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The present book is a self-contained, up-to-date guidebook for the financial investor, student of finance or newswatcher, and the first place to look for that instant insight and know-how which lead to efficient financial decisions. Combining compact analyses of fundamental financial concepts with incisive, thorough studies of pivotal economic affairs and investment strategies, financial expert Nicolas Laos provides instant and thought-provoking analysis of topics: financial markets, financial intermediaries, bonds, stocks, derivatives, foreign exchange, financial statement analysis, portfolio management, risk analysis, and financial management.

Nicolas Laos is a Financial Services Consultant based in Greece and the U.K. and a regular commentator on international economic and political affairs for the media. Born in Athens in 1974, his books and articles have ranged over a broad area of topics, such as finance, international politics and mathematical analysis.

Nicolas K. Laos FINANCE With the Views of G8 Leaders

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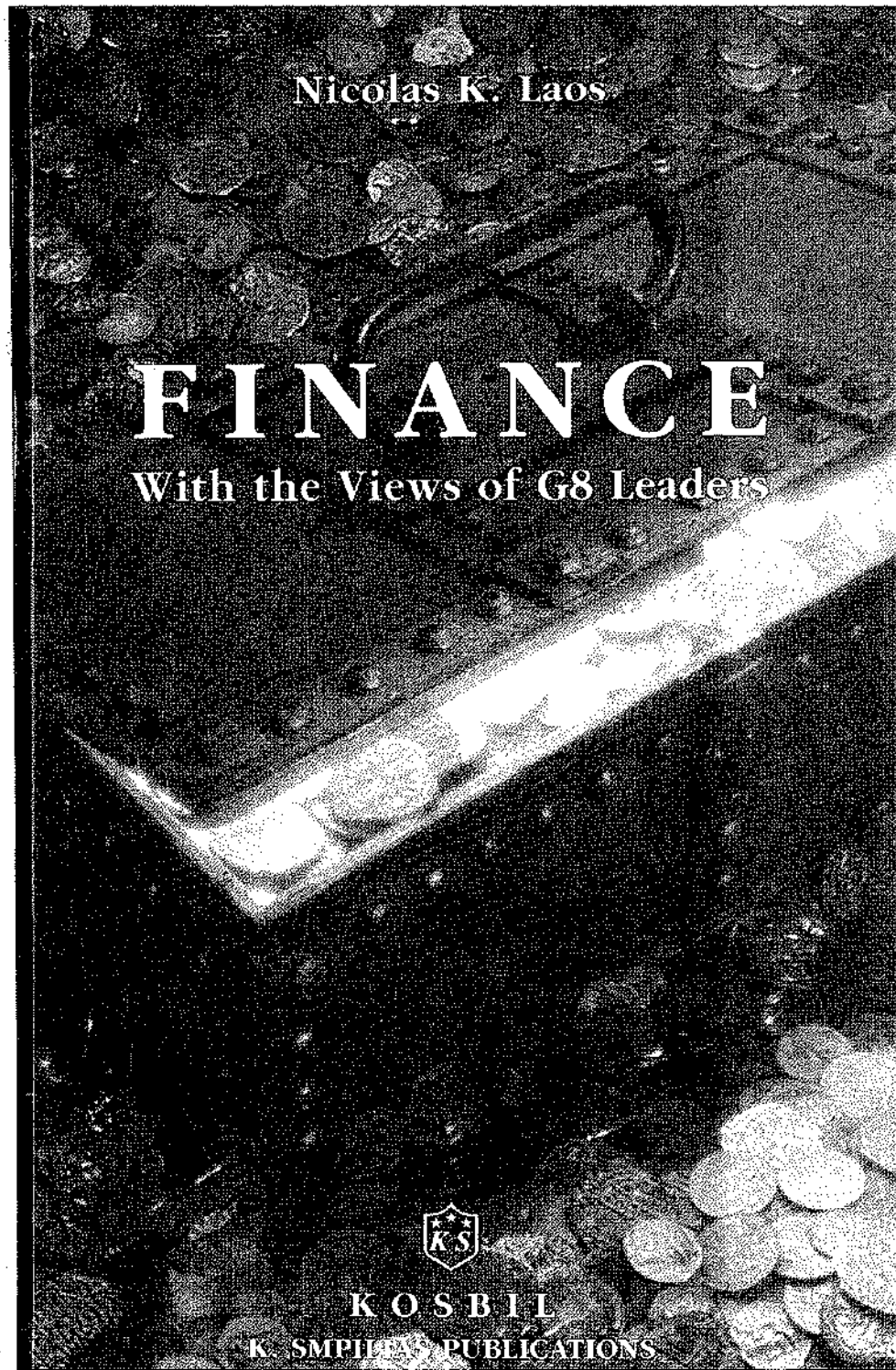

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Financial Accounting, Stock-Market Investments and Business Valuation, Occasional Paper, Athens: Institute of International Economic Relations, 2004 (in Greek).

