main features are repeated here.

II. Data and Definitions

The data used here were mainly taken from the aggregated balance sheets and profit-and-loss accounts of the manufacturing corporations in the countries concerned, as published by various bodies there for the years 1964-1968.¹⁾

The data for the U.K. apply to quoted and unquoted companies. Although firms of all sizes are included among the quoted companies - provided they are large enough to be quoted - only the major non-quoted companies are represented. The Israeli and U.S. statistics represent blown-up samples of all manufacturing corporations in those countries, irrespective of size or ownership. The Japanese data includes only large firms, i.e. firms with assets of over 1000 million yen (equivalent to approximately £1,500,000 sterling in 1968). No distinction is made in the Japanese statistics between quoted and non-quoted companies.

In addition to the data mentioned above relevant empirical studies in the four countries concerned were also consulted, as listed in the footnotes.

Equity is defined throughout this study as the total

¹ Unless otherwise stated, all data were drawn from the following sources: England - Business Monitor M. 3. "Company Finance" (H.M.S.O., London 1971); the U.S. - Quarterly Financial Statistics (Washington, D.C.: Federal Trade Commission, 1964-1968); Japan - Financial Statements of Main Industrial Corporations in Japan (Statistics Department, Bank of Japan, 1965-1970); Israel - unpublished data of the corporate finance research project of the Bank of Israel.

liability to shareholders. It includes share capital (preferred and ordinary) undistributed profits, internal reserves, and loans from owners.

Long-term debt refers to bonds, mortgages, and long-term loans from banks or financial institutions. It does not include bank overdrafts, primarily because it is not possible to separate such overdrafts from the other components of short-term bank credit.

Added value is defined for the purpose of this study as the value of production (annual sales plus the changes in inventories of finished goods and work in progress, minus the purchases of inputs of other firms).

Gearing may be measured either by relating equity to other sources of funds (capital gearing) or by relating interest payments to profit (income gearing). Both these measurements are used in this study with one refinement. It is usual practice to measure capital gearing by means of the ratio of equity to long-term debt, but the use of this ratio alone is questionable, because the demarcation that it implies between short-term and long-term debts is blurred and arbitrary. In practice, unless a firm or an economy undergoes drastic changes, short-term obligations are automatically renewed when they expire; they become long-term debts from the economic, if not always from the legal, point of view. For this reason, a further definition of capital gearing was adopted: equity as a percentage of the total funds used by the firm.

III. Corporate Financial Structure

As presented in Tables 3.1, 3.2, and 3.3, the fi-

nancial data of the industrial corporations examined in this study show clear differences in the degree of gearing and in the structure of equity finance.

TABLE 3.1

MEASURES OF CAPITAL GEARING IN THE FOUR COUNTRIES
(Average 1964-1968)

Country	Equity [*] as Per- cent of Long- Term Debt ^{**}	Equity as Percent of Total Funds	Equity as a Percent of Added Value ^{***}
U.K.	313	42	N.A.
U.S.	250	59	44
Japan	81	24	24
Israel	153	38	30

* Equity - share capital plus undistributed profits and loans from shareholders.

** Long-term debt excluding bank overdrafts.

*** Added value - value of production minus cost of inputs purchased from other firms.

Source: See footnote 1.

As demonstrated in Table 3.1, irrespective of which capital gearing ratio is selected in order to make the comparison, British and American firms use gearing less than do those in Israel and Japan.

The differences are even greater with respect to the structure of equity in the countries concerned. Undistributed profits form a greater proportion of equity in the U.K. and the U.S. than they do in Japan and Israel; in the

latter countries, share capital and loans from owners are the main components of equity (Table 3.2).

It should be pointed out that in the U.K., loans from owners form 7% of the total equity of small firms; the percentage for the quoted companies is not known.²⁾ In Japan, small firms finance 25% of their equity through owners' loans, and in Israel this form of financing accounts for approximately a third of the total investment irrespective of the size of the firm.³⁾

TABLE 3.2

THE STRUCTURE OF EQUITY IN THE FOUR COUNTRIES
(Average 1964-1968)

Country	Share Capital	Undistributed Profits	Loans from Owners	Total Equity
U.K.	42	58	-	100
U.S.	34	66	-	100
Japan	45	37	18	100
Israel	61	6	33	100

Source: See footnote 1.

Although loans from owners have been included in equity for purposes of this study, they actually share many of the qualities of debt financing. Interest paid on such

² M. Tamari, A Postal Questionnaire Survey of Small Firms: An Analysis of Financial Data, Research Report No.16, Committee of Inquiry on Small Firms (London: H.M.S.O., 1972).

³ See footnote 1.

loans is recognized as a tax deductible expense, a deduction which lowers the cost of this form of finance as compared to share capital. Furthermore, the risk incurred by owners who invest in this form of equity is smaller than in the case of share capital; in most cases they can withdraw their loans at will. Unfortunately, it is not possible to determine exactly what proportion of these loans should really be classified as debt finance and what proportion is actually equity.

On the basis of the high proportion of owners' loans in the equity capital of companies in Japan and Israel any re-classification of owners' loans as debt finance will result in an equity/debt ratio for those countries which is even lower than that shown in Table 3.1.

In most cases the balance sheets of manufacturing corporations in all countries show equity at nominal values, whereas short-term liabilities and added value represent current values. For this reason it may be argued that the results shown in Tables 3.1 and 3.2 primarily reflect different rates of change in the price levels of the countries examined.

A closer examination of the data will show, however, that such is not the case. During the period 1962-1968 all the four countries experienced a similar average rate of inflation.⁴⁾ It is true that prior to 1962 the Israeli economy was subject to a more rapid rate of inflation than was the U.K. or the U.S. Adjusting the balance sheet to reflect price changes in Israel do not, however,

⁴ Source: International Financial Statistics, International Monetary Fund, No. 2, Vol. XXII (February 1969), See page 23 of this study.

substantially raise the proportion of equity. In 1958, the year that followed the most inflationary decade in the Israeli economy, this adjustment raised the proportion of equity from 38% to 45%. In that year, non-revalued equity formed 60% and 64% of the total funds in the U.K. and the U.S. respectively.⁵⁾ A similar adjustment made in 1968 does not appreciably change the equity balance sheet for the Israeli corporations.

The adjustment did not change the equity balance sheet rate for two reasons:

a) The linkage of long-term debt to the consumer cost of living during the years 1958-1967 adjusted the equity/debt ratio to the change in price level.

b) The depreciation reserves of the firms are calculated on the basis of the historical cost of the fixed assets. Revaluation of these assets will result in depreciation reserves far in excess of those deducted for profits appearing in the financial statements. The increased depreciation will partially offset the amounts which have to be added to equity as a result of the revaluation of the fixed assets.

Although it is not possible in this study to revalue the assets in the other three countries owing to a lack of suitable data, the Israeli experience indicates that allowing for changes in the price level will not substantially affect the international differences shown in Tables 3.1, 3.2, and 3.3.

⁵ M. Tamari, "Changes in the Financial Structure of Israel's Industrial Companies, 1956/57 to 1961/62", Bulletin No. 19 (Jerusalem: Bank of Israel, November 1963), pp. 14-63.

In addition to the capital gearing ratios discussed above, the relative use of borrowed funds may be examined through data drawn from the profit-and-loss account in the form of the income gearing ratio. The ratio depicts the relationship between interest (payment for the use of borrowed funds) and profits (payment for the use of equity).

This gearing ratio has an advantage over the capital gearing ratios in that since both interest and profits are current items, they are less affected by inflationary trends than are the stock of equity and long-term loans.

The income gearing ratios of the four countries are given in Table 3.3. Also listed is another indicator drawn from the income statement: the relationship between profits before payment of interest and the total investment and the rate of return on equity, i.e. profits, after deducting interest payments, relative to the owners' investment in the firm.

TABLE 3.3

INDICATORS OF INCOME GEARING IN THE FOUR COUNTRIES IN 1968

Country	Interest as a Percentage of Net Profit	Pre-tax Profits before Interest, as a Percentage of Total Investment*	Pre-tax Profits after Interest as a Percentage of Equity
U.K.	7	10	12
U.S. **	14	10	13
Japan	85	11	27
Israel	103	12	22

* Total investment - defined here as the total value of the balance sheet, after the accumulated depreciation is deducted.

**Source: Corporation Income Tax Returns, "Statistics of Income" (Washington, D.C.: U.S. Treasury Dept., 1968). Sources for other countries listed in footnote 1.

The comparison of these two ratios shows the extent to which firms in a country depend on non-equity forms of finance. In those countries where the differences between these two profit ratios are greatest, the degree of capital gearing will also be the greatest.

The indicators of income gearing confirm the findings shown in the previous tables based on capital gearing ratios. Here too, companies in Japan and Israel operate with a relatively less capital from owners and with more borrowed funds than is the case in the U.K. and U.S.

While interest payments are equal to 7% - 14% of profits in the U.K. and the U.S., the ratio between them is almost unity in Japan and Israel.

As is also demonstrated in Table 3.3 the rate of return on owners' equity in Japan is 145% greater than the overall rate of return on total investment, and in Israel it is 83% greater. On the other hand, in the U.K. and the U.S. the differences between these two ratios are far less significant, 20% and 30% respectively. The difference between these two measures of profitability flows primarily from the relative case of borrowed funds on which interest has to be paid. In calculating the percentage rate of return on total investment for the U.K. only interest on long-term loans is considered; therefore, in actual fact this rate must be higher than the 10% shown in Table 3.3 and the difference between the two rates of return must be even smaller.

IV. Factors Explaining the International Differences in Gearing

The entrepreneur earns the highest return possible

on his own investment if he uses only borrowed capital at an interest rate that is lower than the return on the total investment. As the proportion of loan capital increases, however, so does the risk of the lender, leading to a rise in the cost of borrowed capital until it becomes as expensive as equity. At the same time, the additional borrowing also increases the risk of the shareholders who may lose all or part of their equity should the future profit rate before interest decline below the level of the new marginal rate for borrowed money. For this reason, entrepreneurs would not increase borrowing indefinitely, even if the lenders were willing to lend.

The firm will thus tend to move towards that relationship between equity and debt which ensures maximum profitability and yet takes into account the risks involved to both lenders and borrowers. Various models have been suggested for measuring, within a particular economy, the differences in the financial structure of firms operating under different degrees of uncertainty and risk.⁶⁾ Most of these models, however, are not relevant in their original forms for an analysis of the international differences in gearing, primarily because of the type of data at our

⁶ A partial list of studies dealing with this problem includes: M.J. Gordon, The Investment, Financing and Valuation of the Corporation (Homewood, Illinois: R.D. Irwin, 1962); J. Lintner, "The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets", Review of Economics and Statistics, Vol. XLVII, No. 1 (February 1965), pp. 13-37; H.A. Latone and D.L. Tuttle, "Pure Risk Yields and the Cost of Capital", presented at the Eastern T.I.M.S. meeting, October 1965; H. Levi and M. Sarnat, "The Portfolio Analysis of Multiperiod Capital Investment Under Conditions of Risk", The Engineering Economist, Vol. 16, No. 1, Fall 1970.

disposal. Variables such as market prices of shares, interest rates, earnings and the changes therein, which form the basis of such models, are not available in a comprehensive form for all of the countries concerned. Because these variables are in effect measures of risk, profitability, and investor expectations, etc., it is possible to substitute other available data expressing the same factors, as is done in the following analysis.

At the outset, generally accepted variables of risk and profitability are examined in order to see whether they can explain the international differences in gearing. To the extent that they are not able to do so, other variables are analyzed.

1. R i s k

a. Size

The use of the size of a firm as a valid indicator of risk is based on the results of empirical findings in various countries. It has been shown that the failure rate among small firms in the U.S. is greater than that for large firms.⁷⁾ Although in all countries there are small firms operating with higher than normal profit ratios, the dispersion of profit rates among such firms is greater than it is for large ones. The probability of variations and fluctuations thus heightens the element of risk.⁸⁾ Indeed the data drawn from the Dun and Bradstreet reference books show that

⁷ O.D. Dickerson and M. Kawaja, "The Failure Rates of Business", The Financing of Small Business, ed. I. Pfeffer (New York: Macmillan, 1967), pp. 82-94.

⁸ M. Tamari, A Postal Questionnaire Survey of Small Firms, op. cit.

smaller firms in the U.S. have a consistently lower credit rating than do large firms.⁹⁾

There are indeed substantial differences in the sizes of manufacturing firms in the four countries. In 1968, 54% and 60% of the persons employed in manufacturing in Japan and Israel worked for small firms. In the U.K. firms of this size accounted for 29% of the total number of persons employed in manufacturing and in the U.S. their share amounted to 35%.¹⁰⁾ It may be argued, therefore, that the empirical findings presented in Section 3 reflect the size structure and thus the degree of risk in the manufacturing industry in each of the countries concerned.

For the above-mentioned structural differences to explain the findings presented in Section 3, it would first have to be shown that firms of different sizes operate with different equity ratios. Although an examination of the relationship between size and gearing is beyond the scope of this study, there is sufficient evidence in all the countries concerned to show that this is not the case.

Table 3.4 shows that in all four countries small firms tend to operate with a rate of equity relative to their total funds which is similar to or higher than the rate for medium or large firms. If gearing is defined as equity relative to long-term debt, then the difference between small and large firms is even more pronounced in favor of lower gearing in small firms.

⁹ M.H. Seiden, The Quality of Trade Credit, N.B.E.R. (New York, 1964), Table C-2, pp. 118-119.

¹⁰ The sources for this data are the Census of Production published in each country. Small firms were defined in all countries as those employing fewer than 200 employees in 1968.

TABLE 3.4

EQUITY AS A PERCENTAGE OF TOTAL FUNDS AND OF
LONG-TERM FINANCE ACCORDING TO SIZE GROUPS (1968)

	Equity as a Percentage of Total Funds			Equity as a Percentage of Long-Term Finance		
	Small	Medium	Large	Small	Medium	Large
U.K.	56 ^a	-	52	92	-	76
U. S.	53	58	57	75	80	74
Japan	22 ^b	-	22	52	-	45
Israel	45	36	36	75	68	56

Sources: a) M. Tamari, "A Postal Questionnaire Survey of Small Firms",
op. cit.

b) T. Yamanaka, "Small Business in Japan's Economic Progress",
Ashai Evening News (Tokyo, 1971), pp. 113-116.

Sources for Israel and U.S. as well as the large firms in Japan and
U. K. are listed in footnote 1.

The size groups used in Table 3.4 reflect the definitions used by the publishers of the national data. Although the size groups used are not identical in all the countries concerned, the results are sufficiently valid to show that small firms as a group operate with an equity ratio similar to or higher than that used by large firms.

The reasons for the lower gearing in the smaller firms may be summed up as follows:

1) The average cost (per 100 pounds sterling lent) to the lender of making small loans is greater.

2) Large firms are widely known: their management is usually more sophisticated from a financial, economic, and legal viewpoint, and they have business relationships with the institutions of the capital market. In short, it is easier for them to raise loans.

3) Smaller firms are often reluctant to seek out loans in view of the "partnership" relationship involved in raising them. This relationship includes providing detailed financial data, for example, and may sometimes involve a seat "on the board" for representatives of the lender.

4) Small firms stand a higher risk of going bankrupt than do large ones.

5) In many small firms there is often no division between ownership and management, so that the distinction between the affairs of the firm and the private concerns of the owner is not always clear. This lack of clarity increases the risk of the lender.¹¹⁾

Despite the above-mentioned factors, small firms will use loan capital extensively if they wish to grow faster than their ability to increase the owners' participation or to accumulate profits. The costs to such firms of raising equity in the capital markets will usually be greater than the costs of raising loan capital.

Because small firms occupy a more prominent position in Japan and in Israel than they do in the U.K. and in the U.S., if size were to be an explanation of gearing, one would expect the equity ratio of the countries concerned to be exactly the obverse of those shown in Table 3.1. The U.K. and U.S. economies, where large firms

¹¹ For a further discussion of the disadvantages of the small firm in raising loan capital, especially long-term capital, see:

- (1) Financing Small Corporations (Washington, D.C.: Federal Reserve Board of Governors, 1960); and
- (2) Report of the Committee of Inquiry on Small Firms, (London: H.M.S.O., November 1971), Part II, Chapter 12.

predominate, should be operating with high gearing; Israel and Japan should be characterized by low gearing. As such is not the case, it would seem that size, as an indicator of risk, cannot explain the differences in gearing that prevail in the countries concerned.

b. Industrial sector

In each country important differences have been found in the degree of gearing used by the different economic sectors (Table 3.5). One of the reasons for these differences is the degree of risk to which these sectors are subjected.

TABLE 3.5
EQUITY AS A PERCENTAGE OF TOTAL FUNDS IN VARIOUS
INDUSTRY GROUPS (1968)

	Manu- facturing	Wholesale & Retail Trade	Real Estate	Construc- tion	Services
U.K.	52	52	35	39	50
U.S.	59	43	23	30	34
Japan	24	0.6	21	19	36

Source: U.K. and Japan as in footnote 1. U.S. - Internal Revenue Statistics of Income - 1968 Corporation Tax Returns. U.S. Government Printing Office, Washington, D.C. 1972. Data for non-manufacturing groups in Israel are not available.

On this basis, the particular industrial sub-sector within which a firm operates may be taken as another indicator of risk. In most countries some manufacturing industries are fast-growth ones, while others are not and changes in demand are more volatile in some than in others. Furthermore, the degree of competition, ease of entry, public assistance in

the form of subsidies, etc. vary from industry to industry and thus so does the degree of risk. It may be argued, therefore, that the international differences in gearing result from the differences in the industry structure of the manufacturing sector in the countries included in the study.

Since the data at our disposal do not enable us to compare individual firms within homogenous industrial groups, the following presentation is suggested to discover whether any financing pattern by industry does exist which could explain the differences shown in Table 3.1. In each country the equity/total funds ratio was calculated for the industrial groups defined in the statistical source for that country. These groups were then ranked in ascending order of this ratio. Table 3.6 shows the distribution of the industrial groups in each country according to their equity/total funds ratio.

TABLE 3.6
DISTRIBUTION OF INDUSTRIAL GROUPS OF THE MANUFACTURING
SECTOR ACCORDING TO EQUITY AS A PERCENTAGE OF TOTAL FUNDS
(1964 - 1968)

	Lower Quartile	Median	Upper Quartile
U. K.	47	52	54
U. S.	53	56	61
Japan	19	25	28
Israel	30	37	46

Source: See footnote 1.

The above table indicates that the international differences in gearing cannot be explained by the composition of the manufacturing sectors of the four countries studied.

The table shows that the inter-industry differences in gearing within the manufacturing sector in each country are fairly small. Most of the industry groups operate within a rather limited range of gearing ratios so that were one to change the industrial structure in a particular country, the average equity total funds ratio of the manufacturing sector would not change radically.

It would thus seem that the classification of firms within the manufacturing sector according to the industrial group in which they operate is not a sufficiently clear cut classification of risk and so cannot explain the international differences in gearing.

From empirical studies carried out in various countries this finding would seem to apply not only for international, but also for intranational comparisons. An examination of the financial structure of Israeli manufacturing concerns¹²⁾ shows that no consistent differences exist between the various groups; apparent differences revealed by the data disappear when the firms are broken down into size groups within the industry. In the U.K. as well the range of inter-industry equity ratio was found to be small and inconsistent.¹³⁾

¹² M. Tamari, "The Structure of Long-Term Financing in Israeli Manufacturing Corporations", Quarterly Banking Review, No. 52 (Tel-Aviv, December 1973), Vol. XIII, pp. 58-71 (Hebrew).

¹³ S.J. Prais, "Variations Between Industries", Studies in Company Finance, ed. Tew & Henderson (N.I.E.S. 1959), pp. 124-128; M. Tamari, "A Postal Questionnaire Survey of Small Firms", op. cit.

2. Profitability

It is reasonable to assume that a firm's profitability affects its degree of leverage, since the use of gearing is only worthwhile when the expected profitability rate exceeds the interest rate paid on borrowed capital. (Obviously, the entrepreneur will have to make his decision regarding gearing after he has discounted his anticipated rate of profit for errors of judgment, uncertainty, etc.) While this assumption can be demonstrated for an individual firm, the empirical evidence linking profitability and gearing in an inter-firm comparison is not at all clear. For instance, it has been shown that in firms reporting a loss or earning comparatively small profits, equity formed a smaller proportion of total liabilities than it did in highly profitable firms.¹⁴⁾ Some studies in the U.S. have found that while firms operating with a high debt to retained earnings ratio have usually been highly profitable, those with a lower ratio have had such a widespread range of profit ratios as to make it impossible to come to any clear conclusion.¹⁵⁾

Although it is difficult to find a clear connection in inter-firm comparisons, primarily due to uncertainty regarding the future profitability of each firm, it may be argued that the profit trends in an economy are much more

¹⁴ Taxation Statistics, Part Two, Department of National Revenue (Ottawa, Canada: 1970); M. Tamari, "Profits and Profitability in Israel Manufacturing Corporations", Economic Review No. 40 (Jerusalem: Bank of Israel, November 1972).

¹⁵ G. Donaldson, Corporate Debt Capacity (Boston: Harvard University, 1961), pp. 40-42.

regular and may be foretold with greater certainty. We would then expect to find important differences in profitability between the countries concerned which could help to explain the differences found in their equity ratios.

Various definitions of profitability are regularly used in regard to the individual firm, but not all of them are suitable for analyzing the international differences in gearing. For this purpose a definition is required that will not reflect the financial structure of each country nor be unduly influenced by differences in accounting methods. It is suggested here that profits before payment of interest on borrowed funds, taken as a percentage of the total funds employed, is the most suitable indicator of profitability satisfying the above requirement. This measure reflects the total return on capital employed irrespective of its source, i.e. whether it is borrowed or equity and whether it is external or self-financed.

It would have been preferable to examine the profitability of individual firms in each country, but the data at our disposal do not permit us to do so. At the same time the average national rate of profitability would have been insufficient. Instead, profit, as defined above, relative to total sources was calculated for each sub-industry group within the manufacturing sector in the different countries. The groups were then ranked in ascending order according to profitability so as to give some idea of the distribution of this ratio (see Table 3.7).

TABLE 3.7

DISTRIBUTION OF INDUSTRIAL GROUPS ACCORDING TO PROFITS^a
AS A PERCENTAGE OF TOTAL FUNDS (1964-1968)

Country	Lower Quartile	Median	Upper Quartile	Average
U. K.	12.4	13.4	15.1	13.7
U. S.	8.4	10.0	16.7	8.9
Japan	8.0	9.2	11.4	9.7
Israel	8.3	11.7	15.8	12.3

^a Profits before payment of interest and before taxes.

Source: See footnote 1.

From the above table it would appear that there is no consistent pattern of profitability which could explain the international differences in gearing. Most of the industrial groups in the U.K. have a higher return on their total invested capital than do similar groups in the other countries. Thus, as explained previously, we would expect to find companies in the U.K. operating with higher gearing. The obverse is true, however, at least with respect to Israel and Japan. Furthermore, although the industry group distribution according to this profit ratio is similar in the U.S., Japan and Israel, it has already been shown that companies in the latter two countries have a far higher degree of gearing than do their counterparts operating in the U. S.

Perhaps the reason for this lack of relationship between the rate of profitability and the equity ratio lies in the definition of profitability used here, accounting

profit before payment of interest. It may well be that since firms cannot always control the annual rate of profit which often fluctuates, it is difficult, in the short run at least, for them to relate annual profits to their capital structure. Just as established firms often cannot adjust their plant and equipment to the latest technological changes in the short run without incurring great losses in the process, so the long-term forms of capital, reflecting decisions made over many years, cannot always be profitably adjusted in the short run to changes in the annual profit rate.

It is suggested that the growth of the firm may be a far better indicator of the expected profit rate and that it is this indicator of profit that is reflected in the equity/debt ratio of the firm.

3. G r o w t h¹⁶⁾

Fast growth can often cause a demand for funds which cannot be met from equity. Increasing the two major components of equity, undistributed profits and share issues, requires relatively long periods of time - the former depends on years of activity and the latter on protracted planning and drawn-out formal arrangements in view of the changes involved in the relationship between the various owners, etc. One would therefore expect fast-growing firms to turn to short-term or medium-term sources of external finance, thus substantially changing their gearing ratio. Studies on cross sections of firms within some of the

¹⁶

On the positive relationship between profits and growth see A. Singh and G. Whittinton, "Growth Profitability and Valuation: A Note", (Dept. of Applied Economics, Cambridge 1970, mimeographed).

countries show that this is what actually happens.

The analysis of data on the quoted firms in the U.K. shows that greater use of gearing was linked to growth. The same study concluded, however, that the relationship between gearing and expected profitability was not clear, as mentioned above.¹⁷⁾ Data on the characteristics of fast-growing small firms in the U.K. showed a similar pattern.¹⁸⁾

An Israeli study also revealed this pattern of behavior for fast-growing firms.¹⁹⁾

On the basis of these studies showing the close relationship between growth and increased leverage in the individual firm, it would seem that the international differences in gearing may be partially explained by the growth rates in the four economies. The following table (Table 3.8) shows the relative growth rates of the manufacturing sector in each of the four economies studied during the period 1960-1970. Although constant prices have been used in the table, it should be borne in mind that the entrepreneurs and lenders are influenced primarily by the growth rate in current prices, which, so it would seem, would stimulate the use of debt financing even more.

¹⁷ G. Whittington, The Prediction of Profitability (Cambridge at the University Press: 1971), pp.126-136.

¹⁸ M. Tamari, "A Postal Questionnaire Survey of Small Firms", op. cit., pp. 38-42. Fast growers were defined as those whose sales grew by more than 15% annually during the period 1964-1969.

¹⁹ M. Tamari, "The Structure of Long-Term Finance in Israeli Manufacturing Corporations", op.cit.

Nonetheless, the effect of expected price changes on financial policy and the relative ability of borrower and lender to adjust to these changes are beyond the scope of this study.

TABLE 3.8

PERCENT ANNUAL GROWTH IN INDUSTRIAL PRODUCTION IN
THE U.K., U.S., JAPAN and ISRAEL (AT CONSTANT PRICES)
DURING THE PERIOD 1960-1970

Country	Percent Annual Growth in Industrial Production
U. K.	3.0
U. S.	5.0
Japan	15.3
Israel	13.2

Source: Yearbook of National Accounts Statistics,
United Nations (1970).

The above table shows that from 1960 to 1970 industrial production grew far more slowly in the U.K. and the U.S. than in Japan and Israel. These differences in the growth rate are substantially similar to the empirical results regarding the gearing ratio; corporations in the U.K. and the U.S. operate with a lower degree of gearing compared to those in the other two countries.

This international pattern of behavior regarding gearing and growth is reflected in the firms' behavior during periods of national expansion and recession. Two examples will serve to demonstrate this relationship; one from the U.S. and the other regarding Israel.

Between 1919 and 1929 the proportion of equity in the total funds of American manufacturing corporations rose from 68% to 75%.²⁰⁾ During the same period the G.N.P. of the U.S. grew by approximately 3% per annum. On the other hand, between 1937 and 1948 the G.N.P. grew by approximately 16% per annum.²¹⁾ During this period the proportion of equity fell from 74% to 69% of total sources of the manufacturing corporations.²²⁾

In Israel, the G.N.P. has grown rapidly since 1956 at a rate of about 10% per annum at constant prices. The only exception occurred during the years 1966-1967 when there was no growth. Prior to 1962, owners' equity (retained earnings and new share issues) formed between 25%-30% of the growth in total funds, the rest was financed by loan capital. In 1964-1967, however, gearing decreased rapidly so that owners' equity financed 60% of the growth in total funds.²³⁾

Furthermore, the increase in the proportion of equity in the total funds during the recession years occurred in just over 70% of the corporations.²⁴⁾

In 1970-1972 the Israeli economy grew at a rate unsurpassed during the previous two decades; the G.N.P. grew at about 20% per annum at constant prices. The proportion

20. D. Creamer, S.P. Dobrovolsky, I. Borenstein, Capital in Manufacturing and Mining (N.B.E.R., Princeton 1960), Table 49, p. 157.

21. U.S. Bureau of the Census, Historical Statistics of the U.S.A., Colonial Times to 1957 (Washington, D.C.: 1960), p.139, Table FI-5.

22. D.Creamer, S.P.Dobrovolsky, I.Borenstein, op. cit., Table C-4.

23. M.Tamari, "Influence of the Recession on Israel's Industrial Companies", Economic Review, No.34 (Jerusalem:Bank of Israel, March 1970), pp. 20-45.

24. I b i d.

of equity in the total funds declined in 75% of the firms in 1972 relative to 1971.

The above examples regarding the two economies, the U.S. and Israel, are in keeping with the findings of other empirical studies. These show that generally speaking, during periods of recession, equity increases relative to borrowed funds while the opposite is true for boom periods.²⁵⁾

This relationship between changes in gearing and the overall growth rate of an economy results from changes in the attitudes of both lenders and borrowers. The continued rapid growth of the manufacturing sector creates expectations of increasing profitability among all entrepreneurs irrespective of their own individual growth or profitability. They are therefore prepared to pay the higher marginal cost involved in borrowing an increasing proportion of outside funds. At the same time, the dangers of bankruptcy or losses seem to be lessened so that lenders are prepared to allocate more funds to high risk firms than they normally would be. During periods of national recession or slow growth, all firms, even profitable and growing ones, are cautious about increasing their debt in view of the uncertainty regarding future economic prospects. For the same reason, lenders apply more stringent criteria in extending funds.

²⁵ M.H. Seiden, op.cit., Chart 13, p. 96; James S. Duesenberry, Business Cycles and Economic Growth (McGraw-Hill, New York: 1958), p.92; M. Tamari, "The Structure of Long-Term Finance in Israel Manufacturing Corporations", op.cit.

A close inverse connection has been found empirically to exist between changes in G.N.P. and the failure rate, so it is not surprising that as the business cycle trends change, the lenders and the entrepreneurs adjust their lending and borrowing policies accordingly.²⁶⁾

4. Public policy

In order to analyze the influence of various socio-political factors on international differences in the use of gearing, it is first necessary to translate these factors into economic variables. Such variables enable one to examine their effect on the market forces which determine the use of borrowed funds in relation to equity. This study argues that the major differences between the countries examined lie in the public policy regarding the cost and availability of capital at the generally accepted level of risk. Not only do these differences explain the pattern of equity finance in the various countries, but, as will be shown, similar policies produce the same results in all countries irrespective of the socio-political differences between them.

a. Cost and availability of capital

All four countries have similar institutions for raising and channelling funds: stock exchanges; commercial, mortgage, and savingsbanks; and a variety of financial intermediaries. The similarity is superficial, however, and there are important differences in the philosophy

²⁶ E.I. Altman, Corporate Bankruptcy in America (Heath Lexington Books, Mass., 1971), pp. 37-56.

and practice of their respective capital markets. These differences are described in detail in Chapter one of this study but a short resumé is provided here.

While large-scale governmental interference in the capital market - in raising and allocating funds - is not consistent with the main stream of British and American political and social thought, it is a dominant factor in the financial markets of Japan and Israel. This intervention determines the access of corporations to the equity market, the price of credit, the risks of the lender, and the allocation of loan capital. It is argued here that varying degrees of government intervention must therefore affect the equity/debt ratios in the different economies.

In the U.K. the central government accounted for 20% of the total funds lent by the financial markets in 1964, most of which was used to finance the nationalized industries and the local authorities.²⁷⁾ In the U.S. private financial intermediaries provided 89% of the capital funds raised in 1965.²⁸⁾ In neither of these two countries is there any substantial indirect government action to ensure that funds are allocated to special, privileged, industrial sectors. While financial institutions providing capital for specific industries, size groups, or depressed areas do exist, their share of the market is marginal. For instance, in 1968 the Industrial and Commercial Finance Corporation (I.C.F.C.), the major public financial institution in the

²⁷ Functioning of Capital Markets, Organization for Economic Cooperation and Development (Paris: 1968), Table 6, p. 581.

²⁸ Ibid., p. 611.

U. K. - which most closely resembles the development banks of Israel and Japan - provided funds equal to only 5% of the long-term investments of all British manufacturing industries. Similarly, the total funds of the U.S. Small Business Authority, which caters to the financial needs of small business, represented only 6% of the investments in all manufacturing corporations in 1968.

In Japan and Israel, the government together with various public sector agencies effectively control the mobilization of capital; manufacturing corporations find it difficult to raise funds through the sale of equity. Of even greater importance is the predominance of the government as a source of loan capital for manufacturing companies. In Israel and Japan funds from the government-directed development banks account for a considerable portion of the long-term financing of the manufacturing industries. These development banks provided 60% of the investment in fixed assets in manufacturing corporations in Israel between 1956-1968 and 34% of growth in fixed assets in all industrial companies in Japan in 1969.²⁹⁾

Additional funds are channelled to manufacturing corporations by commercial banks providing short-term credit under the directives of the central bank. In Israel only about 25% of the short-term bank credit granted to manufacturing firms come from the uncontrolled resources of commercial banks, the rest is made available through directed credit which is subject to government policy. In Japan, too, the central bank's policy is to direct the

²⁹ T.F.M. Adams and I. Hoshii, A Financial History of the New Japan, (Tokyo: Kodansha International Ltd., 1972), pp. 344-345.

commercial banks in their financing of manufacturing firms, even to the extent of creating a situation of over-lending on the part of the banks. In effect such a policy constitutes lending by the Bank of Japan to manufacturing firms through the commercial banks.

TABLE 3.9

SHORT-TERM BANK CREDIT RELATIVE TO TOTAL FUNDS
AND VALUE OF PRODUCTION IN THE U.K., U.S., JAPAN AND
ISRAEL, 1968

Country	Bank Credit as a % of Total Funds	Bank Credit as a % of Value of Production
U. K.	6	4
U. S.	6	3
Japan	17	35
Israel	15	18

Source: See footnote 1.

From the above table it may be seen that in both Japan and Israel short-term credit - directed and heavily influenced by the central bank and by government industrial policy - formed a substantial part of the total funds of the manufacturing corporations. This credit also finances more of their economic activity - as measured by the value of production - than it does in the U.K. or the U.S.

Apart from the availability of directed funds, the Israeli manufacturer also enjoys subsidies in the form of interest rates below those prevailing in the market. The specially directed short-term loans made available through

the commercial banks for exporters or for working capital are granted at an interest rate of 6% or 9%, whereas the existing market rate is 18%-24%. Furthermore, the development loans are extended at a nominal interest rate of 8%, a rate which is not only below the market level but one which further subsidizes the borrower due to the average annual rise in prices.

While both the U.K. and the U.S. to varying degrees and in different ways subsidize their exporters or help depressed areas and industries, neither do so by providing credit at rates below the market price.³⁰⁾

b. Business risk

The ultimate degree of loss involved in any investment is that incurred when the firm fails. When the firm's liabilities cannot be met completely even after all the assets have been realized, the investors will lose some or all of their investment, and lenders will lose part of their loan capital. Even when the firm's assets cover all the liabilities, the lender will still suffer some loss, at the very minimum the loss of interest during the time the company's affairs are being settled.

The loss in any case of business failure is not equal for all lenders; it varies in accordance with the degree of legal security held. For instance, the loss incurred by mortgage banks or debenture holders will usually

³⁰ This point was stressed in discussions between the author and officials of both the Bank of England and the Board of Governors of the Federal Reserve Bank in Washington. See also Report of the Committee of Inquiry on Small Firms, H.M.S.O. (London 1971), p.163.

be lower than that borne by trade creditors; while the ordinary shareholders will bear the greatest loss of all. Differences in potential loss will be reflected, inter alia, both in the interest rate demanded by investors and lenders and in the share they hold in the firm's financial structure. The greater the risk the less outside interests will be inclined to extend credit; the proportion of owners' equity will therefore be higher. It goes without saying that the owners will then expect higher profits as a recompensation for greater risk.

Although under normal conditions only a small fraction of the enterprises in an economy fail, the lender's ability to gauge the failure rate accurately, and thus forecast the extent of his potential loss is limited. Lenders therefore tend to develop guidelines reflecting their past experience as well as their expectations for the future. According to certain rules of thumb some industries are considered riskier than others, veteran firms less so than new ones, and large firms less so than smaller ones. Furthermore, the degree of government underwriting of loans will affect the real degree of risk involved as distinct from the formal relationship between borrower and lender. The lender then adjusts both the price and the proportion of capital he is prepared to invest in the firm to the rules prevalent in the particular firm, sector, or national economy.

It is extremely difficult to measure the various ramifications of the connection between the failure rate and the degree of equity financing. There seems to be sufficient evidence, however, that a close relationship does

indeed exist between low equity/debt ratios and bankruptcy.³¹⁾ The rates of business failure and the differences in credit policies are therefore used in this study as indicators of the degree of risk involved in investing, lending, or borrowing money in the various economies. These indicators presumably should be related to the differences found in the use of gearing; it seems reasonable to assume that those countries operating with a lower equity ratio will be those where the failure rate is lowest and vice versa.

(1) Rate of failure

It has been estimated that 1%-2% of all companies in the U.K. fail each year. This estimate includes companies that are disbanded even before they begin trading. For unincorporated firms it may be presumed that the failure rate is even higher, since they are smaller than the incorporated firms.³²⁾

The annual failure rate for U.S. business for the period 1961-1965 was between 0.5%-0.7%. This rate is based on failures which involved bankruptcy proceedings in relation to the number of concerns listed in the Dun and Bradstreet reference book.³³⁾ These figures, however, represent only a fraction of the total number of business failures in the U.S.; they do not include failures settled without court proceedings or other losses incurred by creditors. Furthermore, the Dun and Bradstreet figures do not represent a sample of all concerns operating in the U. S.

³¹⁾ See Chapter six of this study.

³²⁾ Small Firms, Report of the Committee of Inquiry on Small Firms, (London: H.M.S.O., 1971), p. 73.

³³⁾ The Failure Record Through 1965, Dun and Bradstreet Inc. (New York: 1966).

Most first-year deaths never even appear in the Dun and Bradstreet listings; it is suspected that neither do a large proportion of the small firms which fail each year. The same source mentions that each year there are approximately 400,000 new concerns, that the same number are discontinued, and that a slightly larger number transfer ownership or control, often due to failure. Thus, about 8% of all operating incorporated and unincorporated companies in the U.S. are discontinued each year.³⁴⁾

Another indicator of mortality rate of U.S. manufacturing firms is the average lifespan of 5-7 years.³⁵⁾

In Israel failed manufacturing companies represented only 0.2%-0.7% of all companies in that sector. The average age of business failures was between 9-13 years.

Because the failure rate in Japan is not published, it was calculated for this study in the following manner: the number of manufacturing firms suspending their business transactions with banks was divided by the total number of manufacturing establishments.³⁶⁾ Since not all the suspensions were definitely due to bankruptcy, the failure rate of 0.5% is probably overstated. It should be pointed out, however, that the data refer only to firms with capital of

³⁴ Statistical Abstract of the U.S.A. (1970).

³⁵ Betty C. Churchill, "Age and Life Expectancy of Business Firms", Survey of Current Business, (December 1955).

³⁶ Figures on the suspension of businesses in 1968 were obtained from Economics Statistics Monthly (Bank of Japan, October 1972). The number of establishments was taken from the "Census of Manufactures", Ministry of International Trade and Industry (Japan: 1968).

more than 1 million yen, which means that the low failure rate may not be at all typical of small firms.

"In 1967 there were more than 8,000 bankruptcies with debt of more than \$280,000 each. Of the 8,000 only one was listed on the stock market, and that company's assets were valued at \$3 million. It seems that bigger companies are more free from financial risk." 37)

The statistical difficulties involved in comparing failure rates in the four countries emphasize the need to be cautious in drawing definite conclusions on the basis of these rates alone. It is suggested, therefore, that an examination of the commonly accepted business practices regarding lending and borrowing in the respective economies can provide additional evidence concerning differences in the degree of risk.

(2) Credit Policy

In Chapter six of this study it will be shown that certain financial ratios of firms in the years prior to their bankruptcy are lower than those of the average firm in the economy. These ratios can therefore be used to measure the financial strength of individual firms and by extrapolation that of the average firm in each of the four economies surveyed. It has already been demonstrated that firms in Japan and Israel operate with lower equity/debt ratios and that there is no substantive difference in their profit rates compared to those existing in the U.K. and the U.S. The following table shows that the various indicators of liquidity are lower in the former two countries.

³⁷ J.C. Abegglen, *Business Strategies for Japan*, (Sophia University, Tokyo, 1970), p. 5.

As these are the major financial ratios used in forecasting bankruptcy or indicating financial involvement, it may be assumed that firms in Japan and Israel operate with a weaker financial structure than their British or American counterparts.

TABLE 3.10

DISTRIBUTION OF INDUSTRIAL GROUPS OF THE MANUFACTURING
SECTOR ACCORDING TO LIQUIDITY RATIOS IN THE U.K., U. S.,
JAPAN, AND ISRAEL, 1968

Country	Current Ratio*			Quick Ratio**		
	Lower Quartile	Mean	Upper Quartile	Lower Quartile	Mean	Upper Quartile
U. K.	1.51	1.62	1.74	0.85	0.92	1.01
U. S.	1.91	2.07	2.30	1.02	1.10	1.22
Japan	1.00	1.14	1.23	0.68	0.76	0.86
Israel	1.05	1.35	1.60	0.55	0.80	0.85

* Defined as current assets/current liabilities.

** Defined as current assets-inventory/current liabilities.

Source: See footnote 1.

The proportion of firms with negative equity - i.e. firms in which the sum of their debts is greater than that of their assets - operating within a certain economy is an additional indicator of the strength or weakness of the accepted financial structure. Data in this respect are available only for firms in the U.K. and Israel. These show that at any point of time almost 30 percent of all Israeli industrial corporations operate with a negative equity.³⁸⁾ In the U. K. a comprehensive study of small

³⁸ M. Tamari, "The Structure of Long-Term Financing in Israeli Manufacturing Corporations", op.cit.

firms showed that there are British firms with negative equity as well, but in 1968 they constituted only 5 percent of all the small firms in the U.K.³⁹⁾

The average age of failed firms in Japan during the period 1965-1974 was 31 years.⁴⁰⁾ As financial weakness usually precedes failure by some years, such a long life-span of failed firms would indicate a prolonged process of protection and consolidation on the part of the Japanese lenders.

"Therefore, in effect, the Bank (of Japan) stands as guarantor to the commercial banks, and thus ultimately to the borrowers from the commercial banks. On several occasions in recent years the Bank has earmarked funds to be channeled through the commercial banks to major companies that have been, for all practical purposes, bankrupt. Conditions have been attached to such findings involving major changes in management and in organizations, but the fact is that the Bank has assumed responsibility for maintaining the corporations in trouble.

Thus the bank loans of major companies are essentially permanent capital even though they are termed short term obligations. The Bank of Japan stands back of the commercial bank. No major company's loan is likely ever to be called unless the Bank of Japan wants it called." ⁴¹⁾

On the basis of the above findings it may be concluded that lenders in Japan and Israel operate within a conceptual framework which accepts as normal, a weaker financial structure than would be acceptable in the U.K. and the U.S.

³⁹⁾ M. Tamari, "A Postal Questionnaire Survey of Small Firms", op.cit.

⁴⁰⁾ W.P. Bonds, "Corporate Bankruptcy in Japan (1965-1974)", Bulletin No.54 (Sophia Univ., Socio-Economic Institute, Tokyo, 1974), p.25.

⁴¹⁾ J. C. Abegglen, loc.cit.

This willingness to accept a higher formal rate of risk in Israel and Japan is primarily due to government policy which has almost always been directed at preventing the closing of unprofitable firms in order to avoid unemployment or harm other policy goals regarding exports, rapid industrialization, etc.⁴²⁾ Such government policy reduces the real risks of lending even to the most inefficient firms. Furthermore, since the state or public sector corporations are usually the main creditors - at least as far as long-term funds are concerned - or serve as guarantors, the risk to other lenders is substantially reduced.

This policy was most notably implemented during the Israeli recession of 1966-1967. Normally such a recession would have led to a large increase in the number of bankruptcies. The banks, however, acting on instructions from the central bank and from the government, either did not press for payment or made numerous consolidating loans to failing firms and in this way kept the number of bankruptcies down. Furthermore, as part of its anti-recessionary policy, the central bank increased the amount of short-term bank credit extended to manufacturing firms, enabling them to increase production for inventories and thus reduce the number of dismissed employees and pay off short-term obligations.

This policy of governmental support exists in the other countries as well, but not to the same extent. In the U.K. it is either limited to certain industries, such as ship-building, or occasionally introduced to prevent the collapse of certain key firms; the policy does not

⁴² See Chapter 2 of this study.

apply in a blanket fashion to the whole economy. Similarly in the U.S. there have been cases of government interference to avoid a business collapse, but this kind of interference is the exception rather than the rule, and it has always been subject to public criticism; creditors cannot accept it as part of the normal pattern of business practice.⁴³⁾ The special facilities in the U.K. (I.C.F.C.) or in the U.S. (S.B.I.C.) for financing small businesses do not reduce the risk of the other lenders, since it is not the practice of these government agencies to cancel their losses or to consolidate them, etc. The same applies to the development funds existing in the U.K. for Scotland and Wales.

Public policy in Japan and Israel increases the availability of funds, lowers the cost of borrowing, and limits the loss to the lender. It thereby enables firms in these countries to operate with higher gearing than do their British or American counterparts. The state or quasi-state institutions providing these funds in the former countries extend credit according to criteria which may be different from those of the normal economically motivated lender. They are therefore prepared to accept higher levels of risk provided that the firms meet the needs of the official socio-economic policy.

Since the Japanese and Israeli governments are the major suppliers of loan capital to manufacturing corporations, the proportion of such government-aided firms in

⁴³ U.S. House Committee on Banking and Currency, The Penn Central Failure and the Role of Financial Institutions, Report of the Committee on Banking and Currency, House of Representatives (U.S. Jan.1972), pp. X, XII, 12 and 13, which describes the decision not to grant a government guaranty for a proposed \$200 million loan.

these economies is very high, and their pattern of high gearing becomes the normal one for the whole economy.

This pattern of high gearing exists, both in the U.K. and in the U.S., in private firms which qualify for funds from the special financial institutions set up in accordance with official policy. These firms have higher gearing ratios than do firms which have to borrow from normal private financial institutions. The following table compares the gearing ratios of small companies that obtained finance from the I.C.F.C. with those of other small companies. The comparison shows that those which benefited from I.C.F.C. financing had an average equity-total funds ratio lower both than that of the average small firm, and than that of the quoted company.

TABLE 3.11

EQUITY AS A PERCENTAGE OF TOTAL FUNDS OF COMPANIES
IN I.C.F.C. SAMPLE, COMPARED WITH SMALL FIRMS AND
QUOTED COMPANIES, 1968

	I.C.F.C. (1967-1968)	Small Firms (1968-1969)	Quoted Companies
Equity/Total Liabilities	45	56	56

Source: Small Firms, Report of the Committee of Inquiry on Small Firms. (London: H.M.S.O., 1971), Table 2, XIII, p.13.

A similar pattern of behavior may be discerned for firms that received financing through the S.B.I.C.'s in the U.S. A study⁴⁴ of the behavior of these investment-corporations showed that unlike normal term lenders such as

⁴⁴ S.J. Flink, The Role of Commercial Banks in the S.B.I.C. Industry, The American Bankers Association, (New York: 1965), pp.91-93.

commercial banks or insurance companies, the S.B.I.C.'s had no rule, formal or otherwise, limiting the amount of their investment to a certain ratio of the net worth of the borrower. For instance, while it is customary for ordinary financial lenders to limit their loans to 70-80 percent of the borrower's net worth, 60 percent of the SBIC's interviewed in that study had no fixed cut-off point at all and only 1/5th of them restricted their loans to an amount less than the net worth of the borrower.

It is the existence of these special types of lenders in the U.K. and U.S., operating according to criteria which are different from those followed in normal commercial lending, which enables firms in certain categories to function with higher gearing ratios than those of the average firm in these economies. This study has shown that one of the main factors explaining the international differences in gearing is the public policy in Japan and Israel which makes loan capital available according to macro-economic considerations rather than those of cost and risk. The introduction of lenders who are willing to assume uneconomic margins of risk, into different national economies, produces a common tendency towards higher gearing, despite the socio-economic differences between them.

The relatively high gearing ratios of these special types of firms in the U.K. and in the U.S. would seem to have important implications for the overall financial theory of the firm. The similarity between these firms and the general level of gearing in Japan and in Israel would suggest that the prime factor in determining the use of loan capital by the individual firm in any economy is the

willingness of the lender to supply such capital. The borrower, provided of course that the rate of interest paid on such loan capital is lower than the expected rate of return on the total investments, would seem to be prepared to operate with only a minimal equity. It is often maintained that one of the factors affecting the rate of gearing is the reluctance of the borrower to accept the loss of control usually associated with borrowing as well as the resultant increased risk of bankruptcy. It would seem that these factors serve only as a minimal constraint against the use of high gearing in the individual firm.

V. Summary and Conclusions

The discussions in Section III and IV of this paper may be summarized as follows:

The average degree of gearing used by manufacturing corporations in Japan and Israel is consistently greater than that employed by their British or American counterparts.

Although the firms in these countries operate within radically different socio-political frameworks, this financial behavior can be explained by economic variables. The introduction of common economic conditions into various countries would result in similar patterns of financial behavior despite the socio-political differences which exist in the different economies.

The lower rate of gearing found in the British and American firms reflects the following factors:

- a. The fear of bankruptcy and thus of increased losses to the lenders. In Japan and Israel this element of risk

is substantially reduced by the knowledge that the government will in one way or another assume part or all of the expected loss.

b. The slower growth rate of their economies as compared to Japan and Israel. During periods of rapid growth firms in the U.S. have tended to operate with higher gearing.

c. The relatively independent capital market militates against the provision of subsidized loan capital, both short term and long term, to concerns which are not able to raise such funds on a purely economic basis. On the other hand, the existence of government-directed credit and loans based on macro-economic considerations in Japan and Israel enables individual firms in those countries to operate with low equity. Since such government finance predominates in the capital market, this low equity ratio becomes the rule rather than the exception. Firms in the U.K. and U.S. which rely on finance from state or quasi-state sources rather than on ordinary financial institutions have higher gearing ratios than do other firms in these countries.

Other factors such as profitability, size or economic sector, etc. do not seem to account for the differences in gearing.

These findings may serve as a basis for further research and discussion which would try to relate changes in financial thinking, the various stages of the business cycle through which the economy passes, and modifications of social goals, to the degree of gearing in the individual firms in a particular economy.

PATTERNS OF PROFIT DISTRIBUTION

I. Introduction

A firm chooses how to distribute its profits and determines the rate of profits to be distributed on the basis of various economic, financial, and social considerations. Broadly speaking, these considerations may be classified under the following headings:

a. Taxation - The respective rates of taxation on dividends and on capital gains affect a firm's decision whether to distribute its profits annually or retain them for future distribution to the shareholders.