Financial Engineering, Athens: Diavlos Publ., 2003 (in Greek).

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Fax: +44(0)208 5373345
Greek Office: +30(210)4226650
e-mail: info@kosbil.com

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To my university teachers in the U.S.A. and the U.K.
and to my publisher K. Smpilias

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CHAPTER FOUR:
Derivatives

CHAPTER FIVE:
Foreign Exchange

CHAPTER SIX:
Financial Accounting and Financial Investments

CHAPTER SEVEN:
Risk Analysis and Portfolio Management

CHAPTER EIGHT:
Financial Management

PREFACE

The purpose of the present book is to study the foundations of finance as well as the interplay between finance and political economy. Within this context, I analyze different investment strategies as well as financial management.

This volume is structured into eight chapters. The topics covered in Chapter One include the nature and the types of financial markets, financial intermediation and the interdependence between the financial system and the economic system. Chapters Two, Three, Four and Five are focused on stocks, bonds, derivatives and foreign exchange, respectively. Chapter Six is mainly about financial statement analysis and value investing. Chapter Seven is focused on risk analysis and portfolio management. Finally, the topics covered in Chapter Eight center around the management of the capital structure of a firm and the management of capital investments.

The content of this book is based on my work as a Financial Services Consultant, refined by my academic research and reinforced by observations and travel around the world's major financial centers. This is why this book's readership includes both university students in finance/banking and practitioners in the financial markets. Fortunately, I was able to test my ideas against the critical judgment of researchers and professors at

the University of California, the University of Cambridge, the Royal Institute of International Affairs (London) and the Solvay Institutes (Brussels) as well as of my colleagues in the business world.

The Director of Kosbil Publications London Ltd not only encouraged me to write this book but offered me generous assistance, thereby making it possible for me to undertake the sustained effort to write my book while also pursuing a busy schedule of analyzing financial markets, consulting and traveling.

Nicolas Laos
Perivale, Middlesex, U.K.
November 2003

INTRODUCTION

Before delving into the substantial issues of finance, we should rather address a few preliminary questions such as: Is Economics a social science? What is "scientific" about the social sciences? What is the meaning of Finance? What is the interplay between international politics and economics? Are financial markets efficient? These are questions which can help us put the study of finance in a more scientifically rigorous setting. As Hippocrates (460BCE-377BCE) put it, "There are in fact two things, science and opinion; the former begets knowledge; the latter ignorance".

Economics as an Object of Science

By the term *Economics*, we should always understand the scientific study of the choices made by individuals and societies in regard to the alternative uses of scarce resources which are employed to satisfy wants. In general, one can understand the meaning of human action by considering a behavior rule R for person X stating that, under conditions C_1, ..., C_m, X will perform action A. Thus, one comes up with a generalization, since the observation of C_1, ..., C_m implies that X performs action A. The previous generalization may contain a probabilistic assumption, i.e. it may be as follows: if C_1, ..., C_m, then X performs action A with

probability p. Moreover, the previous generalization may involve teleological reasoning, i.e. that X does A in order to achieve a goal g, where g is an element of a set of alternative goals which are available to X.

Rational choice theory is a common mode of analysis in the social sciences in general and in economics in particular. According to the rational choice approach, the social behavior of individuals and groups can be analyzed in terms of actors pursuing goals. The conceptual framework that underlies rational choice theory has been described by Talcott Parsons[1] as follows: «The first salient feature of the conceptual scheme to be dealt with lies in the character of the units which it employs... The basic unit may be called the "unit act"... an "act" involves logically the following: (1) It implies an agent, an "actor". (2) For purposes of the definition the act must have an "end", a future state of affairs toward which the process of action is oriented. (3) It must be initiated in a "situation" of which the trends of development differ in one or more important respects from the state of affairs to which the action is oriented, the end. This situation is in turn analyzable into two elements: those over which the actor has no control... and those over which he has such control. The former may be termed the "conditions" of action, the latter the "means". Finally (4) there is inherent in the conception of this unit, in its analytical uses, a certain mode of relationship between these elements. That is, in the choice of alternative means to the end, in so far as the

1. *The Structure of Social Action,* Glencoe, Ill.: The Free Press, 1949.

situation allows alternatives, there is a "normative orientation" of action». Thus, in rational choice theory, it is not assumed that the decision process is a series of literal calculations; instead, actors make choices reflecting their goals and the constraints of the situation. Also, rationality theory does not merely refer to an actor's preferences and constraints, and it does not mean error-free decisions.