If certain payments to owners and managers are recognized as deductible expenses for income tax purposes, then some profits will be withdrawn in the form of salaries, personal expenses, interest-free loans, etc. The extent of such forms of profit withdrawal, as compared with the payment of dividends, depends on the personal income tax rates and whether dividends are also recognized as tax deductible expenses for the company.

b. Financial factors - To determine the ratio of profits paid out to shareholders in relation to those retained, one must take account of the liquidity of the firm, the cost of alternative forms of capital, and the management's investment forecasts.¹⁾ Since dividends affect the market price of shares, the management of a quoted firm

¹ The literature on this subject is voluminous; some of the major works are: P.G. Darling, "The Influence of Expectations and Liquidity on Dividend Policy", Journal of Political Economy (June, 1957), Vol.LXV,

also has to consider the reaction of the stock market to its dividend policy.²⁾

c. Forms of ownership - The aforementioned factors are interrelated with the form of business ownership. The influence of taxation and of the financial factors will vary according to whether the firm is owned by a single owner or entrepreneur or whether it is a close-held concern, a company quoted on the stock exchange, or a multinational conglomerate. These different forms of ownership all have a bearing on the dividend policy of the firm. Two examples should suffice to demonstrate the possible influence of the form of ownership on dividend policy. (1) In a company in which the ownership of shares is widely dispersed, the hired management may keep dividends to a minimum in order to achieve maximum growth without arousing serious objections from the shareholders. On the other hand, fear of shareholder reaction in the case of firms with a smaller number of shareholders, might force the management to declare a dividend even if as a result the interests of the company are adversely affected. (2) In a one-man concern or a closely-held family-owned firm, the owners will seek to distribute profits in such a way as to achieve maximum tax savings and maintain optimum gearing.

1 (cont.)

No. 3, pp. 209-224; M.J. Gordon, The Investment, Financing and Valuation of the Corporation (Homewood, Ill.: R.D. Irwin, 1962), pp. 230-32; M.J. Gordon, "Optimal Investment and Financing Policy", Journal of Finance (May 1963), Vol. XVIII, No. 2, pp. 264-72; John Lintner, "The Cost of Capital and Optimal Financing of Corporate Growth", Journal of Finance (May, 1963), Vol. XVIII, No. 2, pp. 292-310; and William J. Baumol, "On the Theory of Expansion of the Firm", American Economic Review (Dec. 1962), Vol. LII, No. 5, pp. 1078-87.

² R.C. Stapleton, "Taxes, the Cost of Capital and the Theory of Investment." The Economic Journal (Dec. 1972), Vol. 82, No. 328, pp. 1273-1292.

Recent empirical literature shows that in each of the four countries surveyed the distribution of corporate profits follows a definite pattern that takes into account the above-mentioned factors. The purpose of this chapter is to determine whether these national patterns flow from the particular institutional, fiscal, legal, or social forces at work in the various countries, or whether they are to be explained mainly by economic considerations that transcend national boundaries. If it can be shown that firms in all four countries behave similarly with regard to profit distribution, then it may be inferred that this aspect of corporate behavior is determined primarily by economic factors. On the other hand, if there are significant differences in corporate profit distribution policy, then it may be concluded that the national environmental factors are the major determinants of this policy. A third possibility is that both sets of factors are so closely interwoven that their respective effects on dividend policy cannot be differentiated.

To discover which are the predominant factors, we analyzed in this chapter, the profit distribution policy of manufacturing corporations in the countries concerned. The chapter is divided into five sections: Section II- The data; Section III -Analysis of the Factors Determining the Forms of Profit Distribution, i.e. dividends or expenses; Section IV -Description of the Pattern of Dividend Policy in Each of the Countries; Section V - Analysis of Non-Dividend Forms of Profit Distribution; and Section VI - Summary and Conclusions.

II. The Nature and Source of the Data

In the introduction to this study, the nature and sources of the data used, their limitations and general validity were discussed in detail. It should be pointed out, however, that for this aspect of corporate behavior relevant data were not available for Japan, whilst in the other countries it required access to sources of data other than those described in Chapter One of this study.

The data in this chapter are drawn primarily from two sources:

a. The discussion of dividend policy in each of the countries concerned is based on the published results of empirical research. It is submitted that to do otherwise would constitute mere repetition of work already done and contribute nothing to a further understanding of the subject.

b. Data on individual corporations in the U.K., U.S., and Israel are used in the analysis of the non-dividend forms of profit distribution. The financial reports published by Moodys Services, Inc. are the source of data for a sample of 75 quoted companies in the U.K. These reports cover a period of 8 years, 1965-1973. The sample was drawn in such a way as to give adequate representation to the various industrial groups constituting the manufacturing sector and includes firms of various sizes.

The data on the Israeli manufacturing corporations were drawn from the Bank of Israel corporate research project for the years 1968-1970. They include quoted and non-quoted firms as well as firms of different sizes.

In the U.S. the manufacturing firms included in the annual survey of executive compensation conducted by Business Week, constituted the population of this analysis. Additional data on these 65 firms, such as equity, profits, etc., were drawn from their financial reports as published by Moodys Services, Inc. All the firms are quoted and large. The data refer to the years 1971 and 1972.

Although the period covered by the data is not the same for the Israeli companies as for their counterparts in the U.K. and U.S., this does not seem to be a serious flaw. There is no basis for believing that the use of identical calendar years in making international comparisons would provide similarity in economic conditions. Furthermore, as the purpose of this study is to discover whether common patterns of behavior exist irrespective of differences in socio-economic conditions, such differences only enhance the validity of the analysis.

III. Dividend and Non-Dividend Forms of Profit Distribution

The owners of a firm may receive their share of the profits partially or wholly in the form of interest-free or non-repayable loans, inflated managerial salaries, or personal and household expense accounts paid for by the firm. Such non-dividend forms of profit distribution may be paid instead of, or in addition to, the profits distributed by the firm in the form of dividends. The only real limit to the number of ways in which profits can be distributed would seem to be the ingenuity of the shareholders. Although economically all profits represent a return on capital, yet there are important legal and fiscal differences

to the ways in which profits are distributed. For the purpose of calculating the amount of income liable to corporate income tax, dividends are not recognized as an expense, whereas the non-dividend forms usually are. Thus, the use of non-dividend forms of profit distribution can decrease the tax liability of the firm.

The non-dividend forms of profit distribution have other far-ranging effects on the economy as well, over and above the loss of income suffered by the tax authorities. Because a dividend is clearly defined, it serves as a useful measure of the company's performance for shareholders, creditors, and government authorities. On the other hand, the use of non-dividend forms of profit distribution presents us with a misleading net profit figure in the company's financial statements. What passes for net profits is actually the income retained after part of the profits have already been withdrawn. Such practices make inter-company comparisons difficult and prevent a true evaluation of the profitability of the investments made in the company.

The methods of profit distribution also have a bearing on the mobilization of capital. A company will find it easier to raise share capital on a large scale if it distributes profits in the form of dividends, because dividends are as a rule easily transferable and payable to an unlimited number of inactive shareholders. By their nature other types of profit withdrawal are less easily divisible into numerous small units and are less transferable.

Since most of the research into profit distribution, both empirical and theoretical, has concentrated on dividends as they are legally defined, it is important at the

outset to examine whether non-dividend forms of profit distribution exist generally in all four countries, or in certain industries in all four, or whether they are found in only some of the countries. Since the financial statements in all countries do not explicitly distinguish between the return on capital element and the expense element contained in these non-dividend forms of profit distribution, the existence of such forms will have to be inferred from other evidence.

The fiscal structure in the four countries concerned imposes double taxation on the income earned by the shareholders of a company. In the first stage, the company pays income taxes on its profits before distributing any dividend. When profits are distributed as dividends, the recipient pays a personal income tax on the dividend received. Even that part of the profits retained by the firm may be liable to a capital gains tax in the future when the shareholder sells his shares in order to realize the profits which have accrued from reinvestment of past profits.

In contrast to these methods of distributing profits, the non-dividend forms of profit distribution are a means of lessening the tax liability of the company as they are recognized as deductible expenses for that purpose. In theory, the recipients of both types of income are liable to personal income taxes. In practice, however, it is not always possible for the tax authorities to separate the legitimate expenses of the firm from the income paid to the owners. Often no tax is paid at all on profits distributed in the form of expenses. The withdrawal of retained earnings either as loans to owners or as repayments

on loans made by the owners in the past avoids the necessity of paying the capital gains tax.

It is the "double taxation" on dividends which provides the shareholder, who wishes to realize his profits, with the incentive to use the non-dividend forms of profit distribution. In the countries dealt with in this study there exist profitable firms who do not pay out profits in the form of dividends; it may be assumed that the owners of these firms are re-acting to this incentive. They must be receiving their return on capital in one non-dividend form or another. The existence of such firms is suggested here as proof that many expense items are actually disguised forms of profit distribution.

A survey of small and medium-sized U.K. manufacturing firms undertaken in 1956, showed that in over half of the firms studied no dividend whatever was paid. A large majority of the firms used the payment of directors' remuneration as an alternative to dividend distribution.³⁾ In a later more comprehensive study a similar tendency to prefer directors' salaries to dividend distribution was found in the majority of small firms.⁴⁾

Legislation enacted in 1970 in the U.K. limits the ability of owners of close companies to avoid personal taxation through the indirect, non-dividend methods of profit withdrawal described above. Close companies, which con-

³ J. Bates, The Financing of Small Business (London: Sweet and Maxwell, 1964), pp. 39-40.

⁴ M. Tamari, A Postal Questionnaire Survey of Small Firms: An Analysis of Financial Data (London: H.M.S.O. 1972), pp. 33-35.

stitute 70 percent of all companies, are defined as those which are controlled by a maximum of five persons or by its directors.⁵⁾ A company is not "close" if its shares are quoted and traded on recognized stock exchanges. The law treats loans made to a participant in a close company or to an associate of a participant as if they were dividends. Income tax has to be paid by the company on the amount of the loan grossed up at the standard rate of taxation.⁶⁾ The same law limits the amount of interest paid to directors and their associates which can be deducted from a close company's profits for corporate tax purposes.⁷⁾ On the other hand, the limitations previously in force on the level of directors' remuneration have been abolished, and such remuneration may now be deducted in full, subject to the ordinary tax rules for business expenses. Profit withdrawal in the form of personal and household outlays charged to the company is still permitted.

The aforementioned results of the studies mentioned above, together with the introduction of new legal restrictions on close companies, suggest that the use of the close company device as a means of reducing tax liability through non-dividend forms of profit distribution has been a rather widespread phenomenon in the U.K.

Studies of manufacturing firms in Israel have revealed that only eight percent of all those earning profits

⁵ Small Firms, Report of the Committee of Inquiry on Small Firms (London: H.M.S.O., 1971), Chapter 13, para. 13.19, p. 203.

⁶ Income and Corporation Taxes Act, Section 286 (London: H.M.S.O., 1970).

⁷ I b i d, Section 285.

pay dividends fairly regularly, i.e. at least once in three years; all the others, irrespective of size, presumably withdraw profits in other forms. For instance, in 1968, 21 percent of profits of Israel manufacturing corporations were actually distributed in the form of personal expenses, excess salary payments, vehicle allowances, financing of foreign travel, etc. Although the tax authorities may find it difficult to prove that these are not legitimate tax deductible expenses, economically speaking they may be regarded as distributed profits.⁸⁾

Data drawn from the income tax returns of a sample of controlled corporations in the U.S. showed that in 1969 only approximately 20 percent declared dividends, even though over 75 percent of the firms showed a net income.⁹⁾

From the foregoing we may conclude that in all the countries studied the withdrawal of profits in various non-dividend forms is a common practice. It would, therefore, be pertinent to try and show empirically the factors which influence the firm to distribute its profits either in non-dividend forms or through the payment of dividends. A priori one would expect the following factors to play an important role in these decisions.

⁸ M. Tamari, "Industrial Corporate Profits in Israel, 1956-1970", Economic Review, No. 40, (Bank of Israel, Jerusalem, September, 1973), pp. 9 and 10.

⁹ U.S. Internal Revenue Service, Statistics of Income 1969, Corporation Income Tax Returns (Washington: U.S. Government Printing Office, 1973), Table 19, p. 126-127, calculated from columns 1, 11, and 18. Controlled corporations are defined by the I.R.S. as those enjoying some form of joint ownership, with each corporation submitting separate tax returns.

a. Ownership - Companies quoted on a stock exchange, those that are either wholly or partly owned by the public sector, and those whose shares are owned by a large number of inactive shareholders or by banks or investment companies lose their closely-knit ownership structure. They, therefore, tend to submit to shareholders' demands for dividends regardless of the effects of the tax structure.

b. Fiscal Factors - Any legislation that reduces the corporate or personal income tax rate on dividends also decreases the saving incurred by using non-dividend forms of profit distribution. In the case of legislation lowering the tax liability of the company, the amount of profits available for distribution is increased. The individual shareholder may further benefit from legislation that either limits his tax liability on dividends received to a non-progressive flat rate or defers the payment of tax.

c. Size of the firm - The size of a company has an important bearing on the methods it uses for capital formation. It especially affects the firm's potential sources of finance. As the firm grows beyond a certain size, it usually finds it necessary to go beyond the original shareholders and their families in order to raise additional equity. This equity may come either from the public at large, or from institutionalized investors, or from both. Presumably, different types of investors prefer different methods of receiving their return on capital and such preferences will affect the method of profit distribution.

d. Profitability - A firm must, of course, have a certain level of profits before it can pay a dividend.

Furthermore, in a period of rapidly rising earnings shareholder pressure for dividends, even in family-held companies where normally there is no such demand, will lead to a change in policy. It must be pointed out that the difficulty of withdrawing profits in non-dividend firms increases with the size of the profit figures.

e. Equity - The proportion of equity in the firm's sources of funds serves as an indicator of its dependence on shareholders. It is, therefore, to be expected that this dependence affects the form in which the firm distributes its profits. It may be assumed that the percentage of dividend-paying companies will be greater among firms with a high proportion of equity.

The data in the countries surveyed show that it is indeed these factors which differentiate between those companies that distribute profits in the form of dividends and those that choose other forms of profit distribution. It should be pointed out that these factors may be inter-related, so that it is not always clear which one of them is the major characteristic differentiating between the two types of companies. Wherever possible this study will attempt to separate the various characteristics so as to clarify their role in the decision process.

1. Size

Reference has already been made to the tendency of smaller and medium firms in the U.K. to prefer the non-dividend forms of profit distribution. The effect of size may also be seen from the data on the quoted firms of different sizes. In the small sample of U.K. quoted companies

described in Chapter 1 of this study, the proportion of profits distributed as dividends was compared to that distributed as executive salaries for each of three size groups. No substantial differences were found between the groups regarding dividends, but the percentage of profits paid as salaries falls as the size of the firm grows (see Table 4.1). Executive salaries constituted ten percent of the profits earned in 1973 in the smallest quoted companies; they accounted for one percent of the 1973 profits of the largest firms.

TABLE 4.1

DIVIDENDS AND EXECUTIVE SALARIES AS A PERCENTAGE
OF UNDISTRIBUTED PROFITS IN U.K. QUOTED COMPANIES
ACCORDING TO SIZE GROUPS IN 1973

	Dividends as a percentage of profits	Executive salaries as a percentage of profits
Small [*]	28	10
Medium ^{**}	33	5
Large ^{***}	33	1

* Annual sales in 1973 of less than £20,000,000.

** Annual sales in 1973 between £20,000,000 and £100,000,000.

*** Annual sales in 1973 of over £100,000,000.

Source: Moodys Services Inc.

In the U.S. attempts have been made to adjust the profit rate to allow for non-dividend forms of profit distribution, but these attempts have been limited solely to officers' compensation which is only one of the non-dividend

forms. One such study by Stekler defined the profit element in such compensation as the difference between the officers' remuneration paid by a profitable firm and that paid by firms that had no net income in the same asset-size group and industry.¹⁰⁾ The study showed that for the period 1947-1951 this excess compensation was sufficient to bring up the weighted industry average rate of return of all but the largest size group from 8.9 to 9.8 percent; in many of the smaller firms the rate of return was doubled. These results indicate that if other forms of profit distribution were added, total non-dividend profit withdrawals would be quite significant in all but the largest firms. It should be pointed out that in 1968 the firms with assets of less than \$5 million accounted for 40 percent of the output of U.S. manufacturing corporations.¹¹⁾ Data presented by the U.S. Internal Revenue Service also indicate that the size of the firm influences its method of profit distribution.¹²⁾

This effect of size on profit distribution is also noted in a recent study by Lewellen analyzing the income of

¹⁰⁾ H.O. Stekler, Profitability and Size of Firms, Institute of Economic Research (Berkeley: University of California, 1963).

¹¹⁾ Quarterly Financial Statistics. Federal Trade Commission, Washington, D.C., 1969.

¹²⁾ U.S. Internal Revenue Service - Statistics of Income, 1969, op.cit. Table 5, p. 143 - These show that in 43 of the 63 manufacturing sectors no dividends were paid in 1969 by firms with assets of less than \$100,000. In all industrial groups the larger firms paid dividends.

executives in large U.S. corporations.¹³⁾ The companies were chosen from Fortune magazine's list of the 500 largest businesses. In this study the 50 largest companies and 15 of the smaller companies appearing on the list were analyzed. A comparison of the data for the two groups of corporations showed the following results. The top five executives in the largest manufacturing companies received dividends equal to 31 percent of their salaries. During the same period, 1960-1963, the top five executives in the smaller manufacturing companies received dividends equal to only 10 percent of their salaries.

The Israeli data also show the influence of size on the use of non-dividend forms of profit distribution. Table 4-2 shows that in 1968 the smaller firms distributed 70 percent of their profits in non-dividend forms. This figure was estimated by the tax assessors to be the percentage of profits drawn by the owners in the form of excess salary payments and personal expenses charged to the firm. In the largest firms such non-dividend payments represented only about 20 percent of the 1968 profits. This pattern is to be found over the three year period between 1966-1968.

¹³ W. G. Lewellen, Executive Compensation in Large Industrial Corporations (New York, 1968), National Bureau of Economic Research, pp. 241-247.

TABLE 4.2

PERCENTAGE OF PROFIT OF THE ISRAEL MANUFACTURING
COMPANIES DISTRIBUTED AS EXPENSES ACCORDING TO SIZE
GROUP, 1966-1968¹⁴⁾

Size	1966	1967	1968
1-29	102	92	70
30-69	30	22	26
over 70 employees	34	31	21

Source: Bank of Israel Corporate Finance Project.

2. Ownership

The effect of widely dispersed ownership on the form of profit distribution chosen by the firm may be demonstrated either by comparing quoted and unquoted large firms or comparing quoted firms with high degrees of effective owner control with other quoted firms. Both these comparisons show that as ownership is dispersed the tendency to use non-dividend forms of profits distribution declines and vice-versa.

Aggregate data on large quoted and non-quoted firms in the U.K. show that in 1969 the quoted companies in the

¹⁴ For the purpose of this analysis a sample of manufacturing companies was drawn. The tax assessors were then asked to estimate what proportion of the expenses of the firms in their opinion were in actual fact payments made to the owners, even if this estimate was not viable in a court of law. These estimates of excess salary payments, interest paid to owners, household expenses charged to the firm were then added back to the pre-tax income of the firm in order to obtain its undistributed profit. The payments to owners were then calculated as a percentage of the undistributed profit and presented in Table 4.2.

manufacturing industries distributed 30 percent of their profits as dividends.¹⁵⁾ In the same year, however, the non-quoted corporations distributed dividends equal only to 20 percent of their annual pre-tax profits. It may be assumed, therefore, that in addition to paying the formal dividend the latter companies distribute the owners' return on capital in other forms.

Additional evidence regarding the influence of the pattern of ownership on the profit distribution policy of the firm may be gained from a comparison of the foreign and U.K. controlled firms operating in the U.K. (see Table 4.3). This comparison shows that there is no difference between the dividend policy of the quoted and the non-quoted foreign-controlled firms. For U.K.-controlled firms, however, the proportion of profits distributed as dividends in the quoted corporations is far higher (22 percent in 1969) than it is for non-quoted ones (12 percent).

TABLE 4.3

DIVIDENDS AS A PERCENTAGE OF PROFITS IN THE U.K.
QUOTED AND NON-QUOTED COMPANIES ACCORDING TO OWNERSHIP

<u>U.K.-Controlled Companies</u>		<u>Foreign-Controlled</u>	
Quoted	Non-Quoted	Quoted	Non-Quoted
22	12	17	17

Source: Economic Trends, August 1973,
(H.M.S.O. London 1973)

In the case of the foreign-controlled companies it would seem reasonable to assume that the degree of effective ownership in the non-quoted ones is not radically dif-

¹⁵ Business Monitor M.3 Company Finance (H.M.S.O. London, 1971), Tables 5 and 8.

ferent from that of the quoted ones. This means that the ability of the owners to use non-dividend forms of profit distribution is limited in both types of firms. However, in the case of the U.K.-controlled companies the lower percentage of profits distributed as dividends in the non-quoted companies would seem to indicate, inter alia, a greater ability to withdraw additional profits in non-dividend forms.

For the quoted firms it can be shown that different degrees of active owner control are reflected in the size of non-dividend forms of profit distribution. In order to analyze the effect of concentrated ownership the 75 quoted companies were ranked according to the percentage of shares owned by the directors and members of their families. A further distinction was made between the firms according to the size of their sales.

The results of this analysis are shown in Table 4.4. In most of the large firms the directors' share of the ownership is very small (less than one percent of share capital), so the data on firms in this size group were not included in the table. In both other size groups, however, it may be seen that quoted companies with a low level of owner control (as measured in this study) distribute less of their profits in the form of executive salaries. No significant differences were found with respect to the percentage of profits distributed as dividends. It should be noted that the effect of ownership does not seem to be symmetrical since the percentage of profits distributed as salaries does not rise consistently with an increase in owner control. The explanation for this asymmetry is dealt with in detail in Sec.4 of this chapter.

TABLE 4.4

PERCENTAGE OF PROFITS DISTRIBUTED AS DIVIDENDS AND AS
EXECUTIVE COMPENSATION IN QUOTED COMPANIES IN THE U.K.,
ACCORDING TO SIZE GROUPS AND OWNERSHIP, 1973

Shares held by Directors and their families as a percentage of share capital	Medium-Size Quoted Companies *		Small Quoted Companies **	
	Dividends as a percentage of profits	Directors' salaries as a percent- age of profits	Dividends as per centage of pro- fits	Direc- tors' sa- laries as a per- centage of profits
Less than 1%	32	1	28	3
Between 1 & 10%	32	10	30	12
Over 10%	30	5	28	8

* Annual sales in 1973 between £20,000,000 and
£ 100,000,000.

** Annual sales in 1973 of less than £20,000,000.

Source: Moodys Investors Services, Inc.

These preliminary results show that there are certain characteristics such as size and ownership which identify companies which distribute their profits solely in the form of dividends. In order to measure the effect of these characteristics, multiple stepwise regressions were calculated between the company's status with regard to dividends (i.e. whether it paid only dividends or not) and variables representing the distinguishing characteristics. It was not possible to obtain, for the purpose of this study, comparable data for both countries and so different regressions and variables were used for the U.K. on the one hand, and Israel on the other as detailed below. No suitable data were available for the U.S.

For the U.K. only quoted companies were tested.

Since they all distributed dividends, the analysis was performed with respect to one form of non-dividend distribution, viz. executive compensation primarily in the form of salaries. As explained in the introduction to this chapter, profits may be withdrawn in a number of ways, such as paying of interest on excess salaries to the owners, granting interest-free loans with unspecified repayment dates, or charging the personal expenses of the executive to the firm. Of all these forms, only executive compensation can be calculated from the data available; consequently, the discussion in this chapter will be centered on this item alone.

Executive compensation does not include only profits; it also covers remuneration for work performed, since many owners are actually gainfully employed in their firms. It is not possible, however, to distinguish between the dividend element and that part paid for work done in accordance with prevailing market salaries. We have assumed that managerial salaries are paid to owners. The basis for this assumption in the case of non-quoted companies in all countries is the fact that the owners usually play an active role in the everyday management of the firm. It may be argued that linking executive salaries to ownership is not valid in the case of large-quoted companies, as in these companies the executives are usually hired employees and may often only own a marginal share of the companies' stock, if at all. In view, however, of the findings of Lewellen that management income in these companies follows the pattern of dividends and stock price performance

of the employee corporation, the original assumption seems to hold even in this type of company, with the reservation that ownership of the managers may be marginal.¹⁶⁾

The Israeli corporations included only profit-earning companies, both quoted and non-quoted. Some of the latter paid dividends while the others did not. The analysis of the Israeli companies was aimed at those companies which paid a dividend at least once in a three-year period in comparison with those which did not.

Suitable data were available only for 66 of the sample of 75 quoted companies in the U.K. Two indicators of the executive compensation were used for these companies:

a. Executive remuneration in 1973 as a percentage of profits available for distribution in that year. This indicator measures the proportion of profits distributed as salaries.

b. Executive remuneration in 1973 as a percentage of equity in 1973. This indicator measures the return on the owners' investment in the form of salaries.

The variables used were as follows:

(1) Profitability - profits as a percentage of equity with profits being defined as annual profits before taxes and profit distribution, but after the payment of interest.

(2) Ownership - the degree of owner control as shown by the share of common stock held by the directors and members of their families.

¹⁶ W.G. Lewellen, The Ownership Income of Management (New York: National Bureau of Economic Research, 1971), p. 11.

(3) Size - as shown by the level of annual sales.

All the variables refer to 1973 data.