Once it has been postulated that the norm relating means to ends is that of *intrinsic rationality*, the maximization of a utility index is implied. In fact, the rejection of the rationality postulate means that human behavior is: (i) strictly or primarily random, (ii) irrational in the sense that it is inconsistent or schizophrenic, (iii) instinctive, or (iv) strictly traditional. Hence, in so far as the presence of a "deliberative process" can be confirmed, the rationality postulate should be accepted.

It would be extravagant, however, to argue that, by restricting ourselves to the rationality postulate, we have exhausted the study of the problem of arriving at operationally meaningful theorems about the structure of social action. Talcott Parsons, in the early thirties, argued that the ultimate ends, the value-system of the society in which behavior is studied, must somehow find its place in the framework of action employed in the relevant analysis. The social scientist should bear in mind that, in some cases, one may have to introduce "ideally typical" ultimate ends in his/her system, whereas, in other cases, one may recognize that behavior is best described by a model postulating instinctive or strictly traditional behavior, and, in still other cases, one may be obliged to make commitments only to the rationality postulate.

The Meaning of Finance

By the term *Finance*, we mean that branch of Economics which refers to the management of assets, especially money. Moreover, by the term Finance, we may mean the raise of money through the issuance and sale of debt and/or equity.

The 20th century is marked by rapid development in financial engineering. However, the history of financial engineering goes back to ancient times, and problems of financial engineering can be found, for instance, in the works of Plato and Aristotle. In the Middle Ages, many illustrious noble houses in Italy made their fortunes by innovative dealings in money lending and foreign exchange. Moreover, the economic prosperity of the Netherlands in the 17th century is, at least partly, due to such financial innovations as forward contracts, calls and puts, etc. The rise of the British Empire resulted in further advances in financial engineering, particularly in the field of fixed-income investments. In addition, the economic growth in the United States was facilitated by financial engineering, especially by the introduction of limited liability companies.

The modern development of financial engineering starts with the work of the French mathematician Louis Bachelier who, in the year 1900, published a book entitled *Theorie de la spéculation*. New major contributions to modern financial engineering were made in the 1950s by several scientists, such as Kenneth J. Arrow, Gerard Debreu, Franco Modigliani, Merton H. Miller, etc. Ever since, financial engineering continues to grow rapidly.

World Politics and Financial Decision-Making

Investors, especially institutional ones, must be able to make sense of the bewildering and complicated actions of all the players on the international board. At the dawn of the 21st century, the world faces several challenges to peace and prosperity which investors ignore at their peril.

Mistakes in the management of international affairs can have a devastating impact on the lives of individuals and create havoc in financial markets, whereas sensible management of international affairs can underpin the prosperity of millions of individuals as well as the smooth and efficient operation of financial markets. By the 1990s, the complex interdependence of capitalist economies had made clear that these nations were all dependent on each other for future prosperity.

In the 1980s, many economists were concerned about the risks that the "time-bomb" of international debt would explode. Even though the debt crisis did not ruin the international economy, the industrialized nations learned to spread the debt so that any future collapse would not hurt any single developed country (particularly its banking system) especially hard.

The globalization of the international political economy gives rise to a complex economic space beyond the control of individual governments unless they operate together. For instance, how can an individual government control a complex trading process where Korean cars are designed by Germans and marketed by Americans? Similarly, how can the member-states of the eurozone claim sovereign control over their national economies once the European Central Bank (ECB)

controls the eurozone's money supply?

Furthermore, the politics of energy is another important source of troubles in the world economy. After the Gulf War (1990), geopoliticians became sure that oil would remain a vital strategic asset for some time. Moreover, the rapid growth of the East Asian economies tends to increase the price of oil in the early 21st century and necessitates a search for alternative sources of energy.

Risk analysts are also concerned with conflicts around the globe and with changes in the distribution of power among the members of the international-political system in the 21st century. The end of the Cold War did not put an end to local conflicts, which continue for various local reasons. Additionally, the Cold-War Superpowers realize that, in the post-Cold War era, other powers, such as the European Union, China and Japan, rise to take some of their power and responsibility for the management of international affairs.

The new world order which emerged after the end of the Cold War is sui generis, and the analysis of causes and consequences in international relations will be overly constrained if we try to force it into the procrustean bed of traditional metaphors. In fact, in the post-Cold War era, power is becoming more multidimensional, structures more complex and states more permeable. In this context, no single hierarchy describes adequately the distribution of power: the top military layer is largely unipolar, since the United States faces no rivals capable of matching its global military reach; the economic middle layer is tripolar, since there are three major economic blocs in the

world – namely, an Asian bloc formed around the yen, a Western Hemisphere bloc around the dollar and a European bloc around the euro. The bottom layer of transnational interdependence is characterized by a diffusion of power; for instance, transnational investment is helping to confuse identities and affects long-run views of global problems. The type of world economy which emerged after the end of the Cold War is marked by increasing interactions across state borders outside the central control of the foreign policy organs, the multinational corporation being, arguably, the most important transnational actor.

Transnational society is manifested in commercial exchanges, migration, common beliefs, associations which transcend national frontiers, even transnational ceremonies and competitions (such as the Olympic Games). The traditional «billiard-ball» image of the state, self-sufficient and self-directing, but involved in occasional collisions with other equally self-enclosed states is not a sufficient analytical framework in the so-called atomic era, or in the era of globalization. In fact, this argument was originally put forward by J.H. Herz in his book *International Politics in the Atomic Age*. In his view, the traditional impermeability which states had enjoyed within their own frontiers, symbolized by the «hard shell» of their defensive perimeters, now had to be discarded. In the modern world, states have become vulnerable to economic blockade, which in former days had been ineffective; are open to ideological and political penetration, through broadcasting, the world wide web, the printed word and personal contacts in a way they had never been before; are subject to air attack, cyberwar and

netwar; above all are vulnerable to possible nuclear war.

In 1970, a special edition of the journal *International Organization*, edited by Joseph Nye and Robert Keohane, was devoted to the study of transnational relations. In this, a number of writers addressed such themes as the transnational activities of multinational corporations, international banks, labor unions, airlines, non-governmental organizations, revolutionary and/or terrorist groups, the Catholic Church, the Ford Foundation and scientific unions. Apart from the general effect of increasing mutual knowledge and awareness, transnational interaction has a number of other consequences. Changes of attitude may be brought about which will eventually affect government policies; a more pluralist international system is created in which groups and states become linked with groups having common interests in other states; domestic politics is partly internationalized; relations of dependence and interdependence are sometimes established, especially in the commercial and monetary fields; and non-governmental organizations have started becoming a new instrument by which the government of one state may exercise influence within another.

Moreover, the period around the 1960 marks an evolution in world politics wherein the concept of global governance has become increasingly relevant. Global governance concerns the identification and management of those issues which *necessarily* have an impact on all parts of the globe. For instance, the OECD, the IMF, the World Bank and the WTO are the principal instruments of global economic governance.

Other issues of global governance are related to the global ramifications of a nuclear war, the communications revolution, environmental questions and ecological issues, etc. The emergence of issues of global governance makes it amply clear that an element of community interest is inseparable from self-interest. This, in I. Wallerstein's words, raised issues of the global commons or collective goods. Hence, analysts must turn to theories of global and regional integration and disintegration, sovereignty and security as well as to every type of structural approach as they seek to analyze the need for global governance.

In general, it must be mentioned that the functioning of the world economy is determined by both markets and the policies of nation-states. The political purposes, rivalries and cooperation of states interact to create the framework of political relations within which economic forces operate. States set the rules that individual entrepreneurs and multinational firms must follow. However, economic and technological forces shape the policies and interests of individual states and the political relations among states. It goes without saying that the market is a potent force in determination of economic and political affairs. Thus, both political and economic analyses are required to understand the actual functioning and evolution of the global economy.

Market Efficiency

The *efficient market hypothesis* (EMH) states that, at any given time, asset prices fully reflect all available information. The chief corollary of the argument that

prices fully reflect all information[2] is that price movements do not follow any patterns or trends. In other words, prices follow what is known as a *random walk*, an intrinsically unpredictable pattern. Hence, in the word of the strong form EMH, trying to beat the market becomes a game of chance not skill.