Regardless of how executive compensation is measured, the degree of ownership is a major factor explaining the size of this non-dividend form of profit distribution. In the first regression, using executive salaries as a percentage of profits, the proportion of common stock owned by the directors explained 27 percent of the behavior of the firms while size explained only three percent. Current profitability explained only three percent of the proportion of profits distributed as salaries. The second regression using executive salaries as a percentage of equity gave almost identical results. In both regressions the statistical evidence regarding ownership and profitability were significant, whereas that of size was not.¹⁷⁾

The Israeli data show a similar pattern. A multiple stepwise regression was calculated between the company's

$$^{17} y = 0.03183 - .031x_1 - .000x_2 + .001x_3 \quad R^2 = .32$$

(4.882) (-1.391) (-1.672) (4.893)

where $y = \frac{\text{salaries}}{\text{profits}}$; $x_1 = \frac{\text{profits}}{\text{equity}}$; $x_2 = \text{sales}$; $x_3 = \frac{\text{Directors stock}}{\text{common stock}}$

$$y = -.002 + 0.031x_1 - .000x_2 + .000x_3 \quad R^2 = .54$$

(-1.263) (5.555) (-1.451) (4.815)

where $y = \frac{\text{salaries}}{\text{equity}}$; $x_1 = \frac{\text{profits}}{\text{equity}}$; $x_2 = \text{sales}$; $x_3 = \frac{\text{Directors stock}}{\text{common stock}}$

The figures in parantheses represent the t values. The negative sign for x_1 in the first regression is explained in detail in the following section. The negative sign for sales is to be expected since an increase in size is usually associated with a dilution of the share of common stock held by the directors.

status with regard to dividends (i.e. whether or not it paid dividends) and the following variables:

(1) Tax liability - represented by a dummy variable of 1 for those firms with approved enterprises status under the Law for the Encouragement of Capital Investments, and 0 for non-approved firms. This law grants approved enterprises certain concessions that reduce the tax liability of either the firm or the investors, or both.¹⁸⁾

(2) Capital structure - represented by a dummy variable of 1 for those firms whose equity amounted to 50 percent or more of their total balance sheet, and 0 for those firms with a smaller equity ratio. This variable was not included in the U.K. firm regression analysis as the variance between the firms of the equity ratio was negligible.

(3) Profitability - since the definition of low and high profitability presents serious difficulties, two sets of dummy variables were used in this regression:

- a. Firms with average annual pre-tax profits in the period 1964-1968 of more than 5 percent of their equity

¹⁸ For a discussion of the effects of this law on the financial behavior of Israeli firms see M. Tamari "Some Aspects of Differential Income Tax Rates on the Behavior of Israel's Industrial Companies". Economic Review, No. 42 (Bank of Israel, Jerusalem, January 1975). The fiscal concessions may be summarized as follows: (a) Accelerated depreciation; (b) Exemption from income tax. An approved enterprise is liable only to the 28-33 percent company profits tax during a five-year period, beginning with the first year in which there is a taxable income; these rates compare with the 50-55 percent taxes paid by non-approved enterprises. (c) Dividends paid out of profits earned during this period are exempt from personal income tax. These benefits encourage firms to pay dividends, since on the one hand they increase the amount of profits available for distribution, and on the other they limit or defer the tax liability of the individual shareholder on dividends received.

were assigned a value of 1; all others were assigned a value of 0.

b. Firms with average annual pre-tax profits of more than 25 percent of equity were assigned a value of 1; and the others were assigned a 0 value.

(4) Ownership - The firm was given a dummy variable of 1 if the company was quoted on the stock exchange, owned by the government or the Confederation of Trade Unions, or was a subsidiary of an investment or holding company, or a bank; all other companies were regarded as private and given a value of 0.

(5) Size - Firms employing more than 150 workers were assigned a dummy variable of 1, for those with a smaller work force the dummy variable was 0.

Only firms that earned a profit throughout the period 1964-1968 were included; those reporting losses were excluded, as normally they would not declare dividends in any case.

The following results were obtained from the Israeli data. The adjusted R^2 of the regression when all these variables are included is 0.64. The ranking of the variables according to their influence on the firm's policy of distributing profits in the form of dividends is as follows:

- (1) Non-private ownership.
- (2) Approved status under the Law for the Encouragement of Capital Investment.
- (3) Profitability exceeding 5 percent of equity.
- (4) Profitability exceeding 25 percent of equity.
- (5) Equity exceeding 50 percent of total resources.
- (6) Employing more than 150 workers.

The partial correlation coefficients calculated for the variables, however, show that the influence of some of them was negligible. Whereas the first two factors alone yielded an adjusted $R^2=0.6$, the introduction of the others only raised it to 0.641. In other words, non-private ownership and approved enterprise status are the two major characteristics of firms that withdraw profits in the form of dividends as opposed to paying profits in the form of salaries, personal expenses, etc. Despite differences between these two groups of firms in financial structure, size, profitability, etc., it is the form of ownership and fiscal policy that explain the firms' behavior.

While the financial structure and profitability of the firms in the three countries studied differ greatly, as has been shown in the previous chapter, there are forms of ownership which are common to all of them. The data would indicate that this is the predominant factor in the determining whether or not profits are paid out solely in the form of dividends. In companies that are privately owned by a small, closely-knit group of shareholders the tendency is to withdraw profits in non-dividend forms; those firms with more widely dispersed ownership will tend to pay dividends only.

Now that it has been shown that both dividend and non-dividend types of profit distribution exist in all three countries and for similar reasons, we shall proceed to examine the pattern of profit distribution to see whether this too is similar in all three countries.

IV. Patterns of Dividend Distribution

Dividend policy, i.e. company decisions concerning profit distribution to stockholders, is a function of several factors. This section is based on published empirical studies in the various countries and so the findings are only summarized without presenting the statistical evidence for them. This evidence is provided in Appendix A-4 of this chapter.

In his study of company finance in the U.K., Prais showed that the dividends distributed in a particular year were a function not only of the profits earned by the company in that year, but also of the stream of profits earned in previous years.¹⁹⁾ He concluded that the influence of accumulated past profits on current dividend policy decreases as the lapse of time increases between the period in which the profits were earned and the current period. According to a more recent study conducted in the U.K., companies try to maintain an even dividend rate despite year to year fluctuations in the level of average profits.²⁰⁾

Prais' research on companies in the U.K. confirmed Dobrovolsky's earlier findings regarding U.S. companies.²¹⁾ Dobrovolsky found that a rise in profits relative to equity led to a rise in the rate of dividends paid relative to equity, but not to a rise in the proportion of profits

¹⁹ S.J. Prais, "Dividend Policy and Income Appropriation", Studies in Company Finance, ed. Tew and Henderson. The National Institute of Economics and Social Research (Cambridge University Press, 1959), p. 37

²⁰ A. Singh and G. Whittington, Growth, Profitability and Valuation (Cambridge University Press, 1968), p.32, and Tables 2.6a, 2.6b, 2.6c, pp. 36-38.

²¹ S.P. Dobrovolsky, Corporate Income Retention 1915-1943 (New York: National Bureau of Economic Research, 1951).

distributed. The same study showed that inter-company differences regarding the effect of accumulated profits and asset growth on retained profits were so great as to preclude the drawing of any meaningful conclusions. Subsequently, Lintner showed that firms have a certain payout ratio of dividends per share in the short run which they maintain despite changes in the level of profits. In other words, a rise in profits will not be accompanied by a proportionate rise in dividends.²²⁾

A comparison of Prais' and Dobrovolsky's findings shows that the dividend pattern in the U.S. was less stable than it was in the U.K. Part of the period investigated by Prais, however, was one of dividend restraint, and hence it should be compared with a similar period in the American economy before any conclusions can be drawn.

An analysis of the Israeli data revealed the same behavioral pattern as that found for the U.S. and U. K. companies.²³⁾ An increase in the profit-equity ratio led to a rise in dividends relative to equity, but not to a rise in the proportion of profits distributed. In Israel too, the effect of accumulated profits and asset growth on corporate saving was unclear.

The regression suggested by Prais to explain the effect of the stream of past profits on dividends in the U.K. was found to apply to Israeli companies as well. Nonetheless, whereas in the U.K. the profits of the two previous

²² John Lintner, "Distribution of Income of Corporations Among Dividends, Retained Earnings and Taxes", American Economic Review, Papers and Proceedings, Vol. XLVI, No. 2, (May 1956), pp. 97-113.

²³ M. Tamari, "The Pattern of Industrial Corporate Profit Distribution in Israel, 1954-64", Bank of Israel Bulletin, No. 29, (Jerusalem, 1967), pp. 23-49.

years equally were found to influence current dividends, in Israel only the profits of the previous year affected the current dividend.²⁴⁾

Among Israeli companies the values of the ratio of dividends relative to equity varied less than did the rates of profitability, as Whittington and Singh also found for U.K. companies.²⁵⁾

At first sight it appears that there exist differences between the countries regarding the proportion of profits distributed. As will be seen, however, these differences are primarily a result of general economic conditions and not of company policy. For example, prior to 1964 Israeli firms apparently tended to distribute a higher proportion of their profits than did U.K. or U.S. corporations.²⁶⁾ An analysis of Israeli data after 1968, however, shows a slower rate of profit withdrawal compared with the previous period - one similar to that found in the U.K. and U.S.

The data thus indicate a similar pattern of dividend distribution in the few countries studied. The factors accounting for this similarity are summarized below.

When the profit rate is low, almost all earnings must be retained in order to enable the firm to continue operating and to cushion itself against sudden changes either in the capital market or in its rate of profitability. At a higher level of profitability, shareholders

²⁴ M. Tamari, loc.cit.

²⁵ I b i d

²⁶ I b i d

will presumably demand the distribution of those earnings thought to be in excess of what is required as a safety margin and for expansion. A rise in profits will therefore be accompanied by a rise in the rate of dividends paid relative to equity, allowing for a certain time-lag in the firm's ability or willingness to adjust dividends to increased earnings. Uncertainty as to whether the advancing profit trend will continue coupled with the desire to avoid any drastic change in the rate and amount of dividends paid will restrain the company management from paying out larger dividends immediately as profits increase. Only when the profits stabilize at a higher level for some time can the dividend be safely increased without fear that shrinking earnings in the coming year will necessitate a smaller dividend or force the management to resort to external financing in order to pay the same rate.

As its profits expand, a company can pay a higher rate of dividends relative to equity and at the same time plough back a higher percentage of its earnings. Hence an increase in profitability generally results, in the short run, in the distribution of a smaller share of profits and a higher rate of retention.

After a certain time, however, the increase in profitability may generate stockholder pressure for the distribution of larger dividends. Management too will tend to boost the dividend rate with the growth of accumulated undistributed profits, since the latter development is liable to decrease the rate of profitability and increase the cost of using such funds due to the loss of financial leverage.. Hence an increase in the level of profitability

in the immediate past will blunt the tendency to retain earnings. ,

V. Pattern of Non-Dividend Profit Withdrawal

In this section the patterns of non-dividend profit withdrawal in the three countries are examined to see whether they essentially resemble the common pattern of dividend payments shown above.

Companies in the U.K., U.S. and Israel are analyzed. The U.K. data refer in this section to the period 1972-73 and the U.S. to the years 1970-72. In both countries only quoted companies are included. All of these companies distributed dividends, and executive compensation is considered as an additional form of profit distribution.

The Israeli sample relates to non-quoted companies that did not distribute dividends in the period 1968-1970, but earned profits in at least two of the three years and paid salaries to their owners. Only companies employing over 100 workers were included, as data were not available for smaller concerns. Enterprises owned by cooperative organizations were excluded because it was not possible to separate managerial remuneration from other salaries. Also excluded were public sector and Histadrut concerns, since the managers are not free to determine the level of their salaries and other benefits.

Certain studies have suggested that the managerial salaries of firms declaring a loss can be taken as an indicator of the actual wage element, as distinct from the dividend element, because such firms are in no position to

pay salaries including an element of profit sharing.

Preliminary investigations of Israeli companies operating at a loss, however, did not show their managerial salaries to be consistently lower than those paid by profit-earning firms of the same size, etc.

The U.S. data specifies the salaries and benefits received by each individual chief executive. However, since the number of managers in the Israeli firms was not always known it was not possible to use an average salary, which might have been preferable. In the case of the U.K. companies the number of directors is available but the exact remuneration paid to each of them is not known so that here too it was not possible to use an average salary. For these reasons, total managerial salaries were used in the present study.

In order to test the hypothesis that executive remuneration includes an element of profit distribution, the companies in the countries concerned were tested to see whether this remuneration followed a pattern similar to that shown for dividends in the previous section.

Executive remuneration was analyzed, with respect to current profits, past profits, and past salaries.

1. Current profits - as in the case of dividends, a close connection was found in all countries between current pre-tax profits relative to equity and managerial salaries relative to equity. The former ratio is introduced as a measure of the profitability of the firm and the latter as a measure of the return on the capital invested by the directors and their families.

²⁷ H.O. Steckler, op.cit.

The indicator of ownership was not included in the case of the Israeli firms as only non-quoted, closely owned family type of firms were included in the sample. This was done as the number of quoted companies in Israel is too small to allow for meaningful analysis. Data on the share of stocks owned by the directors was not available for the U.S. corporations, so this variable was excluded from the regression.

TABLE 4.5

RESULTS OF MULTIPLE REGRESSIONS CALCULATED BETWEEN EXECUTIVE
COMPENSATION, PROFITABILITY AND OWNERSHIP IN THE U.K., U.S. AND ISRAEL

Equations: (observa- tions)	Constant Terms	Profitability (Profit as a % of equity)	Ownership (% of common stock owned by directors)	Ratio F	Adjusted R ²
U.K. 1973 (66)	-.00251	.103148 ^a (5.509)	.00023 ^a (5.019)	25.1	.51
U.S. 1972 (65)	.00044	.00112 ^a (2.4348)	-	5.9	.08
Israel 1971 (60)	-.03947	.23276 ^a (6.199)	-	38.4	.45

This table contains regression coefficients for the independent variables with respective T values in parantheses; R² = percent variation in executive compensation relative to equity explained by independent variables adjusted for degrees of freedom; F ratio = ratio of explained to unexplained variance adjusted for degrees of freedom.

^a Significant at .01 level.

The above table, presenting the results of our regression analysis shows that in the U.K. companies profitability and the degree of ownership control explain over 50 percent of the executive remuneration.

The fact that an equal rise in profitability leads to relatively higher return to capital in the form of salaries in the Israeli companies than in the U.K. and U.S. flows from the fact that in that country only non-quoted firms were included. In these firms it is to be expected that since the degree of owner capital is greater so the element of profit distribution in salaries will also be greater than in the case of quoted firms. Nevertheless, the regression results show that in addition to their formal dividends, the directors of the quoted companies in the U.K. and the U.S. also link distribution of profits in the form of salaries to profitability just as closely held family type non-quoted firms do, even if to a lesser degree.

An improvement in profitability apparently encourages the chief executives to pay higher salaries to themselves and at the same time retain larger absolute sums for development and expansion purposes.

If it were true that executive remuneration consisted solely of a wage element without any element of profit distribution, then one would expect a similar pattern in regard to the total wage bill paid to employees relative to the firm's profitability.

In order to examine this relationship a regression was calculated in both countries between employee's wages and profitability. The total annual wage bill as a ratio of the value of annual production was taken as an indicator of employees wages and pre-tax profit before payment of interest relative to total assets employed serves as an indicator of profitability.²⁸⁾ In the U.K. the R^2

²⁸ See page 96 of this study for an explanation of the use of this ratio as an indicator of profitability.

of this regression using 1973 data was .00006. A similar low degree of explanation was obtained from the Israeli data for 1971.

The absence of any appreciable effect of profitability on wages, contrasted to the results shown regarding executive remuneration suggests that whereas owners and chief executives can adjust their remuneration to a change in profitability, employees cannot so readily earn a hike in wages when profitability rises. This is additional proof that the salaries paid to the former contain an element of profit distribution, over and above a wage element.

2. Past Profits - In the previous section it was shown that there exists a time lag between profitability and distribution so that the current dividend may be regarded as the result of a stream of profits both past and current. It may be argued, however, that this time lag does not apply to the non-dividend forms of profit distribution as management generally exercises more control over managerial salaries than it can over dividend decisions. Implied here is a greater ability to adjust current proprietary salaries to current profits so that the profits of the immediate past do not influence this form of distribution.

Table 4.6 shows, however, that this is only partially true. Just as in the case of dividends, increased profitability in a specific year is accompanied by larger salary payments to owners and directors in the following year. It is true that the influence of the current year's profitability is stronger than that of the previous years, indicating a tendency to distribute current profits imme-

diately; nevertheless, they both affect the return on capital distributed in the form of salaries. In the U.S. the results regarding the effect of the past profits on executive compensation are not statistically significant.

TABLE 4.6

RESULTS OF REGRESSIONS CALCULATED BETWEEN CURRENT EXECUTIVE
COMPENSATION RELATIVE TO EQUITY AND PROFIT IN THE PREVIOUS YEAR
RELATIVE TO EQUITY IN THE U.K., U.S. AND ISRAEL

Equations: (observa- tions)	Constant Terms	Profitability ^{t-1} as a percentage of equity ^{t-1}	Ratio F	Adjusted R ²
U.K. 1973 (65)	.000123	.03114 ^{a)} (3.312)	10.9	.15
U.S. 1972 (65)	.00059 ,	.00081 (1.42)	2.0	.03
Israel 1971 (272)	.06858	.11295 ^{a)} (6.499)	42.2	0.13

This table contains regression coefficients for the independent variable with respective T values in parentheses; R² = percentage variation in current executive compensation relative to equity explained by its independent variable adjusted for degrees of freedom; F ratio = ratio of explained to unexplained variance adjusted for degrees of freedom.

^a Significant at .01 level

3. Past Salaries - The connection, shown above, between current profitability and executive compensation, raises the question whether there exists a time lag in adjusting the latter to changes in profitability similar to that found in the case of dividends. Table 4.7 which presents the results of regressions calculated between the

executive compensation in the current year and that earned in the previous year, shows that such a time lag does exist.

TABLE 4.7

RESULTS OF REGRESSIONS CALCULATED BETWEEN CURRENT EXECUTIVE
COMPENSATION RELATIVE TO EQUITY AND EXECUTIVE COMPENSATION IN THE
PREVIOUS YEAR RELATIVE TO EQUITY IN THE U.K., U.S.
AND ISRAEL

Equations: (observa- tions)	Constant Terms	Executive Compens- ation ^{t-1} as a percentage of equity ^{t-1}	Adjusted R ²
U.K. 1973 (65)	-.49016	1.04389 ^{a)} (21.709)	.8
U.S. 1972 (65)	.00010	.96455 ^{a)} (11.40)	.67
Israel 1971 (272)	-.00056	.98358 ^{a)} (51.535)	.95

This table contains regression coefficients for the independent variable with respective T values in parentheses; R² = percentage variation in current executive compensation relative to equity explained by its independent variable adjusted for degrees of freedom.

^a Significant at .001 level.

From the regression results shown above it may be seen that current salaries paid to executives are also closely related to their level in the previous year. Like dividend-receiving shareholders, manager-owners evidently prefer a stable return on investment to drastic changes resulting from fluctuations in profitability. At the same time, prudent management demands, even more so in such firms than in those paying dividends to an amorphous group of shareholders, that the firm be protected against sudden

changes in profits and in the money market by controlling the level of distributed profits.

This connection suggests that, although current profitability generates pressure to withdraw profits, either to maintain financial leverage, for investment elsewhere, or for consumption purposes, the owners' return on equity in the previous year tends to restrict the current withdrawal to a comparable level.

VI. S u m m a r y

In all four countries profits are distributed both in the form of dividends and as expenses, salaries, and loans to owners and directors. It would seem that the decision concerning the most beneficial form, or combination of forms, of profit distribution depends primarily on the nature of the ownership of the firm and not on its financial structure or size. While there may be some interrelationship between the form of ownership and financial structure or size, it has not been found to exist in all the countries surveyed. Firms held by closely knit groups of owners tend to pay them out in non-dividend forms, while firms whose ownership is widely dispersed generally distribute profits. The taxing of undistributed profits or the reduction of income tax rates for special categories of firms will increase the probability of profit distribution through dividend payments.

The pattern of profit distribution is similar in all three countries for both dividend and non-dividend paying companies. Such a pattern suggests that the determinants of the rate of dividends paid, and the ratio of dividends to profits are primarily economic and financial and apply to all countries irrespective of any differences in environmental factors.

APPENDIX

TABLE A-1

DISTRIBUTION OF DIVIDEND AND NON-DIVIDEND PAYING
COMPANIES IN ISRAEL IN 1968 ACCORDING TO THE FORM OF
OWNERSHIP AND TAX STATUS

(Percentages)

Ownership	Pay Dividends	Do not pay Dividends
Quoted on Stock Exchange	14	-
Public but not quoted	22	12
Cooperatives	1	13
Subsidiaries of other companies	44	8
Private	19	67
Total	100	100
<u>Tax Status</u>		<u>Total</u>
Approved	50	50 100
Non-approved	20	80 100

Source: Bank of Israel, Corporate Finance
Project.

TABLE A-2

DISTRIBUTION OF DIVIDEND AND NON-DIVIDEND PAYING
COMPANIES IN ISRAEL IN 1968 ACCORDING TO VALUE OF
PRODUCTION AND FIXED ASSETS IN 1968
(Percentages)

	Pay Dividends	Do not Pay Divi- dends	Total
--	------------------	------------------------------	-------

<u>Size</u>			
Value of production in IL			
below 1 million IL	10	90	100
1 - 1.5 million	11	89	100
1.5 - 3 million	29	71	100
3 - 5 million	28	72	100
over 5 million	56	44	100
Fixed Assets in IL			
under 1 million	6	94	100
1 - 3.5 million	34	66	100
3.5 - 5 million	22	78	100
Over 5 million	58	42	100

Source: Bank of Israel, Corporate Finance Project.

TABLE A-3

DISTRIBUTION OF DIVIDEND AND NON-DIVIDEND PAYING
COMPANIES IN ISRAEL ACCORDING TO TAX STATUS AND PROFIT
ON EQUITY IN 1968
(Percentages)

	Pay Dividends	Do not Pay Dividends	Total
Approved Enterprises			
Profit/Equity less than 15%	30	70	100
Profit/Equity more than 15%	50	50	100
Non-Approved Enterprises			
Profit/Equity less than 15%	8	92	100
Profit/Equity more than 15%	20	80	100

Source: Bank of Israel, Corporate Finance Project.

TABLE A-4

DIVIDEND DISTRIBUTION PATTERNS IN THE U.K., U.S.A., AND ISRAEL

	Correlation Coefficients		
	Rate of Return (net of assets)	Rate of Return (equity assets)	Retention Ratio
1) <u>U.K.</u> - All industries-1948-60 Dividend return	0.72	0.51	-0.51
2) <u>U.S.A.</u> $y = -4.51 - 0.2x_1 + 0.79x_2 + 0.03x_3$ (± 0.06) (± 0.07) (± 0.07) ^{a)}			
<u>Israel</u> $y = 5.9 - 0.12x_1 + 0.39x_2 + 0.04x_3$ (± 0.15) (± 0.13) (± 0.005) ^{a)}			
where $y = \frac{\text{Retained earnings in } t}{\text{Equity in } t}$			
$x_1 = \frac{\text{Net profit in } t}{\text{Equity}}$			
$x_2 = \frac{\text{Net profit in } t^{-1}}{\text{Equity}}$			
$x_3 = \frac{\text{Undistributed profits in } t^{-1}}{\text{Equity}}$			
<u>U.S.A.</u> $y = 1.42 + 0.70x_1 - 0.33x_2 + 0.11x_3$ (± 0.05) (± 0.11) (± 0.05) ^{a)}			
<u>Israel</u> $y = 0.11 + 0.52x_1 - 0.46x_2 + 0.06x_3$ (± 0.10) (± 0.17) (± 0.10) ^{a)}			
where $y = \frac{\text{Retained earnings in year } t}{\text{Equity in year } t}$			
$x_1 = \frac{\text{Net profit in year } t}{\text{Equity in year } t}$			
$x_2 = \frac{\text{Dividends in year } t^{-1}}{\text{Equity in year } t}$			
$x_3 = \frac{\text{Increases in assets in year } t}{\text{Equity in year } t}$			

Sources: U.K.: A. Singh and G. Whittington, Growth, Profitability and Valuation (Cambridge: Cambridge University Press, 1968), Table 3.3, p.65.

U.S.A.: S.P. Dobrovolsky, Corporate Income Retention, 1915-43 (New York: National Bureau of Economic Research, 1951).

ISRAEL: M. Tamari, "The Pattern of Industrial Corporate Profit Distribution in Israel, 1956-64", Bank of Israel Bulletin, No.29, Dec.1967.

^aFigures in brackets represent the standard deviation.

MONETARY POLICY AND THE INDIVIDUAL FIRM

I. Introduction

Changes in the price and availability of credit affect almost all the decisions and activities of the firm. Investments that were profitable and attractive previously, become marginal, and perhaps even unprofitable under higher interest rates and vice versa. In the manufacturing firm such investments include not only plant and machinery but also inventory and credit extended to customers. In turn these investments influence and are influenced by the sales made by the firm.

One of the major forces affecting changes in the cost and availability of credit is the monetary policy adopted by the central bank. Usually, the aim of monetary policy is to adjust money supply and bank credit in accordance with a desired flow of commodities and services, without, of course, creating pressures on the price levels. It may be expected, a priori, that an expansionary monetary policy, if successful, will permit a rapid growth in consumption and investment, whereas a restrictive policy will have an opposite effect.

In this study, changes in the commercial bank credit received by the firm are used as an indicator of monetary policy. This definition is based on the assumption that in the short run the individual firm will be influenced not by the policies of the central bank but rather by its bank's decision to restrict or increase the credit available to the firm. It is generally accepted that there exists a considerable time lag between the decision taken by the central

bank and its percolation through the money market, the financial intermediaries and the changes in the yields of financial investments down to the individual firm so that the impact of the other effects of monetary policy will be more diffuse.¹⁾ At the same time monetary policy does not affect all firms to the same degree; under a restrictive monetary policy some firms are able to expand the amount of bank credit received and during an expansionary one some firms find their bank credit restricted.