A major challenge to the EMH is the existence of stock-market anomalies -namely, reliable, widely observed and inexplicable patterns in returns. Commonly observed anomalies include size effects (i.e. small firms may offer higher stock returns than large ones) and calendar effects (e.g. the "January effect", which seems to indicate that higher returns can be earned in the first month compared to the rest of the year). Moreover, as we shall show in Chapter Six, there are indicators of undervalued stocks used by value investors. Value investors dispute the EMH and see investment opportunities created by discrepancies between stock prices and the underlying value of the asset; to uncover such opportunities, one should use the valuation tools which we shall study in the sequel of this book.

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2. The strong form of the EMH asserts that all private and public information is fully reflected in asset prices.

CHAPTER 1

FINANCIAL MARKETS

1.1. The Concept of Money

According to the standard functional definition of *money*, four functions have been ascribed to money –namely, medium of exchange, unit of account, store of value, and standard of deferred payment. The stock of money held in an economy is held for various reasons: firstly, money is held in order to facilitate exchange (i.e. it is to be spent rather than saved), and, secondly, it may be held as an asset (i.e. to be saved rather than spent).

Official measures of changes in the money stock are generally divided into two categories: *Narrow* measures are related to transactions and consist of those assets which serve as immediate purchasing power (notes and coin and demand deposits with banks). *Broad* measures include the components of the narrow measures and additionally include assets which are more in the nature of investments or savings but which enjoy a fairly high degree of liquidity. In particular, the monetary aggregate M1 (narrowly defined money supply) consists of coins,

paper currency, plus all demand or checking deposits; the monetary aggregate M2 (broadly defined money supply) includes all items in M1 plus certain liquid assets or near-monies (savings deposits, money market funds, and the like).

1.2. Money and Inflation

If the supply of money falls below the level that is necessary to support the growth of the economy, then the growth of the economy will be held below its potential. On the other hand, if the supply of money is above the level that is necessary to support the potential growth of the economy in real terms, then the growth of the economy in money terms will be greater than the growth in real terms and this, other things equal, will manifest itself in inflation.

Quantity Theory of Money

In 1911, the American economist Irving Fisher expressed the *Quantity Theory of Money* in what is known as the equation of exchange:

$$MV = PT,$$

where M= the quantity of money in the economy, V= the velocity of circulation of money (i.e. it is the number of times that each unit of money is used on average during a given time period), P= the general price level (i.e. the average value of each transaction), and T= the total number of transactions (i.e. the physical volume of transactions during a given time period). The basic argument of supporters of the Quantity Theory is that, at least in the short-run, V is constant or at least predictable (the velocity of circulation is determined by institutional factors such as the payments interval for wages), and T is determined by the productive capacity of the economy, and therefore the effect of a change in M must be a

change in P. However, in the 1930s, the underlying assumption of the Quantity Theory of Money that full employment was the natural state of the economy appeared to be false. Thus, in the 1930s, the Quantity Theory was replaced by the so-called Keynesian theory, which influenced economic policy until the 1970s, when it was challenged by Monetarism.

Keynesian Theory

According to John Maynard Keynes' analysis of the demand for money, the choice of alternative assets to money does play a significant economic role since, Keynes argues, the holder of speculative money balances is likely to invest such balances in financial rather than real assets. Hence, if the money supply is increased, the first effect will be that interest rates will fall (the prices of financial assets are bid up by money holders disposing of their surplus money balances). Additionally, the second effect is that the lower rate of interest will reduce the cost of borrowing and thus stimulate business investment. Under the assumption that the gross return on investment projects remains unchanged, the lower cost of borrowing will increase the net return on investment. As investment increases, overall demand will also increase through the multiplier effect. The increase in demand will in turn bring about higher levels of output, employment, income and expenditure. According to J.M. Keynes, there appeared to be evidence that lower interest rates did not stimulate investment and that what stimulated investment was demand for the goods that the investment would produce. Thus, so-called Keynesian economists argue that it is more important to stimulate investment by first stimulating demand and that the stimulation of demand can be better achieved via fiscal policy than via monetary policy.