It has been found in the U.S., for example, that during a credit squeeze small firms suffer more heavily than do large firms.²⁾ Furthermore, firms with a low credit rating, such as new firms or those reporting losses, will often find that during periods of credit restraint their bank credit declines whereas older, well-established firms or profitable ones are able to obtain their normal level of credit.

A representative sample of non financial firms would take into account the transformation of monetary policy through the banking system, the actual distribution of credit according to firms and the time lag involved.

In studying the behavior of the individual firm, the actual changes in short-term credit aggregates are therefore likely to be a more valid indicator of monetary policy than such general factors as changes in money supply, velocity of money, etc.

¹M.J. Hamburger, "The Lag in the Effect of Monetary Policy: a Survey of Recent Literature", Monthly Review, Federal Reserve Bank of New York (New York, December 1971), Vol. 53, No. 12, pp. 289-298.

²A.M. Meltzer, "Mercantile Credit, Monetary Policy and Size of Firms", Review of Economics and Statistics, Vol. XLII, No. 4, November 1960, pp. 429-436.

A possible indicator of changes in bank credit could be obtained by subtracting the opening balance of outstanding bank debt from the end of the year balance sheet.³⁾ The changes in the actual sums of money received by a firm from its bank, would, however, seem to be of marginal interest only as it would not be clear as to whether this change was due to supply or demand. In this study therefore, the change in bank credit is related to some indicator of the firm's activity such as the value of its production (measured by its sales plus the changes in the inventory of finished goods and work in progress). By doing so, it may be possible to identify the supply factor, assuming that the demand for credit is a function of the production cycle of the firm, its credit standing, its size, and the industrial sector in which it operates.

It is not claimed that the use of this credit/value of production ratio eliminates the problem of to what extent bank credit is an exogenous influence on the firm or results from the firm's demand for such credit. It is however suggested that the use of this ratio minimizes the effect of demand so that changes in bank credit would primarily flow from changes in supply alone. Furthermore, the fact that in most countries bank credit is cheaper than other forms of short-term credit primarily as a result of the lower risk undertaken by the banker compared with the other short-term creditors, means that the firm will exploit all the bank credit available before going on to other more ex-

³⁾ It would have been preferable, perhaps, to use monthly or quarterly figures but as these are not available, annual data have had to be used. The assumption is that such data represent the average figures for the firms during the year.

pensive forms of credit. On the basis of this assumption it would seem that the control exercised by the firm over the amount of bank credit is far smaller than the effect of the supply of such credit on the behavior of the firm.

The comparison of the bank credit/value of production ratio obtained for the current year with the previous years' ratio thus indicates a relative change in availability of bank credit.

It is suggested that the bank credit/value of production ratio of the previous year represents some sort of point of equilibrium. In any particular year those firms in which this ratio rises may be said to have increased their bank credit whilst a decrease in bank credit is represented by those firms in which the ratio declines. A firm whose ratio relative to the previous year rises, is seen as enjoying an excess of bank funds over and above the needs of its production cycle, and the effect of a decrease in the amount supplied is represented by those firms in which the ratio declines.

At first glance it seemed as though this elimination of the demand factor could be obtained by simply using the value of production as one of the variables in regression analysis. However, the attempts to do so failed to produce operative results primarily owing to the multi collinearity between bank credit and value of production. Attempts to use statistical methods to rectify this did not produce viable results. For that reason, it was decided to use the bank credit/value of production ratio of the firm as explained above.

The first hypothesis to be examined in this study is whether a retraction in bank credit so defined leads to a reduction in the firm's investment whereas an increase in bank credit leads to greater investment. It should be pointed out that monetary policy is only one of the factors affecting investment and may perhaps only affect marginal decisions. Expectations of management regarding changes in the exchange rate, commodity prices, etc., may lead firms, in the short run, to increase their investments, especially in inventory, irrespective of the monetary policy being followed. Fiscal policies, overall economic conditions and the firms' expectations of future changes are usually the predominant factors, whilst the price and availability of credit may be considered to be secondary ones.

The second hypothesis to be tested is whether a reduction in bank credit is compensated for by an increase in the other financial sources of the firm, whereas expanded bank credit is accompanied by a decrease in other funds. Although it may be assumed that such relationship does in fact exist, the important question is the strength of the relationship between changes in bank credit and the other sources of finance.

An additional purpose of this chapter is to discover to what extent the empirical results regarding these two hypothesis are the same in the four economies surveyed. As has already been shown in Chapter 2, the socio-economic framework within which firms operate varies from country to country - this difference applies equally to the role of bank credit in the financing of the firm.

The central bank and state institutions, both in Japan and in Israel, exert a great degree of control over the lending process of the commercial banks. Their intervention in this process is not restricted, as in the case of the U.K. and the U.S., to the monitoring of an overall monetary and fiscal policy, but includes the allocation of bank credit even on the level of the individual firm. Those firms operating or implementing some aspect of the official economic policy have greater access to bank credit than do other firms, often obtained at subsidized rates of interest. It would seem reasonable, therefore, to expect the effect of changes in bank credit to be substantially different in the former two countries than in the U.K. and the U.S. Some statistical evidence of these international differences in the banking system as they affect the financial structure of the manufacturing firm may be seen in the following table (Table 5.1).

TABLE 5.1

RATIO OF BANK CREDIT RELATIVE TO VALUE OF PRODUCTION, TOTAL ASSETS, CURRENT LIABILITIES, AND CURRENT ASSETS IN 1970 IN THE MANUFACTURING CORPORATIONS OF THE U.K., THE U.S., JAPAN AND ISRAEL

	<u>Bank Credit</u> <u>Value of</u> production	<u>Bank Credit</u> <u>Total</u> assets	<u>Bank Credit</u> <u>Current lia-</u> <u>bilities minus</u> bank credit	<u>Bank Credit</u> <u>Current</u> assets
U.K.	0.04	0.07	0.28	0.13
U.S.	0.03	0.06	0.19	0.08
Israel	0.18	0.15	0.68	0.30
Japan	0.35	0.17	0.50	0.29

Source: See footnote 1 to Chapter 1.

This table relates the ratio of bank credit in the average firm to various indicators of the economic activity of the firm, such as, the value of production, total assets and other balance sheet items. Irrespective of the ratio considered, the table shows that in Israel and Japan firms operate with far more bank credit than do their counterparts in the U.K. and the U.S.

In addition to the quantitative differences regarding bank credit shown in the above table, there exist qualitative differences in the effect of bank credit on the firm. Firms in Israel receive a considerable proportion of their bank credit as an incentive to increase exports. At least part of this bank credit is meant to finance the import of raw material for processing and reexport, as well as the granting of trade credit to customers abroad. It may be reasonable to assume, therefore, that changes in the firm's bank credit in this country will influence its investment policy regarding inventory and receivables, in a manner different to that of their counterparts in other countries. In Chapter Two it has been pointed out that Japanese banks maintain a special relationship with the non-financial corporations belonging to the same concern or group. This relationship may create a situation in which changes in bank credit would affect the financial management of these firms to an extent which would differ from that found in the U.S. and the U.K., where this special relationship does not usually exist.

If the empirical results in all countries follow a similar pattern, then it may be assumed that this pattern will apply to many other economies, despite the socio-economic

differences between them. To the extent that this is not the case, this chapter deals with the factors that explain these international differences and their effects on the effectiveness of the central bank's monetary policies.

The discussion in this chapter takes the following form:

Section II presents the definitions used and describes the information available and its limitations.

Section III treats the effects of monetary policy on the firm's investment policy with respect to trade credit, inventory, and fixed assets.

It has been suggested that the non-bank financing available to firms substantially thwart the monetary policy of the central bank.⁴⁾ This argument is discussed in Section IV which includes an analysis of the ability of the firm to substitute funds from all sources other than the banking system to compensate for the short-fall resulting from a restrictive monetary policy. These sources include those funds raised from the sale of equity and bonds, as well as the internal finance generated by the firm. In view of the short term nature of financing from the banking system special attention is paid in this section to the relationship between monetary policy and short-term credit obtained by the firm primarily from its trade suppliers.

⁴The literature on this subject is very extensive and so reference is made here only to a partial list. Report of the Committee on the Working of the Monetary System, H.M.S.O., London 1959, and J.G. Gurley and E.S. Shaw, Money in a Theory of Finance, Brookings Institute, Washington D.C., 1960 pp.245. See also K. Brunner, "The Role of Money and Monetary Policy", Federal Reserve Bank of St. Louis Review, July 1968, who submits a critical view of the Gurley-Shaw thesis. A more recent and perhaps balanced treatment of the subject is to be found in the article by R.G. Davis, "An Analysis of Quantitative Credit Controls and Related Devices", Brookings Papers on Economic Activity, January 1971, Washington D.C., 1971.

II. Definition of the data used, its sources and limitations

The following three types of assets are analyzed as indicators of the investment policy of the individual firm.

a) Credit extended to trade customers = Credit extended in the form of open accounts and notes and bills receivables. The outstanding debt owed by the debtors, as shown in the firm's balance sheet, is used to represent its investment in this asset.

It should be noted that in addition to representing part of the investment policy of the firm, the credit extended to customers is a source of non-bank credit to other firms. The effect of changes in bank credit on the receivables of the individual firm will therefore be reflected in the supply of such funds and so will have to be incorporated in the analysis of the relationship between changes in bank credit and the demand for non-bank funds discussed in section four of this chapter.

b) Inventory = The balance sheet inventory of raw materials. This figure is used as another indicator of the investment policy of the firm. As a definition of inventory, it seems preferable to total inventory, which would include stocks of finished goods and work in progress. It has been shown that the ability of the firm to adjust its investment in raw materials is greater than its freedom regarding stocks of finished or semi-processed work, the size of which depends primarily on the demand for the firm's output.⁵⁾

⁵M. Tamari, "The Influence of Economic Recovery (1967-68) on Israel's Industrial Companies", Economic Review No. 37, Bank of Israel, (Jerusalem, 1971), pp. 9-10.

c) Fixed assets = Land, plant and machinery as listed in the firm's balance sheet. Other long-term assets such as investments in subsidiaries bonds, financial paper, etc. were not included on the assumption that they are incidental to the activities of manufacturing corporations.

It may be argued that technological factors actually determine the firm's policy regarding all three types of investment, since the type of goods produced by a firm as well as the period required for completing the entire manufacturing process will determine what type of plant is used, the location of the factory, and the quantities of raw materials held. Furthermore, over time, terms of trade develop which include the commonly accepted periods of customer credit and its price; the individual firm is not always able to change them in any significant way.

As a result of these technological factors, firms in any given industrial sector operate with similar asset/output ratios. These ratios express the type of activity in which the firm is engaged, so that by relating each of the assets to an indicator of production it is possible to minimize the effect of the industrial sector on its investment policy. In the case of the fixed assets and inventory, this indicator is the value of production ($\text{Sales} \pm \text{the change in inventory of finished goods and work in progress}$). In the case of receivables, the figure for total sales is used instead, since credit is extended only on goods actually sold. Changes in the ratios of the firm will reflect its reaction to the changes, actual or anticipated, in the over-

all level of economic activity in the economy.

Those companies showing a higher ratio in the current year may be considered to have increased their investment over and above the technological demands of their output or sales, while the opposite will be true for those with lower ratios. Changes in this "excess investment" will be made in accordance with management expectations regarding prices of plant and raw materials, trends in sales, fluctuations in transport and handling costs, and wages. These considerations oblige the firm to adopt an investment policy that takes into account more than the purely technological factors.

In addition, this policy will be heavily influenced by the cost and availability of funds, including bank credit.

Apart from the effect of bank credit on the investment policy of the firm, this study examines the ability of the firm to substitute other sources of finance for commercial bank credit. This non-bank finance represents funds from the sale of equity and bonds, mortgages, undistributed profits, delayed payment of long-term debt, trade, and other short-term credit. For the purpose of this study undistributed profits include the depreciation allowance, since these funds are at the discretion of the management and may be used to finance investments in various assets, at least in the short run.

This definition of non-bank finance is used here in preference to short-term non-bank credit (primarily trade credit), which is often used as an alternative in studies

on the effects of monetary policy.⁶⁾ The present definition is based on the assumption that a firm determines its sources of funds according to their availability and cost and not necessarily in direct relationship to the various assets, the investment in which is determined according to their respective rates of profitability. This means that the substitution for commercial bank credit may come from any of the various sources short term or long term, external or internal, equity or debt and not only from other short term sources like supplier credit.

It may be argued that the total non-bank finance of the firm may simply be a reflection of the changes in the needs of the firm owing to changes in its overall activity and not to the availability of bank credit. For this reason the total non-bank funds were related to the value of production; the current year's ratio of funds to output being compared to that of the previous years.

As defined above, the data refer to figures drawn from end of the year financial statements. In the absence of alternative data it is assumed that these represent the average stocks throughout the year.

On the basis of these definitions, appropriate data were extracted from the financial statements of a cross section of firms in the four countries. The source of the data

⁶ J.B. Coates, "Trade Credit and Monetary Policy: A Study of the Accounts of 50 Companies". Oxford Economic Papers, Vol. 19, No. 1, March 1967 (Oxford University Press, 1967) pp. 116-132.

and the nature of the population are explained in detail in the introduction to this study, and only a brief resume is presented here.

The U.K. data refers to 75 quoted firms for which financial reports were obtained from Moody's Financial Service Inc. for the period 1969-1973. For the same period information concerning 120 Japanese firms, quoted and unquoted, was drawn from the financial reports published by the Ministry of International Trade and Industry. The data concerning 400 Israeli corporations were obtained from the financial statements submitted to the income tax authorities in the period 1969-1972.⁷⁾ In these countries, the study covered only manufacturing corporations, representative of the various size groups.

In all the countries the population of companies was kept constant, thus obviating the effects of differences in managerial behavior and in credit policy that would affect an analysis of a fluctuating population.

Since suitable data for individual companies in the U.S. were not available, 1968-1973 aggregate data were used for the various industrial groups in the manufacturing sector. Each of these groups was regarded as a separate observation; the same ratios were calculated for the group as were calculated for individual firms in the other countries. In order to avoid confusion the results regarding the U.S. are not included in the tables but instead are referred to in the text.

⁷The analysis covering the Israeli corporations was repeated on annual data for the period 1960-1969 and where relevant the results are presented either in the text or in the appendix.

It should be noted that whilst it is suggested that it is possible to extrapolate from the behavior of the individual firm a general pattern of business reaction to changes in central bank policy, proof of such a suggestion is beyond the scope of this study.

III. Investments

1. Trade credit

In Israel much of the bank credit is granted at subsidized interest rates to manufacturing concerns in order to enable them to extend credit to overseas customers. In Japan too the funds available to the firm are subject to tight institutional control aimed at implementing government economic policy. One might assume, therefore, that changes in available bank credit would affect investment policy regarding receivables in these countries differently than in the U.K. and the U.S. This a priori assumption is strengthened by the figures showing the relative importance of bank credit to the individual firm in the four countries (see Table 5.1).

The data in the following table, however, show that in all the countries surveyed, investment in receivables is only partially related to fluctuations in the firm's bank credit.⁸⁾

⁸This finding is in accordance with the results of other empirical research in the U.K. and Sweden which show that firms tend to have a consistent ratio of receivables to sales despite changes in monetary policy. See J.B. Coates "Trade Credit and Monetary Policy", op.cit., p. 126 and G. Eliasson, "The Credit Market, Investment Planning and Monetary Policy - an Econometric Study of Manufacturing Industries". Industriens Utredningsinstitut, (Stockholm 1968).

In this table (Table 5.2) the distribution of the firms in each country is shown according to the effect of changes in bank credit on the ratio of receivables to value of production. The pattern of behavior, according to the figures in the table, is similar in each country. Of those firms which experienced a rise in bank credit relative to output, just over half increased their customer credit. Similarly, a diminished bank credit/value of production ratio led to a decline in customer credit relative to sales in only 50 to 60 percent of the firms.

The table is intended to show whether or not a relationship exists between the factors and whether this relationship is positive or negative. This method does not measure the strength of the relationship. Alternative statistical techniques, such as regression analysis, which could have done so, were found to be unsuitable owing to the multicollinearity between bank credit and the value of production. Attempts to use statistical methods to overcome this problem, did not produce viable results.

It should be borne in mind that Table 5.2 presents results for a period of five years in each country. Although it may be presumed that the overall economic conditions in each year were not always similar, nevertheless, the data show that the effect of changes in bank credit on the investment in receivables is the same throughout the period surveyed.⁹⁾

⁹ It must be stressed that the results shown in Table 5.2 deal with changes in customer credit relative to sales and not with changes in customer per se. The changes in the latter have been found to be substantially affected by changes in bank credit. See M. Tamari, "The Relationship between Industrial Trade and Bank Credit in Israel". Economic Review No. 36 (Jerusalem, December 1970) Bank of Israel, pp. 30-33.

TABLE 5.2

DISTRIBUTION OF FIRMS ACCORDING TO CHANGES
IN THE BANK CREDIT/VALUE OF PRODUCTION RATIO AND
CHANGES IN THE RECEIVABLES/VALUE OF PRODUCTION RATIO
IN THE U.K., JAPAN AND ISRAEL
(percentages)

		Bank Credit/Value of production ratio			
		Increases		Decreases	
		Receivables/Value of production ratio		Receivables/Value of production ratio	
		Increases	Decreases	Increases	Decreases
<u>U.K.</u>					
	1973	53	47	45	55
	1972	55	45	43	57
	1971	51	49	42	58
	1970	52	48	45	55
	1969	54	46	44	56
<u>Japan</u>					
	1973	56	44	42	58
	1972	54	46	45	55
	1971	58	42	43	57
	1970	55	45	45	55
	1969	56	44	42	58
<u>Israel</u>					
	1972	54	46	41	59
	1971	51	49	44	56
	1970	55	45	42	58
	1969	52	48	45	55
	1968	51	49	43	57

Source: U.K. - Moodys Service Inc.; Japan - Ministry of Trade and Industry; Israel - Bank of Israel Corporate Finance Project.

The Chi square test gives the following values: for U.K. $x^2 = 1.64$, for Japan $x^2 = 3.42$ and for Israel $x^2 = 2.01$; in all cases we accept the null hypothesis (that the two sets of variables are independent of each other) with a level of significance of .05.

Because data on individual firms in the U.S. regarding changes in bank credit were not available, aggregate data was used regarding industrial sectors, as explained in the introduction to this chapter. Although the results of this analysis are not included in Table 5.2, the industrial sectors' behavior is similar to the findings for the individual firm in the other countries. In the period 1968-1971, sectors in which bank credit rose relative to production in a particular year were almost equally divided between those which increased their investment in trade credit and those which did not. Similarly, in those sectors where bank credit declined relative to production, only half reduced their outstanding receivables.¹⁰⁾

It thus seems that after financing their primary function, manufacturing - many firms do not use their excess bank credit to increase their investment in financing the operations of their customers.

It might be assumed that the obverse would be the case, since higher rates of interest usually are earned from such investments. The willingness of the creditor firm to extend such credit is however only one aspect of the transaction, the debtor firm must also be willing to accept an indebtedness over and above the normal terms of credit prevalent in the economic branch in which it operates. The debtor firm will only do so if the cost of such credit is lower than that of alternative sources of funds. Since there are obviously firms for which this is not the case, creditors are not always able to increase their investment in receivables even should they so desire.

¹⁰⁾ The assumption is made that the changes in the bank credit/value of production ratios of the industrial sectors represent changes in supply of bank credit as explained in section one of this chapter.

Furthermore, the extension of trade credit is primarily a function of increased sales so that even at zero rates of interest, any increase is dependent on the borrower's ability or willingness to purchase goods from the supplier. Such purchases are more dependent on the customer's expectations regarding his future sales as well as costs of storage, spoilage, etc. than on the availability of trade credit.

At the same time it has been shown that the granting of trade credit is not a function of the firm's own financial structure but primarily of such non-financial factors as the terms of trade prevalent in the specific industrial sector in which the firm operates.¹¹⁾ For many firms these financial factors militate against increasing investments in receivables over and above the customary rate even if the funds for this investment are available.

Table 5.2 shows also that a decrease in excess bank funds does not result in the firm reducing its investment in customer credit. Whereas the individual firm may be limited in its ability to differ radically from the accepted terms of trade, it might be thought that the firm is free to cut back the credit given in excess of that required by its sales, in view of the reduced credit received from its own bankers. Since, however, a reduction in trade credit is tantamount to a rise in price, the firm may be either reluctant or unable to diminish its competitiveness in this respect.

¹¹ M. Tamari, "The Nature of Trade Credit". Oxford Economic Papers, Vol. 22, No. 3, November 1970 (Oxford University Press, 1970), pp. 411-415.

Furthermore, one of the major reasons for the use of trade credit by the recipients despite its relatively higher cost is, that unlike bank credit, the debtor may often withhold payment and thus prolong the period of credit at no extra cost:

This would explain the large number of firms in which a decrease in bank credit does not lead to reduced customer credit.

As the credit granted to its customers is very much of a technical matter it would seem from the above that irrespective of whether the firm is subject to a decrease in bank funds or to an increase, the individual firm is often unable in this respect to pursue an investment policy in accordance with its own financial structure or needs.¹²⁾

Of greater importance, however, is that despite the substantial differences in the socio-economic framework of the countries surveyed, the reaction of the firms to changes in their bank credit is fairly similar.

2. Inventory

The decision of a firm to invest part of its funds in raw materials is usually considered to be a function of three factors:

a) The technological requirements of its production line: certain stock levels must be maintained to enable the firm to operate without disruption.

b) The savings earned by bulk or opportunity buying in excess of current needs as well as management's anticipation of future trends in prices.

¹²M. Tamari, "The Nature of Trade Credit", loc.cit.

c) The cost of holding excess inventory, comprising the costs of the capital employed, storage, handling, and losses due to obsolescence, pilfering or damage.

Because changes in the investment in inventory are related in this chapter to changes in the firm's output, only factors b and c apply. It is not possible in this study to evaluate the costs of capital, but it is suggested that the bank credit of the firm relative to its production does represent a source of funds which is available for financing inventory investment.

The following table shows the distribution of the firms according to changes in bank credit and the investment in the firm in inventory of raw materials. In each country and for each year for which data are available, the firms are divided into two groups; those in which bank credit relative to value of production rose and those in which this ratio declined during that year. The former firms are considered, as explained in the introduction to this chapter, to have received an excess of bank credit, over and above the normal needs of their primary activity as reflected in the value of their production. The latter group is seen as representing those firms which suffered a shortage in the supply of bank credit relative to their technical needs. Within each group of firms, a further distinction is made between those firms which increased investment in inventory of raw materials and those firms in which this investment was curtailed. The distribution of the firms according to the changes in these two ratios, namely bank credit/value of production and inventory/value of production, will serve to illustrate the connection between them.

This distribution will only show whether or not a relationship exists between them and whether this relationship is negative or positive. It does not measure the strength of the relationship. Alternative statistical techniques such as regression analysis which could have done so, were found to be unsuitable owing to the multi collinearity between the bank credit and the value of production. Attempts to use statistical methods to overcome this problem, did not produce viable results.

In the countries concerned the overwhelming majority of the firms in which bank credit relative to output increased in any given year also increased their holding of raw materials over and above that required by the normal course of production. Similarly, a contraction in bank credit is accompanied by a decrease in such inventory.

The following table shows that there exists a definitive positive relationship between the changes in the firm's excess bank credit and its investment in inventory.

Table 5.3 shows that this pattern is not restricted to any particular year. In each country data for a period of five years are presented. Despite the differences in the overall economic conditions in the particular economy during this period, the table shows that the firm's investment policy regarding inventory is related to changes in bank credit as described above. Although the percentage of firms in which an increase in inventory occurs, may change from year to year, nevertheless, over 70 percent of these firms in which the bank credit/value of production ratio rises reported an increase in the inventory/value of production ratio, a

similar proportion of those firms suffering a contraction in bank credit, reduced their investment in inventory.

TABLE 5.3
DISTRIBUTION OF FIRMS ACCORDING TO CHANGES
IN BANK CREDIT/VALUE OF PRODUCTION RATIO AND CHANGES IN
INVENTORY/VALUE OF PRODUCTION RATIO IN THE U.K., JAPAN
AND ISRAEL
(percentages)

	Bank credit/value of production ratio			
	Increases		Decreases	
	Inventory/Value of production ratio		Inventory/ Value of production ratio	
	Increases	Decreases	Increases	Decreases
<u>U.K.</u>				
1973	77	23	18	82
1972	75	25	27	73
1971	81	19	22	78
1970	77	23	20	80
1969	78	22	24	76
<u>Japan</u>				
1973	73	27	22	78
1972	75	25	21	79
1971	74	26	23	77
1970	78	22	23	77
1969	78	22	20	80
<u>Israel</u>				
1972	74	26	19	81
1971	76	24	26	74
1970	80	20	25	75
1969	76	24	23	77
1968	78	22	24	76

Source: U.K. - Moodys Service Inc. Japan- Ministry of Trade and Industry; Israel - Bank of Israel Company Finance Project.

The Chi square test gives the following values:
for U.K. $x^2 = 62.72$, for Japan $x^2 = 58.34$ and for Israel
 $x^2 = 58.32$; in all cases we reject the null hypothesis
(that the two sets of variables are independent of each
other) with significance level of .001.

The pattern of behavior, shown in Table 5.3 regarding
the individual firms in the U.K., Japan and Israel is also
reflected in the data regarding industrial sectors in the
U.S. In the period 1968-1971 approximately 75 percent of
the industrial sectors with greater bank credit relative
to their production increased their "non-technical" inven-
tories of raw materials. The same proportion of sectors
for which bank credit declined reduced their investments
in inventory.

Certain studies,¹³⁾ however, do not show that in-
vestment in inventory responds to changes in monetary policy,
but this finding may be due to the choice of total inventory
including finished goods and work in progress as well as the
stock of raw materials. The first two types of inventory
as a measure of inventory investment, are not controlled
solely by the firm, but are to a large extent dependent on
its ability to market its goods. These sales would seem to
be a far more dominant factor in determining changes in to-
tal inventory than would be the relative availability of
bank credit or the effect of easy or tight money policies.

Investment in raw material inventory seems to re-
spond to changes in the bank funds available to the firm,

¹³G. Whittington, The Prediction of Profitability and other
studies of company behavior (Cambridge University Press,
1971) pp. 171-172.

for the following factors:

1) Investment in inventory is primarily an investment of the financial asset type; it is not directly linked to the main function of the manufacturing firm. As a result, the firm will tend to use only its excess funds in such assets. Any increase or decrease in these excess funds will thus radically affect the firms investing in such inventory.

2) The nature of the asset makes it suitable for use as collateral in obtaining bank credit, especially in periods of rising prices. Furthermore, the extension of documentary credits by the banks is a normal method of financing the purchase of raw materials.

Despite the differences in the economic framework within which the firms in the four countries operate, there appears to be a common pattern of behavior regarding the effect of bank credit on investment in raw materials.

3. Fixed assets

These assets represent the investment of the firm in land, plant and machinery. It would have been preferable to separate the land and plant from the machinery, since the latter are more closely connected to the manufacturing process, but the data do not permit us to do so.

As in the case of the other two types of investment considered till now, a table was constructed showing the distribution of the firms in each country, according to changes in bank credit and changes in investment. Two groups of firms, those reporting a decline in the bank credit/value of production ratio and those in which this ratio increased, were further divided according to the

decline or increase in their fixed assets/value of production ratios. The following table (Table) 5.4 shows the distribution of the firms in each of the three countries over a period of five years, according to the changes in these two ratios and serves to illustrate the effect of changes in bank credit on the investment policy of the firm regarding this type of asset.

The purpose of this analysis is to discover whether or not a relationship exists between the two factors and whether or not this relationship is negative or positive. Alternative statistical techniques such as regression analysis which could measure the strength of the relationship were found to be unsuitable owing to the multi-collinearity between bank credit and the value of production. Attempts to use statistical methods to overcome this, did not produce viable results.

Table 5.4 shows that the relationship between changes in bank credit and the investment in fixed assets is not symmetrical.

On the one hand, the increase in bank credit does not seem to be strongly related to the investment policy of the firm. In each country, those firms which increased their bank credit/value of output ratios, are almost evenly divided between those enlarging their fixed assets/value of production ratios and those for which a decline is recorded. It is true that in some years during the five-year period covered by the data, the percentage of firms increasing their investments in fixed assets is greater in others, yet it never rises or falls much beyond 50 percent of all the firms enjoying an increase in their bank credit.

TABLE 5.4

THE DISTRIBUTION OF FIRMS ACCORDING TO
CHANGES IN BANK CREDIT/VALUE OF PRODUCTION RATIO AND
CHANGES IN ITS FIXED ASSETS/VALUE OF PRODUCTION RATIO
IN THE U.K., JAPAN, AND ISRAEL
(percentages)

	Bank credit/Value of production ratio			
	Increases		Decreases	
	Fixed assets/Value of production		Fixed assets/value of production	
	Increases	Decreases	Increases	Decreases
<u>U.K.</u>				
1973	52	48	19	81
1972	47	53	24	76
1971	54	46	21	79
1970	48	52	18	82
1969	51	49	23	77
<u>Japan</u>				
1973	51	49	25	75
1972	55	45	23	77
1971	48	52	18	82
1970	49	51	28	72
1969	52	48	21	79
<u>Israel</u>				
1972	46	54	18	82
1971	51	49	21	79
1970	48	52	25	75
1969	52	48	22	78
1968	54	46	22	78

Source: Moodys Service Inc.; Japan - Ministry of Trade and Industry; Israel - Bank of Israel Corporate Finance Project.

The Chi square test gives the following values: for U.K. $x^2 = 18.5$, for Japan $x^2 = 16.8$, and for Israel $x^2 = 17.3$; in all cases we reject the null hypothesis (that the two sets of variables are independent of each other) with a level of significance of .001.

On the other hand, the relationship between a reduction in bank credit and decreased investment seems to be a strong one. Throughout the five-year period surveyed, almost 75 percent of the firms in each country, reduced their fixed assets/value of production ratio when their bank credit/value of production ratios declined.

Data concerning the U.S. industrial sectors, not included in the table as explained in the introduction, show a similar pattern. Between 49-54 percent of the sectors in which bank credit increased in the period 1968-1971, raised their investments in fixed assets whilst the investments in the other sectors declined. In those sectors which showed a decline in bank credit, over 75 percent registered lower investment in fixed assets.

These results seem to indicate that an increase in bank credit is only a marginal factor in the firm's decision to expand its investment. Increased investments in plant and machinery have to be carefully coordinated with the existing facilities of the firm so as to prevent disruptions in the production line; they usually involve, moreover, substantial outlays of funds. Because such investments require relatively longer and more careful planning, than do other types of investments, to finance them, the firm will tend to rely more on long term funds such as its depreciation reserves, or, the issue of stock or debentures, etc.

The short term bank credit received would seem, nevertheless, to play an important role in the interim-financing of these investments. Documentary credits for machinery, pre-installation expenses, etc. which have to be paid before the equipment is installed would seem to come from this source of funds.

Reduced bank credit will therefore result in curtailed investments in the short run, since to raise additional long term funds requires a relatively long period of time.

As for the other types of investment discussed above, it is important to note that the pattern of behavior is similar in all the countries studied. In other words, the effects of changes in bank credit on the firm's investment policy are the same irrespective of the socio-economic conditions of the particular economy and of the nature of the banking system in that country.

IV Substitution of alternative sources of finance

It has been argued that is the less credit worthy firms that suffer from a reduction in borrowing facilities during periods of tight money. These firms tend, according to this theory, to bring pressure on financially sound non-bank firms to transfer to them part of the funds. If this argument is valid then such substitution decreases the effectiveness of the monetary policy of the central bank.¹⁴⁾

Most of the empirical studies related to this problem focus on the possibility of compensating for lower bank credit. Some studies have dealt only with net trade credit (i.e. the difference between credit received from suppliers and that granted to customers).¹⁵⁾ When dealing with data

¹⁴R.G. Lipsey and F.P.R. Brechling, "Trade Credit and Monetary Policy", Economic Journal, Vol. 73, No. 292, (London: Royal Economic Society, Dec. 1963), pp. 618-641.

¹⁵G. Whittington, op.cit., pp. 151-172.

relating to firms in a single sector, however, these two types of credit should be analyzed separately for the following reasons:

(a) The concept of net trade credit is based on an assumption of a closed economy: Credit extended is recorded by one firm as funds granted to customers and registered by the recipient firm as credit from trade suppliers. This assumption, however, is not valid neither theoretically nor empirically. Part of a firm's receivables are extended to firms overseas, just as part of the trade credit is received from foreign suppliers. Furthermore, unless one is able to obtain complete financial data on all sectors of the economy, it is not possible to ascertain fully the changes in net trade credit.

(b) It has been shown that some of the factors inducing a company to seek credit from suppliers differ from those influencing the decision to provide credit to customers.¹⁶⁾ In a sample of 300 Israeli firms, the coefficient of correlation between supplier credit and a company's financial variables¹⁷⁾ was 0.56, whereas that for customers' credit was only 0.16. On the other hand, more of the inter-firm differences in the volume of customer credit granted are explained by general factors, such as the economic sector in which the firm operates, the degree of concentration in the branch, etc.

¹⁶ M. Tamari, "The Cost and Use of Trade Credit" International Management Review, Vol. 13, No. 1, 1973, pp.93-102.

¹⁷ These are equity capital and reserves as a percentage of total liabilities; outstanding short-term bank credit as a percentage of turnover; interest as a percentage of turnover; the current ratio (current assets/current liabilities), which indicates a company's liquidity; profits before tax as a percentage of turnover; and interest as a percentage of profit before tax.

(c) No identity was found between the amount of credit a firm receives from its suppliers and that which it grants to its customers. In some concerns, the weight of supplier credit is relatively large and that of customer credit small and vice versa. The correlation between the weights of these two variables in the same sample shows that there is no significant connection between them (the correlation coefficient was only 0.14).

For these reasons use has been made in this study of trade credit received by the firm as only one of different possible sources of satisfying the demand for substitute financing. The influence of changes in bank credit on the supply of trade credit, i.e. investment in receivables of the manufacturing firm has already been analyzed in section three of this chapter.

Preliminary results obtained in this study show that while many firms tend to increase their borrowing from trade creditors when bank credit declines (all relative to value of production) the substitution effect is neither clear cut nor powerful.

In none of the years surveyed did the percentage of firms in which the trade credit/value of production rose exceed more than 52 percent of the firms whose bank credit declined. Furthermore, the percentage of firms able to compensate themselves by additional credit from this source, varies from year to year.

In 1970, for example, only 40 percent of the Israeli companies who suffered a "shortage" of bank credit were able to increase their debt to their trade suppliers. In 1972,

however, 52 percent of the firms whose bank credit/value of production ratio declined were able to substitute trade credit for the lack of bank credit.

Data regarding trade credit received by the firms in the U.K. sample were not available for more than two years so that it was not possible to analyze the trend in the relationship between the two types of credit. In 1973, however, only 42 percent of the companies in the sample whose bank credit declined were able to increase their credit from suppliers.

Aggregate data regarding industrial sectors in the U.S. show that their behavior is similar to the findings for the industrial firm in the other countries. In the period 1968-1971, in those sectors in which bank credit declined relative to production, only between 36 and 43 percent substituted trade credit for the short fall in bank credit.

The primary reason for this lack of a more definite relationship of substitution between the two types of credit received by the firm would seem to be the fact that additional trade credit can only be received through the purchase of additional raw material. This limits the firm's ability to substitute this credit for bank credit without increasing its output or its inventory. It is true that trade credit can be increased by the withholding of payment and thus increasing the period for which the credit is available. In practice, however, the ability to withhold payment is usually linked to the continued purchase of raw material. An increase in such purchases would seem

to be more closely related to management expectations regarding future sales and the cost of holding inventories etc. rather than the possibility of receiving more trade credit.

An analysis of the other empirical studies in the U.K. and the U.S. shows a similar lack of clarity. Some authors have found that gross trade credit received is used by manufacturing companies to compensate for the higher cost of bank credit.¹⁸⁾ Other studies show that there is no significant connection between general monetary conditions and trade credit received.¹⁹⁾

Even those studies using net trade credit (trade credit granted minus trade credit received) as an indicator of how bank credit, do not present conclusive results; some indicate that short term trade credit is able to frustrate monetary policy²⁰⁾ and other that this is not the case.²¹⁾

Since trade credit is only one of the components of the funds available to the firm, it may be argued that using all the sources would show a greater substitution effect than that mentioned above. To check this possibility a further analysis was made of the effect of changes in bank credit on changes in the total non-bank funds available to the

¹⁸M.I. Nadiri, "The Determinants of Trade Credit in the U.S. Total Manufacturing Sector", Econometrica, Vol. 37, July 1969, pp. 408;421.

¹⁹J.B. Coates, op.cit. p. 126.

²⁰F.R. Brechling and R.G. Lipsey, op.cit. p. 641.

²¹G. Whittington, op.cit., p. 171 and M.I. Nadiri, loc.cit.

firm. These non-bank sources are defined as all the funds available to the firm, long- or short-term funds, those generated internally and those raised from external sources. Naturally bank credit is not included; but these sources do comprise funds from the sale of equity or debentures, long term bank or other loans, credit from suppliers, other notes payable, undistributed profits, and depreciation reserves.

The hypothesis to be tested is whether those firms for which bank credit declines in relation to the value of production, are able to raise funds from alternative sources and vice versa.

The ratio of total non-bank funds, as defined above, to the value of production in the current year was compared with the corresponding ratio for the previous year. If the hypothesis holds true then those firms for which the bank credit/value of production ratio decreases should show an increase in the total funds/value of production ratio. In other words a "scarcity" of bank credit relative to the production process of the firm will lead it to find other funds. For those firms operating with an excess of bank credit, i.e. an increase in the bank credit/value of production ratio, the recourse to alternate funds should decline. To the extent that the data do not show this pattern, it may be assumed that there is either no substitution effect or only a limited one.

The following table shows the distribution of the firms in the three countries according to the changes in their non-bank funds/value of production ratios within two

sub-groups, viz. those in which bank credit/value of production ratios increased and those in which this ratio declined in the current year. This distribution will show whether or not a relationship exists between the two factors and whether the relationship is negative or positive. Alternative statistical techniques, such as regression analysis, which are able to measure the strength of the relationship were found to be unsuitable owing to the multi-collinearity between bank credit and the value of production. Attempts to use statistical methods to overcome this, did not produce viable results.

Table 5.5 shows that in the U.K., Japan and Israel, no apparent relationship exists between "excess" bank credit and other forms of finance after allowing for changes in the output of the firm.

The proportion of firms which increase their non-bank funds/value of production ratio, tends to be the same whether the bank credit/value of production ratio rises or falls in that particular year. In 1973, for instance, 83 percent of those firms in the U.K., whose bank credit increased relative to their value of production, also increased the funds raised by them from non-bank sources.

That year, however, 81 percent of the firms suffering a "shortage" of bank credit were also able to raise additional funds from non-bank sources.

In 1972, 56 percent of those firms enjoying an excess of bank credit reported a decline in funds raised from non-bank sources, despite the increase in their bank credit.

TABLE 5.5

DISTRIBUTION OF FIRMS IN THE U.K.,

JAPAN, AND ISRAEL ACCORDING TO CHANGES IN THEIR
BANK CREDIT/VALUE OF PRODUCTION RATIO AND ACCORDING
TO CHANGES IN THEIR TOTAL NON-BANK FUNDS/VALUE OF
PRODUCTION RATIO
(percentages)

	Bank credit/value of production ratio			
	Increases		Decreases	
	Non bank funds/value of production ratio		Non-bank funds/value of production ratio	
	Increases	Decreases	Increases	Decreases
<u>U.K.</u>				
1973	83	17	81	19
1972	44	56	41	59
1971	84	16	85	15
1970	80	20	82	18
1969	46	54	48	52
<u>Japan</u>				
1973	80	20	83	17
1972	84	16	81	19
1971	71	29	75	25
1970	82	18	81	19
1969	68	32	67	33
<u>Israel</u>				
1972	79	21	82	18
1971	84	16	80	20
1970	65	35	69	31
1969	62	38	61	39
1968	83	17	84	16

Source: U.K. Moodys Services Inc.; Japan - Maursen Inc.;
Israel-Bank of Israel Corporate Finance Project.

The Chi square test gives the following values: for the U.K. $x^2 = .42$, for Japan $x^2 = 0.0$ and for Israel $x^2 = 0.0$; in all cases we accept the null hypothesis(that the two sets of variables are independent of each other) with c level of significance of .05.

Similarly, 59 percent of the firms whose bank credit decreased relative to their value of production in that year, also contracted the use of non-bank funds.

This lack of relationship between the growth of non-bank funds and the changes in bank credit/value of production ratios is shown in Table 5.5 in the distribution of the firms in Japan and Israel.

In the U.S., the data regarding industrial sectors reflects a similar pattern of behavior.

Although some firms do seem to expand or contract their non-bank credit according to changes in their bank credit, suggesting a degree of substitution, it seems that in the majority of firms the general overall factors affecting the funds available to the firm seem to be far more important.

These results show that regardless of whether only short-term trade credit is considered as a substitute for bank credit, or whether total non-bank funds are considered, there seems to be only a marginal relationship between the two and the changes in bank credit. Furthermore, the same behavior is found in the four countries considered, despite the many social and economic differences which exist between them.

This lack of substitution seems to be the primary reason that bank credit is so closely linked to inventory and for the close relationship between a contraction in the supply of bank credit and investment in fixed assets, as shown previously.

As the firms are either unable or unwilling to increase their non-bank funds in order to compensate for the decrease in bank credit and vice versa, their investment policy regarding these two assets is closely linked to the changes in bank credit.

S U M M A R Y

In the four countries reviewed, the banking system operates under varying degrees of competition and central bank control. In Japan and Israel government and central bank intervention is directly linked to the allocation of bank credit to the individual firm as a means of implementing official economic policy. Banks in the U.K. and the U.S., on the other hand, are relatively free to construct loan portfolios, within the general framework of monetary policy and central bank directives. These differences between the countries in the nature and degree of government intervention, exist, over and above the differences in the social, political and economic framework within which the firms operate in these countries, as explained in detail in chapter two.

It would have been reasonable therefore, to expect substantial differences in the effect of changes in bank credit on the asset structure of the firm and on its ability to raise funds from alternative sources. Two examples may suffice to illustrate the possible influence of the international differences in the banking system on the behavior of the firm.

a. In Israel the subsidization of commercial bank credit granted to manufacturing corporations is linked to

the import of raw materials for re-export as finished goods, and to the granting of credit to foreign customers. It may be expected, therefore, that the effect of changes in bank credit, or investment in inventory and receivables, would be stronger than in those countries where such linkage does not exist.

b. Commercial banks in Japan have been previously described as being the centres of concentric circles of firms; those closest to the bank being non-financial firms with a common or inter-locking directorship. The fact that these firms enjoy a special relationship with a commercial bank may be expected to affect their investment policy.

The analysis of the data, however, reveals a common pattern of behavior regarding the influence of bank credit on the investment policy of the firm, in the four countries reviewed. Furthermore, the findings summarized below apply to all the countries, even though the proportion of bank credit in the financial structure of the firms varies widely from country to country.

The effects of changes in bank credit on the investment policy of the firm may be summarized as follows.

Investment in inventory of raw materials is closely and positively related to increases and decreases in bank credit.

The investments in the fixed assets of the firm do not react symmetrically to fluctuations in bank credit. Whereas an increase in bank credit does not seem to affect this type of investment, a decline in bank credit is accompanied in the majority of the firms by a decline in the growth of these assets.

Bank credit does not seem to be a major factor in the decision of the firm to expand or contract the credit granted to its trade customers.

The common pattern found in the four countries seems to result from the inability of the firms in all these countries to use other forms of finance, whether long or short term, as a substitute for bank credit.

It may not be possible to extrapolate these findings regarding bank credit in the individual firm to explain the effects of monetary policy in the economy as a whole. On the basis of the empirical results of this study it may be argued, however, that monetary policy will affect mainly the investment policy of the firm with respect to fixed assets and the inventory of raw materials.

FINANCIAL RATIOS AS A MEANS OF FORECASTING BANKRUPTCY

I. Introduction

As has been shown in preceding chapters, the financial structure of the manufacturing firm varies from country to country, as does the financial framework within which it operates. In any economy, however, those responsible for granting credit in banks, industrial, and commercial firms have to have some way of determining the risk represented by the financial position of their clients. At the same time, shareholders, potential investors, and management also need criteria for evaluating profitability, risk, and methods of long-term finance for their investments or enterprises.

One system often recommended for examining a firm's financial position, is ratio analysis: the comparison of various data in the balance sheet and profit and loss statement. The purpose of this chapter is to show that financial ratio analysis is a viable tool for measuring risk in the countries surveyed. It will be demonstrated, moreover, that despite the differences in the economies studied, -regarding the reliability of corporate financial statements, the sophistication of financial management, and public attitudes towards the disclosure of business data - there exists a common set of financial ratios which can be used as an analytical tool.

Theoretically, a great many ratios can be calculated from a firm's financial statements, but in fact the number is limited by the data available and the objectives

of the analysis. For the purpose of this study, the major objective of such analysis is to reduce the risk to which creditors and shareholders are exposed. Such risk has been defined in this study as the likelihood of a firm going bankrupt or defaulting on its debts, since bankruptcy or default entails the greatest cost to creditors and shareholders alike.

Various methods have been suggested for measuring the relationship between general overall economic indicators, business failure, and the bankruptcy rate.¹⁾ These models apply, however, only to those countries in which the relevant economic indicators enjoy common characteristics. This chapter deals only with those methods for using ratio analysis to forecast bankruptcy which have been found to apply to the three countries concerned, despite the economic differences between them.

Detailed data on individual firms were available to the author only for the U.K. and Israel; empirical results obtained in various American studies had to be used for the U.S. The source of the data on the Israeli corporations, was, as mentioned in previous chapters, the corporate returns submitted to the income tax authorities, including the returns of large companies which failed. Failed firms were defined either as those against which bankruptcy proceedings were filed or those which were granted a moratorium on their long-term debts or defaulted on their interest payments. In addition to the 1971-1973 data on

¹ V. Zarnowitz and L. Lerner "Cyclical Changes in Business Failures and Corporate Profits", Chapter 12 in Business Cycle Indicators, Vol. 1, G. Moore, ed. (New York: NBER, 1961). The influence of aggregate economic factors on business failures is examined in E.I. Altman, Corporate Bankruptcy in America (Heath Lexington Books; Mass. 1971), Chapter 2.

75 quoted companies in the U.K. obtained from Moody's Information Services (as explained in Chapter 1), financial ratios regarding ten manufacturing companies were obtained from one of the largest London clearing banks. These ten companies had either been declared bankrupt or had been granted consolidation bank loans; economically they were bankrupt, even if legally they were not. The data were drawn from the companies' accounts three years prior to their bankruptcy in 1973-1974. In all three countries only manufacturing corporations were included unless otherwise stated in the text.

Section II of this chapter describes the financial ratios of bankrupt companies in the U.K., U.S., and Israel. Section III presents an index based on financial ratios which, it is suggested, can be used to foretell the probability of financial difficulties some three to five years prior to the actual bankruptcy. In Section IV the use of discriminate and regression analysis in the U.S. and Israel is examined in order to determine which ratios are most indicative of future bankruptcy and how they can be applied to the U.K. firms. Section V includes a summary and conclusion.

II. Financial Ratios of Bankrupt Companies

Of the financial ratios that can be calculated for an individual firm, those which serve as indicators of financial weakness are described below and the ratios for failed and continuing firms are compared. In the three countries, the ratios of the failing firms are lower than those found for the rest of the population. In general

their ratios decline, moreover, several years prior to business failure.

1. Ability to pay

The capacity of a firm to pay its expenses and debts as they mature is generally measured by the current ratio (current assets divided by current liabilities), the quick ratio (current assets minus inventory relative to current liabilities), the turnover of inventory, and the turnover of receivables.

It is often suggested in academic and professional circles that the quick ratio is preferable to the current ratio, since the effect of inventory has been negated. According to this view, inventory is the least liquid of the current assets, but for several reasons it may not be:

a. Just as there is a long term element in investment in inventory, so too a firm usually operates with a minimum fixed level of investment in customer credit.

b. Customers' open accounts or notes receivable may often prove to be more difficult to realize than investments in inventory, such as an inventory of raw materials, for example. In periods of inflation, inventory is often a highly liquid asset.

c. It is difficult to suggest a level of the quick ratio which can serve as an absolute guide to insolvency or as a benchmark against which various firms can be measured. On the other hand, firms in any industrial group or in any country that have a current ratio of less than 1:1 are in effect insolvent; thus this ratio does

serve as a convenient dividing line between firms. For these reasons the current ratio was chosen in preference to other ratios (see Table 6.1).

TABLE 6.1

DISTRIBUTION OF BANKRUPT AND CONTINUING MANUFACTURING COMPANIES IN U.K., U.S., AND ISRAEL, ACCORDING TO THEIR CURRENT RATIO
(Percentages)

Current Ratio	U.K. (1973)		Israel (1968)		U.S. (1940)	
	Bankrupt	Cont.	Bankrupt	Cont.	Bankrupt	Cont.
Up to .99	30	1	69	27	64]	23]
1.0 to 1.5	60	30	23	34		
1.6-2.00	10	33	3	16	36]	77]
2.1+	—	36	5	23	—	—
	100%	100%	100%	100%	100%	100%

Source: U.S., C.L. Merwin, Financing Small Corporations, pp. 90-106. N.B.E.R. (New York, 1942).
U.K. and Israel see introduction of this chapter.

As demonstrated by the data in Table 6.1 bankrupt firms in these countries tend to have lower current ratios than do continuing firms. In the U.K., almost all the bankrupt firms (90 percent of them) had a current ratio of less than 1:1.5 as compared to less than a third of the other firms. The Israeli data reveal a similar pattern, except that the difference between the bankrupt firms and the others is to be found mainly in the range of ratios below unity, because the liquidity ratios of all Israeli corporations are generally lower, as explained in Chapter 3 (see pages 83-85).

In the period 1964-1968 there was a marked improvement in the overall liquidity of Israeli manufacturing companies. Of the 34 Israeli bankruptcies investigated, however, 19 of the firms showed a decrease in their current ratio in the period preceding bankruptcy and 12 showed fluctuations which blurred any clear-cut trend; only three experienced a rise.²⁾ These fluctuations, however, have little significance in any event, because the current ratio was already very low in most cases.

In addition to the current ratio, other indicators of the firm's ability to repay loans and other forms of credit were calculated for the Israeli corporations. A similar pattern was revealed: lower ratios for the bankrupt firms. One such ratio is that of the turnover of inventory ($\frac{\text{value of production}}{\text{inventory}}$). The data for the other two countries does not permit the analysis of other ratios.

Of the U.K. bankrupt firms, over 50 percent had a current ratio lower than that of 75 percent of the companies in their industrial group. The data do not permit us to analyze the trend of these ratios for U.K. firms in the period preceding bankruptcy.

Merwin's study showed, however, that the current ratio of American discontinued firms declined three to five years prior to bankruptcy.³⁾

² M. Tamari, "Financing Long-Term Investments in Industrial Companies in Israel 1950-1970", Quarterly Banking Review, The Association of Banks in Israel, Tel Aviv, December 1973, Vol. XIII, pp. 58-71. (Hebrew)

³ C. L. Merwin, Financing Small Corporations, (New York: N.B.E.R., 1942), p. 100.

2. Long-term financing

One indicator of a firm's liquidity position is the ratio of long-term liabilities to long-term investment. Actually this measure is simply the inverse of the current ratio and they can therefore be used interchangeably. Studies of Israeli industrial companies show that long-term investments are generally financed from long-term sources. After 1968 the growth rise in equity alone was sufficient to finance the growth in long-term investments, so that long-term loan capital could be used to improve the liquidity of the manufacturing corporations. Despite this high general level of liquidity in those firms that did go bankrupt, long-term financing was insufficient to cover the long-term investments. These bankruptcies demonstrate the riskiness of those firms which finance long-term investments with short-term capital - a situation reflected by a low current ratio.

In addition to the question of liquidity, the degree of gearing used by the firm also influences the risk undertaken by shareholders and lenders. In this chapter, only one of the possible financial ratios reflecting the level of gearing has been examined: equity plus reserves as a percentage of total funds. The analysis of the data shows that prior to bankruptcy the soon-to-be bankrupt companies operate with a higher degree of gearing than in the continuing firms in the three countries.

Table 6.2 does not include U.S. firms since the data available on American bankrupt firms do not permit us to calculate the ratio of equity to total funds. Instead the net worth/debt ratio was calculated, and, as shown in

the text below, the results obtained for the U.S. are in fact similar to those found for the U.K. and Israel.

TABLE 6.2

EQUITY PLUS RESERVES AS A PERCENTAGE OF TOTAL FUNDS IN BANKRUPT (2 YEARS PRIOR TO BANKRUPTCY) AND NON-BANKRUPT MANUFACTURING COMPANIES IN THE U.K. AND ISRAEL (percentages)

Equity + reserves as % of total liabilities	U. K.		Israel	
	Bankrupt	Continuing	Bankrupt	Continuing
0-25	60	3	78	27
26-50	30	3	19	31
51-75	10	8	3	40
75+	-	86	-	2
	100	100	100	100

In 60 percent of the bankrupt companies in the U.K. sample, the owners' equity was less than 25 percent of the total liabilities of the firm; only 3 percent of the continuing firms had a similar equity ratio. Whereas 86 percent of the continuing firms had equity greater than 75 percent of their total liabilities, none of the bankrupt firms were so financed.

In the Israeli sample of bankrupt firms, 78 percent had equity equal to less than 25 percent of their total liabilities, whereas only 27 percent of the continuing firms had a similar financial structure.

While 65 percent of the bankrupt firms in Merwin's sample in the U.S. had a net worth/debt ratio of less than unity, only 26 percent of the continuing firms were in a similar situation.

From Table 6.2 it may be seen that over 80 percent of the continuing firms in the U.K. operated with an equity/total funds ratio of over 0.75 whereas only 2 percent of the Israeli corporations had a similar financial structure. This fact however simply reflects the international differences in gearing as discussed in Chapter 3 of this study and does not distract in any way from the observation that in both countries continuing firms operate with more equity than do bankrupt firms even some years prior to the bankruptcy of the latter.

As the firm approaches bankruptcy the ratio of equity to total funds will usually fall. Usually this decline occurs as the accumulated losses of the firm continue to mount, but it may also result - in the case of a closely-held family firm - from the withdrawal of loans previously made to the firm by the owners.

Three years prior to their bankruptcy, 56 percent of the Israeli firms considered had equity of less than 25 percent. A year before bankruptcy, however, 78 percent of these firms had such an equity ratio. Furthermore, 91 percent of the bankrupt corporations showed a decline in their equity ratio in the period before their collapse.

The U.K. data are not suitable for any analysis of a trend over time as explained in the introduction to this study.

In the U.S. sample, used in Merwin's study, the ratio of net worth to total debt declined in the case of 70 percent of the firms.

The equity ratios of the continuing corporations, however, did not follow the same pattern in Israel and the U.S. From 1963 on, the relative proportion of equity in the long-term funds of the Israeli firms steadily increased.⁴⁾ In the U.S., the debt equity ratio remained fairly stable in the continuing corporations.⁵⁾

3. Profitability

A high profit level may sometimes enable a firm to succeed despite the stresses of a strained financial structure. The empirical evidence in most countries shows, however, that in companies which go bankrupt the weak financial position is usually linked with low profits.

Of the ten bankrupt firms in the U.K. sample, two had suffered losses in the three years preceding bankruptcy; another showed losses for two years before the failure. Of the remaining seven which had consistently shown profits, six firms reported a decline in their profits relative to turnover, and only one showed a consistent rise in profitability. In the case of the latter firm, it seems that the rise in profitability was not sufficiently large to service the costs of a weakened financial structure.

An analysis of the 34 large Israeli industrial firms which failed in 1967-1968 leads to similar conclusions. Twenty-one of the firms experienced losses for at least four of the five years prior to bankruptcy. Only four of the firms earned a profit every year.

⁴ M. Tamari, "Financing Long-Term Investments in Industrial Companies in Israel 1950-1970", loc.cit.

⁵ C. L. Merwin, op.cit., p. 94.

Of the 13 firms reporting profits in all or most of the years preceding bankruptcy, the financial accounts of nine reveal a steadily declining profit-turnover ratio; the ratios of the remaining four show no clear trend. A careful examination of the balance sheets of the 13 profit-earning companies reveals weaknesses in their financial structure - a low current ratio, a heavy burden of loan capital, and a slow turnover of inventory and receivables. Despite the relative profitability of such companies, their financial structure was so weak as to render them incapable of surviving any downturn in market or production conditions.

III. Index of Risk

Some experts in financial and banking circles, believe that it is difficult to obtain a clear picture of the risk involved in an individual company from a study of the balance sheet and the profit and loss statement, since the financial ratios may point in opposite directions. It may be worthwhile, for example, to give credit to a company with a high rate of profit despite its low current ratio, or to ignore the small share of equity capital and grant short-term credit to a firm with a rapid turnover of receivables.

Nevertheless, the lender or supplier still requires information as to the degree of risk involved. An index which comprises all the relevant financial ratios can supply this information. Such an index, of course, is unaffected by such important external factors as the business status of the borrower, government policy, etc. It does

not measure the profitability of the firm to its owners or to the economy, nor does it indicate a "good" firm - however that may be defined - but it does serve well as an indicator of risk.

In interviews conducted by the author of this study, senior officials of institutions granting credits or publishing financial ratios or analyzing business trends, were asked to chose and rank those financial ratios which their experience had shown them to be of importance in causing business failure or bankruptcy. Apart from Israeli bankers and accountants interviewed, such institutions included two major commercial banks in New York, Robert Morris Associates in Philadelphia and Dun and Bradstreet in New York (these being the major compilers and publishers of financial ratios and credit ratings in the U.S.), a leading commercial bank in London, the credit managers of three large U.S. manufacturing corporations and a major U.K. merchant bank. On the basis of a consensus of these interviews together with the results described in Section II of this chapter the following ratios are included in the suggested index and their relative weights assigned.

TABLE 6.3
INDEX OF RISK

	Points
1) Equity capital + reserves/total liabilities	25
2) Profit trend	25
3) Current ratio (current assets/current liabilities)	20
4) Value of production ^{a)} / inventory	10
5) Sales/receivables (including notes)	10
6) Value of production/working capital (current assets less current liabilities)	10
	<u>100</u>

a) Sales plus change in inventory of finished goods and goods in process.

If the component ratios are so closely interrelated that a weakness in one will be reflected as a weakness in the others, then the index will simply give a picture similar to that obtained from one of the ratios. A sample of 130 Israeli industrial firms showed, however, that of the 57 with at least one weak ratio out of the three major component ratios of the index (equity, profit trend, and current ratio), 20 had two weak ratios, and only five had three weak ratios. For only 14 of the 34 bankrupt firms in the second sample were all three of the principal financial ratios low. Thus, it is clear that an analyst cannot rely on one ratio alone to measure the degree of risk, since different ratios may lead to conflicting opinions regarding the credit standing of the firms.

Each firm in the sample is given a certain number of points for each ratio included in the index, as shown in Table 6.4.

TABLE 6.4
KEY FOR CALCULATING INDEX OF RISK

	Points
<u>1) Equity capital and reserves</u>	
Over 50 percent of total liabilities	25
41-50 percent	20
31-40 percent	15
21-30 percent	10
11-20 percent	5
Up to 10 percent	0
<u>2) Profit trend over a three year period</u>	
Profits every year and rising net profit-turnover ratio	25
Profits every year but no uniform trend in the net profit-turnover ratio	20

	Points
Profits every year but a declining trend in the profit/turnover/ratio	15
Loss during first year followed by profits	15
Loss in a year other than the first year	10
Loss in first and second years	5
Loss in all three years or in last two years	0
3) <u>Current ratio</u>	
Firms with a ratio of over 2.00	20
1.51-2.00	15
1.11-1.50	10
0.91-1.10 ^{a)}	5
Less than 0.91	0
4) <u>Value of production/inventory</u>	
Firms with a ratio which would place them in the upper quartile of the firms in the same branch and size group	10
Second quartile	6
Third quartile	3
Lowest quartile	0
5) <u>Sales/receivables</u>	
Firms with a ratio which would place them in the upper quartile of the firms in the same branch and size group	10
Second quartile	6
Third quartile	3
Lowest quartile	0
6) <u>Value of production/working capital</u>	
Firms with a ratio which would place them in the upper quartile of the firms in the same branch and size group	10
Second quartile	6
Third quartile	3
Lowest quartile	0
a) Unity of this ratio describes a firm which is exactly solvent so it is used as a benchmark between solvent and insolvent firms. In view of the difficulty of evaluating inventory and debtors, however, a range between 0.91 and 1.10 was considered to be one.	

The indices for bankrupt companies in the year prior to bankruptcy were compared with those for all companies operating in the period 1958-1960. The original test was carried out on 1960 data concerning Israeli manufacturing firms. This early period was chosen so that it would be possible to re-test the validity of the index on different firms operating a decade later under radically altered economic and social conditions. It should be stressed that the index was not built on the basis of actual data but rather on subjective and theoretical considerations which, it is suggested, would make the index more applicable to different samples of firms.

The results reveal that the index for bankrupt firms was lower than it was for all companies operating during the period 1958-1960. In 1960, seventy-five percent of the bankrupt firms had fewer than 35 points and 50 percent had fewer than 25, whereas 75 percent of the other firms had more than 46 points and 50 percent more than 63 (see Table 6.5).

Of 16 firms which ceased operations in the above period other than for some chance reason (such as the death of the owner) but were not officially declared bankrupt, only four had more than 50 points in the index.

TABLE 6.5

DISTRIBUTION OF ISRAELI MANUFACTURING COMPANIES ONE YEAR BEFORE BANKRUPTCY AND CONTINUING ISRAELI MANUFACTURING COMPANIES IN 1960 BY QUARTILES, ACCORDING TO THE INDEX OF RISK

	Bankrupt Companies	Continuing Companies
Lower quartile	13	46
Median	25	63
Upper quartile	35	76

As early as 1958, moreover, the firms that went bankrupt in 1960 had a lower index than that for other firms; 75 percent of the former had fewer than 37 points, while 75 percent of the other firms had more than 46 points. Thus the index does seem to indicate a danger of bankruptcy several years in advance.

The aforementioned preliminary investigations reveal that bankrupt firms have lower ratios or a lower index than do continuing firms. They do not prove that companies with weak ratios or a low index necessarily go bankrupt. It is therefore essential to study the probability of firms with different indices going bankrupt.

To this end a sample of 130 firms were taken from among the Israeli manufacturing companies operating in 1958, apart from government and Histadrut enterprises, and indices were calculated for each firm for 1958 and 1960. If a firm went bankrupt in 1960, it received 0. Of the 21 firms with fewer than 30 points in 1958, 52 percent went bankrupt during the period studied; of 50 firms with 30-60 points, 6 percent failed and of 59 firms with more than 60 points in 1958, only 3 percent collapsed. (See Table 6.6).

TABLE 6.6

DISTRIBUTION OF 130 ISRAELI MANUFACTURING COMPANIES
ACCORDING TO INDEX OF RISK, 1958 AND 1960
(percentages)

Index in 1958	Index in 1960			Ceased operating	Total	No. of firms
	High ^{a)}	Medium ^{b)}	Low ^{c)}			
High	76	21	-	3	100	59
Medium	32	50	12	6	100	50
Low	10	14	24	52	100	21
a) 61 or more points; b) 31-60 points; c) Fewer than 30 points.						

According to this table, firms with fewer than 30 points are more likely to go bankrupt than are those with over 60 points. Similarly, the likelihood that firms with a low index will remain in this category is greater than the probability for firms with a high index to drop to a lower category. Of the 21 firms with an index of less than 30 in 1958, only two succeeded in rising to the 60+ group, while of the companies with more than 60 points in 1958 not a single one dropped to the last group (fewer than 30 points).

The author is aware of the criticism that the index relies too heavily on subjective elements. Such alleged shortcomings, however, do not seem to detract from the usefulness of the index for the following reasons:

- 1) The use of an objective index constructed mechanically from the data of firms would be limited to the sample from which the index was drawn or to similar companies operating under the same general economic conditions. An index built independently of actual data would, a priori, be more applicable to a wide range of dissimilar firms, to those operating in other economies or operating in the same economy at a different period of time or under changed economic conditions.

- 2) That an index is subjective need not prevent its use in other countries or by analysts whose credit standards differ from those reflected in the index suggested. Such analysts would simply have to adjust the weights and the key for calculating the index according to their own preferences or experience. For instance, whereas the acceptable current ratio in Israel lies between 1.1:1 and

1.5:1, in the U.K. and U.S. it would probably lie between 2:1 and 3:1. In this case the analyst simply has to adjust accordingly the key presented in Table 6.3. It should be stressed that the index described in this study is not presented as the best possible one, but as a possible analytical tool which can be applied universally without requiring too many adjustments and alterations.

3) As shown in the following section, in order to use even the objective indices provided by discriminate or regression analysis, the analyst still has to make subjective decisions.

4) Financial ratio analysis is usually most problematic with respect to nonquoted firms, since their financial statements are not always reliable or complete. In contrast to more sophisticated and allegedly objective approaches, the knowledge that the index suggested here is a subjective one militates against its being regarded as a fool-proof analytical tool and so may prevent serious errors of judgment when analyzing such firms.

The above results show that a subjective index based on a small number of financial ratios could be used in Israel in 1960 to predict the probability of firms going bankrupt. Further analysis is required, however, in order to show whether:

(1) The index is also able to foretell bankruptcy within the same economy (Israel) but at a different period of time.

(2) The same ratios and weights are relevant in industrial sectors other than manufacturing.

(3) The Israeli index is applicable in its original form

to manufacturing companies in other economies despite the socio-economic differences between them, as described in Chapter 2.

In order to clarify the first of these questions, the index, originally tested on Israeli data for firms operating in the years 1958-1960, was retested for the period 1968-1970. In this decade the Israeli economy had undergone important changes which included the only recession in its history, a war and a radical expansion of territory and population. A representative sample of Israeli manufacturing corporations was drawn from all the manufacturing corporations operating in 1968. Each corporation was graded according to its index in 1968 and again for 1970. Failed firms were defined as those which had gone bankrupt, been given consolidation loans or had fallen in arrears in their payments of interest and principal. Such failed firms were given an index of 0 in 1970. Firms that had ceased to operate but which had not been declared bankrupt according to the above definition were excluded.

The results of this analysis show that none of those firms operating with an index of over 60 points in 1968 had gone bankrupt by 1970. Of those firms with less than 30 points in 1968, 65 percent had failed by 1970. None of those in the highest index group (over 60 points) had dropped to the lowest group (less than 30 points). In contrast to the 1958-1960 period in which only three percent of the weak firms managed to improve, in the later period 10 percent of those in the lowest group rose to the

highest one by 1970. This radical improvement in the later period reflects the low starting point in 1968 following the 1966-1967 recession.

These results would seem to indicate that the ratios chosen, and the weights ascribed to them in the original index, apply to Israeli manufacturing corporations despite changed political and economic conditions at different points of time.

To examine its suitability, the original index was also tested on firms operating in an industrial sector other than manufacturing firms. As a sector with a basically different financial structure, the hotel industry was chosen, and data were collected on 75 corporations operating hotels of 50 rooms or more. Each corporation was allocated points in accordance with the rating of its financial ratios in the suggested index. No changes were introduced to allow for inter-industry differences in methods of financing. The definition for failed firms was the same as used in the retesting described above.

The 1965 ranking of these hotel corporations showed that half of the failed firms had an index of less than 30 points. Only 19 percent of the continuing firms had a similar rating. Furthermore, whereas only 10 percent of the failed companies had a rating of over 60 points, this rating was found in 40 percent of the continuing firms.

The two groups of firms were again compared for 1967 in order to test the ability of the index to forecast the future bankruptcy of firms in the hotel industry.

TABLE 6.7

DISTRIBUTION OF 75 HOTEL CORPORATIONS ACCORDING TO
INDEX OF RISK, 1965 AND 1967
(Percentages)

Index in 1965	Index in 1967				Total
	High	Medium	Low	Failed	
High ^{a)}	82	9	-	9	100
Medium ^{b)}	27	46	9	18	100
Low ^{c)}	-	-	50	50	100

a) Over 60 points

b) Between 30 and 59 points

c) Less than 30

The above table shows that only 9 percent of the firms in the highest group (over 60 points) had failed by 1967 as compared to 50 percent of the lowest group (less than 30 points). None of those in the lowest group had risen even to the middle group (between 30-60 points). From the above it may be seen that the index originally tested on manufacturing corporations is a viable analytical tool even when constructed for companies in a different industrial sector.

The final hypothesis which remains to be tested is that the original index can be used to foretell the bankruptcy of corporations operating in the other countries included in this study. In order to test this hypothesis, an index was built on the basis of the data drawn from the U.K. bankrupt and non-bankrupt firms. The index for the bankrupt firms reflects their ratios three years prior to bankruptcy, that for the non-bankrupt ones refers to 1971.

The Israeli index was used with a slight change in the weight accorded to the equity ratio to allow for the higher average equity ratio in the U.K. (See Chapter 3). The author did not have access to the data on the individual bankrupt companies and the index was calculated by the commercial bank supplying the information.

The following table shows the results obtained by applying the index of risk to the U.K. companies.

TABLE 6.8

DISTRIBUTION OF U.K. MANUFACTURING COMPANIES IN
ACCORDANCE WITH THEIR RATING IN THE INDEX OF RISK

	Less than 30	31-60	61-100	Total
Non-bankrupt	-	2	98	100
Bankrupt	40	40	20	100

If the Israeli ceiling for testing the probability of bankruptcy - fewer than 30 points - is used, it is clear that none of the non-bankrupt firms fell into this category, while 40 percent of the bankrupt firms were already in this group three years prior to bankruptcy. It is true that 20 percent of the bankrupt firms received the highest rating, but as stressed before the index does not guarantee success in foretelling bankruptcy. Nevertheless, the probability of firms with a low rating going bankrupt is higher than for firms with a high rating. If one allows for the difference in the general level of the financial ratios in the U.K., relative to Israel, by raising the levels of the lower and upper groups to fewer than 40 points and over

70 points respectively, the percentage of the bankrupt firms declines in the upper two rating groups.

The index was tested on firms in the U.S. for this study by the credit department of one of the largest commercial banks in New York. Twenty of their clients were tested including eight of which had been declared bankrupt. The data on the failed firms were drawn from their financial statements three years prior to bankruptcy. It was not possible for the author to obtain the data on the individual firms so the bank calculated the ratios for each firm and awarded the points accordingly.

The results of this analysis show that the suggested index successfully identifies U.S. firms likely to go bankrupt even without altering the weights ascribed to each ratio. In one important respect, however, the results differed from those obtained from the Israeli data. Whereas in Israel the cut-off point for those firms with the highest probability of going bankrupt within three years was an index of 30 points, this level was not operative for the U.S. firms. Seventy-five percent of the bankrupt firms had an index higher than 30 points. On re-examining the data it was found that the most suitable cut-off point was 55 points. Eighty-seven percent of the failed firms had an index less than 55 as compared to only 20 percent of the continuing firms.

On the basis of the examination of the U.K. and U.S. firms, it appears that the original index applies to firms in countries other than Israel. In order to improve the efficiency of the index as an analytical tool, it may be necessary to alter slightly the weights which

the probability of firms going bankrupt is greatest.

Of greater importance is the fact that certain ratios indicate financial weakness in all the countries studied. A high degree of gearing, a declining or erratic profit rate, constant losses, and a high degree of illiquidity serve as warning signs a considerable period before bankruptcy in the three countries. Recent research in the U.S. also supports this observation, both for quoted companies and for small businesses.⁶⁾

IV. Regression Analysis for Forecasting Bankruptcy

It has already been explained that the ratios and the weights allocated to them in the index are arbitrary and were not calculated from any set of data. They were chosen through subjective criteria based on the experience of bankers and investors. Further research on this subject in the U.S. has provided alternative methods for using financial ratio analysis as a means of forecasting bankruptcy.

Beaver has shown that the cash flow of the firm is the best single indicator of failure.⁷⁾ In a further study, Beaver showed that the market price of common stock acts as if investors used financial ratios as an indicator of failure.⁸⁾ The use of both these indicators is limited,

⁶ R.O. Edmister "An Empirical Test of Financial Ratio Analysis for Small Business Failure Prediction:", Journal of Financial and Quantitative Analysis, Vol.VII, No.2, (March 1972), pp.1477-1493.

⁷ W.H. Beaver, "Financial Ratios as Predictors of Failure", Empirical Research in Accounting. Selected Studies (Institute of Professional Accounting, Chicago, 1967), pp. 71-111.

⁸ W.H. Beaver, "Market Prices, Financial Ratios and the Prediction of Failure". Journal of Accounting Research (Chicago, 1968), pp. 179-192.

however, either to firms quoted on a stock exchange and/or to firms that provide sufficient financial data for a reliable cash flow analysis.

Later Altman used discriminant analysis to show which combination of ratios could predict bankruptcy.⁹⁾ As Altman himself points out, however, the average credit manager or banker may not have the necessary facilities available in order to use this method on his clients. Furthermore, the cut-off point which plays an important role in his study is to a certain extent subjective. Nevertheless, Altman's work has aroused several responses in the financial literature which have led to further elaborations and improvements on his original method.¹⁰⁾

Presented here is a simpler method of analysis which takes advantage of simple regression techniques. The analysis was based on ratios calculated from the 1963/64 financial statements submitted to the Israeli income tax authorities by large Israeli manufacturing firms. This population included 34 companies which failed in 1967-68. For the purpose of this paper, failed firms were defined as firms which went bankrupt, received long term consolidation loans, or defaulted on their payments of interest and principal. A relatively early period was chosen for the Israeli firms so that the results could be re-tested on a population of firms operating in a different period of time.

⁹ E. Altman, "Financial Ratios, Discriminant Analysis and the Prediction of Bankruptcy", Journal of Finance, Vol. XXI, No.3 (September 1968), pp. 589-609.

¹⁰ C.G. Johnson, "Ratio Analysis and the Prediction of Firm Failure", Journal of Finance (Dec. 1970), pp. 1166-68, and E. Altman, Corporate Bankruptcy in America (Heath Lexington Books, Mass., 1971).

It was not possible to test the results obtained through this analysis on failed firms in the U.K. and U.S. As explained previously, the information on individual firms that went bankrupt in these countries was not made available to the author. Commercial banks calculated the ratios for these firms and supplied only the final ratings according to the index.

The analytical method described in this section, though not as sophisticated as discriminant analysis, nevertheless has several advantages because it is so simple to calculate. It is easily accessible to any business or credit manager. Furthermore, it can also be used for unquoted companies. No reference need be made to the average levels of the ratios in the branch and size group, unlike the index suggested earlier.

A. Financial Ratios

The following ratios were included in our calculations on the basis of theoretical considerations and empirical studies which have shown them to be of importance in forecasting bankruptcy.

1) Equity as a ratio of total assets - 1964

Equity was defined as share capital, undistributed profits (excluding depreciation), and loans from shareholders.

2) Profitability

In this study two indicators of the trend in profitability were used:

a) Profit status - The Israeli firms were divided into two profit groups, those declaring a loss in 1964 and

those reporting a profit. Each firm was accorded a dummy variable; those declaring a loss received 1 and all others were marked as 0.

b) Changes in profitability - Profitability was defined as profits before taxes as a percentage of equity. Those firms whose profitability in 1964 was lower than that for 1963 and 1962, or in which the declared loss was greater, were accorded a dummy variable of 1; all other firms were accorded 0.

3) Inventory of finished goods as a ratio of sales
in 1964

This ratio serves as a measure of the firm's cash flow, and thus indicates the likelihood of the firm's defaulting on its debts. Data for calculating this ratio exist for all firms, even for those which do not provide sufficient data for the accepted cash-flow analysis.

In management texts it is often suggested that sales relative to fixed assets or total assets be used for this purpose. Inflation, however, so prevalent in most economies today, weakens the reliability of any measure involving fixed assets - entered in the financial statements at their historic costs - in relation to sales listed at current prices. Although inventory is also affected by changes in price, inventory turnover is a short-run process and thus the inflationary effect on inventory is smaller than it is on fixed assets.

4) Current ratio

The current ratio is defined as current assets relative to current liabilities.

5) Interest paid and financial charges as a ratio
of profit before taxes

This ratio was chosen rather than the weighted interest rate, since normally no information is provided in the financial statements of small and medium-sized and unquoted firms on the actual rates of interest paid for different types of borrowed funds.

6) Changes in sales

It has been shown that even in the short run the financial behavior of the firm is influenced by changes in level of its annual sales, regarding profits, inventory, the amount of borrowed funds, the type of funds borrowed, etc.¹¹⁾

B. Empirical Results

A simple regression analysis between the starting of a company (whether it went bankrupt or not) and the ratios described above was carried out for all the corporations included in our survey and the following results were obtained.¹²⁾

$$Y = 0.43 + 2.204x_1 - 0.200x_2 + 0.371x_3 - 0.078x_4 + 0.204x_5 \quad R^2 = 0.481$$

(3.380) (1.164) (-1.5600) (2.378) (-1.795) (1.164)

where $Y = 1$ for firms which failed in 1967 or in 1968
 $= 0$ for firms which did not fail

¹¹ M. Tamari, "The Influence of Recession on Israel's Industrial Companies", Economic Review No.34 (Bank of Israel, 1970), pp. 21-25.

¹² The statistical techniques used to construct the univariate scale of risk were conducted by Dr. J. Parush, Professor of Statistics at Bar Illan University and are presented in Appendix A.

- 1) x_1 = profit status = 1 for firms reporting losses in 1964
= 0 for profit-earning firms in 1964
- 2) x_2 = equity relative to total assets in 1964
- 3) x_3 = profit trend = 1 for firms in which the losses increased or profit-relative-to-equity declined in 1964 in comparison with the rate for 1963 and 1962
= 0 for those in which profit-relative-to equity rose in 1964 in comparison to the rate for 1963 and 1962.
- 4) x_4 = current ratio - 1964
- 5) x_5 = inventory as a ratio of sales in 1964.

The figures in parantheses are t-values.

The variables in the above equation are presented in the order of their entrance into the analysis by the stepwise regression technique. The dominant factors indicating the probability of business failure seem to be the indicators of profitability and the proportion of funds derived from the owners' investment. That a firm suffers a loss or reports a decline in profitability increases its prospects of failure. The greater the investment of the owners in the firm, the lower are the prospects of failure, as reflected in the negative sign of the coefficient. It would seem that the small contribution made by the addition of the current ratio flows from its strong positive correlation with the weight of equity in the total sources of funds. Although in theory a high current ratio could exist in a firm operating with high leverage and a relatively high proportion of long-term loan capital, the above results seem to suggest that in practice liquidity is more usually connected with the restrained use of leverage.

None of the other ratios described in Section IV.a. proved to be significantly related to predicting the future failure of the firm.

The coefficients of the variables (exclusive of the constant) were multiplied by the actual ratios of each firm, thus giving a sum total for the individual firm. In the following table the distribution of the failed and non-failed firms according to these totals is shown. The median of the index (-0.1) was taken as the dividing line between the two groups.

TABLE 6.9

DISTRIBUTION OF FAILED AND CONTINUING MANUFACTURING COMPANIES IN 1968 ACCORDING TO THE SUM OF THE COEFFICIENTS

	Less than -0.1	Greater than -0.1
Failed	4	13
Continuing	13	4

The above table shows that four of the non-failed firms had ratios which after multiplication by the coefficients provided by the regression added up to less than -0.1 (the median). Further examination showed that one of them failed in 1970, i.e. two years after the cut-off date used to define a failed firm. Another one of these firms was a subsidiary of a commercial bank which, for reasons of its own, did not allow the firm to fail. The remaining two were granted extensive long-term loans which enabled them not only to continue to operate, but even to expand.

TABLE 6.10

DISTRIBUTION OF THE FAILED AND CONTINUING MANUFACTURING COMPANIES IN 1968 ACCORDING TO THE SUM OF THE RATIOS MULTIPLIED BY THEIR RESPECTIVE COEFFICIENTS

	Less than -0.17	From -0.17 to -0.07	-0.05- +0.09	Greater than +0.09
Failed	-	4	5	8
Non-failed	11	4	2	-

There exists a range within which no failed firms fell - i.e. less than -0.17. In other words, there is no probability that firms with ratios which after multiplication by the respective coefficients gave totals of less than -0.17, will fail in the near future. At the end of the scale, there is a range within which there were only failed firms (i.e. greater than +0.09). In between these two extremes lies an intermediate area in which both failed and non-failed firms are found. Even in this intermediate area, however, the indicators of risk are useful. The trend of increasing risk in this range is obvious. As the sum of the ratios rises, the number of failed firms increases and that of the non-failed declines.

It may be argued that the results of the regression analysis shown apply only to the population from which they were drawn. In order to test the validity of this argument a new population was drawn of 16 different firms in the period 1968-72. This population includes 8 firms which did not fail. Whereas the period on which the previous tables were based (1964-1968) included a recession and a war, the period 1968-1972 was one of continued economic growth.

The coefficients obtained from the 1964-1968 data were applied to the ratios of these 16 firms; the results are shown in the following table. The median was taken as the dividing line for the two groups.

TABLE 6.11

DISTRIBUTION OF FAILED AND NON-FAILED MANUFACTURING CORPORATIONS IN 1972 ACCORDING TO THE SUM OF THE RATIOS MULTIPLIED BY THE COEFFICIENTS IN 1968

	Less than -0.044	Greater than -0.044
Failed	2	6
Non-failed	6	2

The point of correlation in the above table is 0.5.

The results shown in the above table would seem to suggest that these coefficients may be used to indicate the probability that a firm will fail irrespective of the population chosen and irrespective of the economic conditions prevailing in the economy.

V. Summary and Conclusions

It has been argued in this study that the financial ratios of firms can provide a useful analytical tool for forecasting the financial difficulties and possible bankruptcy of firms in the three countries concerned, the U.K., the U.S., and Israel. This usefulness seems to override the differences in the socio-economic and political climate in which the firms operate.

In the three countries, firms prior to bankruptcy have financial ratios which are lower than those of non-bankrupt firms. Furthermore, these ratios tend to decline about three-five years before bankruptcy.

Numerous ratios can be calculated from the financial statements, and some different ratios for the same firm may lead to conflicting conclusions. Moreover, it is not sufficient to know that firms have a weak financial structure when they go bankrupt. It is important to be able to foretell the likelihood of their collapse sufficiently in advance so as to minimize the loss to creditors.

Two methods of using financial ratios as a means of forecasting bankruptcy are suggested. One of them is a subjective index; the other is based on the use of regression analysis.

By either of these two methods all the firms in a creditor's portfolio can be ranked in ascending order according to the sum of their ratios multiplied by the respective weights obtained. The creditor can then determine his credit policy in respect to each firm in accordance with his own financial position and his subjective readiness to undertake varying degrees of risk.

In the case of the regression analysis, firms at the bottom of the range require less supervision and may be granted more credit at lower rates of interest. As one ascends the range, the firms should be subjected to greater scrutiny when credit is granted; more frequent financial reports should be required during the life of the loan. It may well be that the securities demanded and

the rate of interest charged could rise as credit is extended to firms higher up in the range.

In the case of the subjective index, the firms are ranked in descending order of risk, so that the above procedure has simply to be reversed.

Both these methods would seem to be applicable to all countries, although local conditions may necessitate changes in the weights ascribed in the subjective index. If cut-off points are needed for management purposes, these can be subjectively decided in accordance with the failure rate, accepted business criteria, or the state of the economy.

From the empirical evidence provided in this chapter it can be seen that in the countries studied a high degree of gearing, a declining or erratic profit rate, constant losses, and a high degree of illiquidity are common features of failing firms a considerable period before their bankruptcy.

Both indexes suggested here, have limitations and advantages; an analysis of the superiority of one or other index, however, is not relevant to the main purpose of this study.

If the purpose of this chapter was to demonstrate the most efficient index for foretelling bankruptcy, then it would indeed be necessary to compare the two indexes so as to determine which one of them gave the best results.

As stated in the introduction to this chapter, however, this is not the purpose of the study, which is to show the validity of financial ratio analysis in different countries despite the differences in financial reporting and the general socio-economic framework within which the firms operate. Furthermore, the study wishes to show that it is possible to construct such indexes in the various countries which can be used to foretell bankruptcy and that basically these indexes are the same and are applicable in the countries studied despite the differences between them. For this reason the study has not included a comparison of the two indexes in order to ascertain which of them is preferable.

APPENDIX

STATISTICAL METHOD FOR USE OF REGRESSION - ANALYSIS FOR FORECASTING BANKRUPTCY¹⁾

Indicators of the financial condition of these firms on the ratios described in the previous section, are denoted by x_j , $j=1$.

A dummy variable, denoted by y , takes the value of 1 if the firm went bankrupt and the value of 0 if it did not.

A simple regression analysis of y^i on x_{ji} provides weights for each of the indicators x_j . The weights are simply partial regression coefficients, b_j , obtained from the least squares regression equation:

$$\hat{y}_i = a + \sum_{j=1}^k b_j x_{ji}$$

Unfortunately, this procedure has a drawback; one of the assumptions of the classical regression model is violated.

If we treat the dependent variable as a dichotomous variable, the assumption of homoskedasticity ceases to be valid, as can be seen if we define:

$$e_i = y_i (\alpha + \sum_{j=1}^k \beta_j x_{ji})$$

The variables e_i are assumed to be statistically independent with zero expectation. Since y_i is either 0 or 1, then e_i must be either $-(\alpha + \sum \beta_j x_j)$ or $1 -$

¹ Written by Prof. J. Porush of Bar Illan University.

$(\alpha + \sum \beta_j x_j)$. Since the expectations $E e_i = 0$ the e_i are binomial variables with the variances

$$\sigma_{ei}^2 = (\alpha + \sum \beta_j x_{ji}) (1 - \alpha - \sum \beta_j x_{ji}) = E y_i (1 - y_i)$$

These variances are not independent of i and therefore are not all equal to each other.

Although the least square estimates, b_j , are still unbiased and consistent under heteroskedasticity, the estimates of the variances and therefore the t - values and the correlation coefficients are no longer unbiased and consistent. In some textbooks on econometrics (see for instance Goldberger²) the "generalized least squares" device is suggested. In our case to apply this method would require defining new variables:

$$y_i^* = \frac{y_i}{\sqrt{y_i(1-y_i)}} \quad \text{and} \quad x_{ji}^* = \frac{x_{ji}}{\sqrt{y_i(1-y_i)}}$$

for a return of the regression. Obviously, the new deviations $e_i^* = y_i^* - (\alpha + \sum \beta_j x_{ji}^*)$ can be assumed to fulfill the the homoskedastic requirement.

Practically, however, many of the elements $y_i (1 - y_i)$ obtained by the first round are negative and therefore the above transformation is impossible.

Since the set of variables x_{ji} is expected to discriminate between risky firms and others, we estimated the variance of the deviations for each group.

Define the set of index values for which $y_i = 1$ by S_1 and the set for which $y_i = 0$ by S_0 . Denote by e_{0i} and

²A.S. Goldberger Econometric Theory, (John Wiley and Sons, 1964), p. 250.

e_{li} the e 's for which $i \in S_0$ and $i \in S_1$, respectively. From the first step we estimated two parameters:

$$a = \sum_{i \in S_0} (\hat{e}_{oi} - \hat{e}_0)^2 / N_0 \text{ and } b = \sum_{i \in S_1} (\hat{e}_{li} - \hat{e}_1)^2 / N_1$$

where N_0 and N_1 are the number of cases in S_0 and S_1 respectively. Now we made the following transformation:

$$y_i^* = y_i / \sqrt{a} \text{ if } i \in S_0$$

$$y_i / \sqrt{a} \text{ if } i \in S_1$$

$$x_{ji}^* = x_{ji} / \sqrt{a} \text{ if } i \in S_0$$

$$x_{ji} / \sqrt{a} \text{ if } i \in S_1$$

The second step was to run the regression of y_i^* on x_{ji} , the coefficients of which are used for the final index.

CHAPTER 7

SUMMARY AND CONCLUSIONS

In this study we have examined to what extent the observed financial behavior of firms is a function of the social, political and economic framework in which they operate. Aspects of corporate finance in four countries have been analyzed in order to discover any substantial differences between them and to learn whether any such differences are caused by economic variables or by socio-political factors.

Owing to a lack of suitable data the study is limited to firms operating within the manufacturing sector. There is no basis for assuming however, that the findings regarding this sector would not apply to companies operating in other sectors, such as wholesale and retail trade, construction, transport, etc.

The study covers companies in four countries - the U.K., U.S., Japan and Israel - in which the financial, social, and political frameworks for economic activity differ radically. These differences may be summed up briefly as follows:

The U.K. has a sizeable and flexible capital and money market that has been developed over a long period of time and comprises a wide variety of financial institutions. Although nationalized industries and public sector corporations do operate in the U.K. economy government intervention, both direct and indirect, in financing firms and underwriting their debts is marginal. The corporate sector includes quoted companies with widely-dispersed share

capital as well as firms in which ownership is restricted to a small number of shareholders often linked by family connections. In recent years both G.N.P. and industrial output have grown slowly.

The U.S. has a large highly-competitive capital and money market composed of a wide variety of sophisticated financial institutions, in which government intervention is at a minimum. This capital market operates side by side - either as a result or as a cause - with the giant corporations of the American manufacturing sector. Share ownership of these corporations is widely dispersed, and the hired executive is a common form of corporate management. Both G.N.P. and industrial output have grown slowly in the past few years. At the same time, the U.S. has been in the foreground at implementing modern financial management methods and in requiring detailed financial reporting both for public and internal use.

The Japanese economy has been characterized by rapid industrialization and a high rate of growth in G.N.P. This growth has been achieved, inter alia, by extensive direct and indirect government intervention in the capital and money market. Failing firms, especially large ones, are often underwritten by the financial community, either as a result of direct government intervention or in response to official policy. The pre-war cartels and trusts have been replaced by concentric circles of banking and financial institutions, industrial and commercial corporations. As a result, decisions regarding corporate policy often express a consensus of opinion reached between the management of an individual firm and the representatives

of institutions linked to the firm as described above, those of competing firms as well as executives of the relevant government departments. In Japanese manufacturing, moreover, small firms constitute a highly significant element. The household sector maintains a high degree of personal saving, and these savings are channeled through the various state financial institutions in order to provide financing for Japanese manufacturing firms.

Ever since the establishment of the state, the economy of Israel has been marked by rapid industrialization and economic growth. The emphasis on growth was necessitated by the needs to absorb mass immigration, finance the defense requirements of the country, and implement the ideology of a planned economy held by the founders of the State. The government maintains almost complete control over the raising of funds both at home and abroad. Furthermore, the allocation of these funds, even at the level of the individual firm, is often determined not by a market mechanism but rather through the operation of some government or central bank institution. As a result decisions regarding investment, plant location and even the product to be manufactured often reflect the overall requirements of the government's economic policy which may overshadow normal market considerations of profit, growth, etc. Not uncommonly, failed firms are saved by massive injections of state and public funds. In the corporate structure of Israeli manufacturing family-owned companies exist side by side with state-owned corporations and firms owned by the trade union movement.

I. Main Findings

The extent of gearing differs in the four countries studied. In other aspects of corporate finance, however, such as the influence of changes in monetary policy, the distribution of profits and the validity of financial ratio analysis, the behavior of the firm has been found to be similar in all the countries despite the international differences in the social, political and economic framework.

1. Gearing

U.K. and U.S. firms have on the average less gearing than do their counterparts in Japan and Israel. According to a measure of capital gearing such as equity as a percentage of the total balance sheet value of the firm, U.K. and U.S. firms had close to 60 percent equity in the period 1964 to 1968. The average Israeli firm operated with only 34 percent equity during the same period and the Japanese firm with only 22 percent.

In order to explain these differences in gearing, the study employed methods usually used for the financial analysis of an individual firm. Such analysis concerns those factors that affect the profitability of the firm and influence the risks undertaken by suppliers of borrowed funds.

Such accepted indicators of profitability as the ratio of profit plus interest to the total funds employed did not explain the international differences in gearing. Growth as an indicator of profitability, however, does account for these differences. The two economies in which firms operate with a low gearing rate, the U.K. and the

U.S., are characterized by slow growth in the G.N.P. and other overall economic indicators. This finding accords with the empirical evidence showing that slow growth firms in any particular economy or all firms in that economy during a period of recession tend to employ lower amounts of borrowed funds than do rapid growth firms in the same economy or all firms during periods of rapid growth.

Indicators of risk such as size, industrial sub-sector in which the firm operates, or the average rate of bankruptcy in the economy do not substantially relate to the differences in gearing referred to above. On the other hand, government policy has been found to be a major explanatory factor, especially when it is government policy to minimize the risk to the lender and thereby increase the supply of loan capital to the firm. In Japan and Israel, the two countries in which firms operate with a high degree of gearing, it has been government policy to make subsidized funds available to manufacturing firms and to prevent the failure of bankrupt companies in these two economies. In the U.S. and the U.K. companies receiving funds from special agencies such as S.B.I.C. in the U.S. or the I.F.C. in the U.K. (which do not operate as purely economic lenders) tend to have a higher gearing ratio than do manufacturing companies which have access only to the normal lending market.

2. Profit Distribution

In the economies surveyed some firms distributed dividends, while other firms, even though they earned profits, did not. It may be assumed that in the latter firms managerial salaries, interest-free loans, and payment of

personal and household expenses by the firm contain some element of return on capital for the shareholders. The major reason for these non-dividend forms of profit distribution would seem to be the form of ownership; an increase in the separation of active management from ownership leads to a decrease in the number of firms which distributed profits in this form. Larger firms, in general, also seem to distribute dividends rather than expenses, but whether this is a function of the size of the profits or of the type of ownership is beyond the scope of this study. In all these countries the income tax authorities do not recognize dividends as a deductible expense in calculating the tax liability of the firm, whilst the above-mentioned method of distributing profits in the form of expenses does not suffer any such disability. Fiscal measures that grant firms a special tax status with reduced tax liability therefore increase the number of firms distributing profits in the form of dividends. Granted the similarities in income tax law and rates as well as the presence in all the countries surveyed of small firms or firms in which the owners are also active managers, it is not surprising to find in all of them profitable firms that distribute profits in non-dividend forms.

A review of the published empirical evidence concerning these countries shows that the dividend policy of manufacturing firms follows a similar pattern in all of them. Higher profits lead to greater dividend distribution, even though the increase in dividends is not proportional to the rise in profits. The firm adjusts its dividend policy to the change in profitability only after

a lapse of time. Current dividends have been found to be a function of current profits as well as the flow of profits in the recent past. This study attempted to test whether managerial salaries, one of the non-dividend forms of profit distribution mentioned above, follow a pattern similar to that for dividends. In the three countries for which relevant data are available, the U.S., the U.K. and Israel, the study shows that managerial compensation relative to equity rises as profits to equity rise. In addition a time lag was also found to exist between changes in profitability and changes in managerial salaries. With respect to both dividend and non-dividend forms of profit distribution, it seems that the main reason for the time lag is the uncertainty of management regarding future profits. The common pattern of profit distribution policy shown in this study suggests that the economic variable of uncertainty is so powerful that it overshadows the international differences in profitability, growth and in the capital and money markets.

3. The Effect of Monetary Policy on the Behavior of the Individual Firm

As noted earlier, the four countries concerned have developed capital and money markets which differ markedly from each other. The degree of central bank supervision and government intervention in the allocation of short-term bank credit constitutes one of the major differences. Analyzing the effects of monetary policy on the individual firm in each of these countries, therefore, could delineate the consequences that varying degrees of central bank intervention have on economic activity in any given economy. For the purposes of this study monetary policy

was defined as changes in the bank credit received by the individual firm.

In order to obviate the effect of the demand for funds, changes in bank credit have been related to changes in the production of the firm. The previous year's ratio of bank credit to the value of production is regarded as a point of equilibrium. Variations in this ratio from one year to another are presented as changes forced upon the firm as a result of changes in supply. Alternatively, the changes in bank credit value of output ratio reflect an excess (or a scarcity) of bank credit after the firm has financed its normal manufacturing activities.

Such excess credit may be used to finance investments in fixed assets, inventory, or trade credit. How changes in this ratio affect the investment policy of the firm is one aspect of the analysis conducted here. The other aspect is the ability of the firm to substitute non-bank sources of funds for bank credit in order to finance these investments. The empirical results, obtained on samples of individual firms in the U.K., Japan and Israel, show the following results:

a. Changes in bank credit lead to asymmetrical changes in the investment policy of the firm regarding fixed assets. On the one hand, a decrease in bank credit leads to a lower investment rate in these assets; on the other hand, an increase in bank credit does not raise such investments. This lack of symmetry reflects the fact that decisions to increase investment in fixed assets usually require long periods of time. To invest substantial amounts of funds requires careful planning and deliberation

which are not related primarily to the availability of short-term bank credit. The availability of short-term bank credit is an important factor, however, in the interim financing of projects already decided upon, so that for many firms reduced bank credit leads to a halt in investment in these assets.

b. Fluctuations in bank credit are strongly related to changes in the inventory of raw materials held by the firm. Greater bank credit is accompanied in most firms by an increase in such inventories. At the same time a decrease in bank credit reduces such inventory investment for the majority of firms. This relationship flows from the suitability of short-term bank credit for financing inventory in excess of the firm's normal needs, as a result of management appraisal of future trends in prices and sales.

c. Credit granted to customers seems to have no relationship to changes in short-term bank credit. The extension of customer credit is a function not of the firm's own financial structure, but primarily one of the branch in which the firm operates. Since the individual firm is unable in the short run to change either its terms of sale or market conditions, it is unable to adjust the credit granted to customers in accordance with fluctuations in the supply of short-term bank credit.

d. No strong relationship was found between changes in short-term bank credit and the recourse to non-bank sources of funds. These non-bank sources have been defined in this study as a rise in equity, acquisition of

additional long-term loan capital and increases in the short-term funds provided by suppliers and others. It was found that in most firms these funds were not a substitute for short-term bank credit.

Of even greater importance, however, is the fact that the effect of changes in bank credit on the individual firms seems to be the same in all countries, irrespective of the structure of the capital market, the degree of government intervention or the structure of the short-term money market. One is led to conclude, therefore, that the effect of monetary policy on the individual firm is not primarily a function of the structure of the banking system nor of the role of the central bank within a particular economy.

2. The Validity of Financial Ratio Analysis as a Means of Forecasting Bankruptcy

In view of the many economic and social differences between the economies concerned, it might be argued that financial ratio analysis could not be generally used to foretell financial difficulty in a firm. In this study two methods of financial ratio analysis have been suggested. First an index was constructed based on a number of financial ratios, the ratios being chosen and given appropriate weights according to the subjective evaluation of the author. Secondly, regression analysis was employed to establish the relevant financial ratios and the weights to be ascribed to them. Both methods were used to examine bankrupt and non-bankrupt firms in three economies, the U.S., the U.K., and Israel, to see whether they could be used to foretell bankruptcy.

The subjective index developed in Israel was shown to be applicable to samples of firms in the U.S. and the U.K. The regression analysis conducted on the Israel firms was then compared to the results of empirical research performed in the U.S. Both indices were shown to be applicable to firms in economies with vastly different socio-economic framework. Perhaps of greater importance is the fact that three financial ratios show themselves to be of great importance in all the countries concerned: the equity/debt ratio, the profitability trend and the ratio of inventory of finished goods and work in progress to the value of production of the firm. In any economy firms with a low ratio of equity to total funds, with a bad profitability record and with an excess inventory of finished goods seem to constitute potential bankruptcies. Greater caution on the part of lenders would be called for in such a case in all countries, regardless of the national rate of economic growth, the degree of government intervention in the economy, the social and political values of that particular country.

II. C o n c l u s i o n s

These findings lead to the following conclusions regarding corporate finance in any economy:

1. The use of loan capital is primarily restricted by the willingness of the lender to undertake a greater or lesser degree of risk. The borrower, it would seem, is always prepared to use more loan capital than equity provided of course that the expected rate of profit on the investment is greater than the interest cost. An analysis

of gearing, either in the individual firm or in a group of companies, has to deal, therefore, primarily with changes in the willingness of lenders to undertake risk; the borrower's attitude to risk taking is to be considered only as a minimal constraint on the use of loan capital.

2. The form of business ownership is a major economic variable which has to be considered in any analysis of inter-firm differences.

3. Although the four countries surveyed have a common pattern of corporate taxation, the tax rates and methods of tax collection differ considerably. Despite these differences, this study has shown that the overall tax structure produces a common pattern of behavior in all four countries. This would lead one to suppose that at least as far as the manufacturing corporation is concerned, as distinct from the financial corporation, changes in taxation would have to be fundamental and far-reaching for them to produce an appreciable effect on corporate financial behavior.

4. Pattern of corporate financial behavior exist independently of the social, political, and cultural framework in which the individual firm operates. Theories and techniques that apply in one economy may therefore be transferred to companies operating in another economy despite the socio-political differences between them.

Although this study has delineated such a common pattern only with respect to dividend policy, the effect

of monetary policy on the individual firm and the reliability of financial ratio analysis, there does not seem to be any reason to suppose that the same conclusion would not apply to other aspects of corporate financial behavior. Further study is required, however, to prove whether this is the case. Two such areas of interest, not dealt with in this study primarily because of the lack of suitable data, are the impact of the overall socio-political framework on entrepreneurship in any given economy and the effect of commonly accepted social values on the growth of a firm, especially its readiness to enter the export market.

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