Monetarism

The monetarist holds that the money supply is the major determinant of short-term movements in nominal GNP and of long-term movements in prices. Unlike Keynesian economics, monetarists argue that the holder of money balances is not limited to a choice between money and financial assets but that, in the longer term, all other assets, financial and real, are alternatives to money. The distribution of wealth across a number of competing assets will only be in equilibrium when the marginal returns from all assets are equal. If they were not equal, then it would be rational to shift away from the assets which yielded lower marginal returns to assets which yielded higher marginal returns, and such a process would continue until the marginal returns on all assets were equal. Assuming a situation of equilibrium, if the supply of money increases, the marginal return on money will fall and wealth-holders will not be in equilibrium any more. Hence, they will attempt to restore equilibrium by acquiring other assets. In other words, the increase in the money supply creates an increase in the demand for all other assets (financial and real), and equilibrium is only restored when the prices of these other assets have risen so as to bring their marginal returns into line with the increased supply of money. Therefore, monetarists argue, an increase in the supply of money, other things equal, leads to an increase in prices and in money incomes, too.

Monetarists believe that there is some natural level of unemployment. Moreover, they accept that, at any particular segment of space-time, the actual level of unemployment may be higher than the natural level because of imperfections in the economy (e.g. monopolies, excessive trade union power, unduly large government expenditure, overly generous social security payments, etc.). Therefore, according to

monetarism, in the short-term, there should be no attempt to boost economic activity via monetary expansion or government spending. In fact, the expansion of the money supply should be regulated to keep it in line with the expected real growth of the economy. In the longer-term, a monetarist policy involves measures such as the reduction of government spending, the elimination of the budget deficit, the reduction of trade union power and the dismantling of monopolies and restrictive practices.

1.3. Financial Institutions and Markets – Banking Institutions

In an economy, there will always exist two groups of economic agents: (i) surplus units, i.e. those whose revenue exceeds their current expenditure during a given period of time, and (ii) deficit units, i.e. those whose expenditure exceeds their current revenue in a given period of time. Therefore, some mechanism is required to ensure that the surplus funds are channeled to the deficit units.

The surplus units can lend their excess funds directly to the deficit units, e.g. a person can buy company or government stocks through a public issue. However, it is very often the case that a surplus unit will lend its excess funds to a financial institution (*financial intermediary*), which will then on-lend these funds by itself, buying company stocks, government stocks or other assets in which it invests. Thus, instead of a direct contractual relationship between the provider and the user of the funds, there are two contractual relationships: (i) the surplus unit lends to or acquires a financial claim on the financial intermediary, and (ii) the financial intermediary lends to or acquires a financial claim on the ultimate borrower, the user of the funds.

The basic problem with direct lending is that of matching, and it can take the following forms: (i) maturity (i.e. the lender may wish to lend short, whereas the borrower may wish to borrow long), (ii) amount (i.e. the lender may have only a small amount to lend, whereas the borrower may wish to borrow a large amount), (iii) risk (i.e. the risk which is inherent in the project to be financed may be greater than the lender is willing to bear), and (iv) location (i.e. the lenders and the borrowers may be in different geographical regions).

Financial intermediation facilitates the reconciliation of the differing needs of lender and borrower by means of:

(i) *Maturity transformation* – a financial intermediary can borrow short and lend long, thus meeting the needs of both lenders who wish to lend short and borrowers who wish to borrow long.

(ii) *Aggregation* – by collecting together a large number of relatively small amounts, a financial intermediary can meet the requirement for large loans.

(iii) *Risk transformation* – a financial intermediary can reduce substantially the impact of bad loans by making a large number of loans, most of which they will be good. Moreover, financial intermediaries have greater expertise in evaluating lending propositions, and, by maintaining branch systems, they collect surplus funds in one area and on-lend in another. In addition, a financial intermediary can, through the benefits of economies of scale, enjoy lower operating costs than would be possible for parties involved in direct lending.

Amongst the different financial institutions, the banks are the prime providers of money in a modern economy. In particular, the common bank functions

are the following: (i) *the taking of deposits*, (ii) *the encashment of deposits* (i.e. banks stand ready to pay out cash to their depositors either on demand or at notice), and (iii) *the transfer of deposits to third parties* (mainly by way of cheques, standing orders, direct debits, etc.). This latter function, namely money transmission, is very largely carried out by the so-called retail banks, which either have extensive branch networks or are involved in the clearing system (i.e. the exchange and settlement of cheques and other means of payment).

The liabilities and the assets of banks are divided into the following categories:

Bank Liabilities

Capital: every bank has capital and reserves which represent the shareholders' stake in the business.

Demand deposits: being current, they are repayable on demand.

Time deposits: these include what are known as deposit accounts.

Certificates of deposit (CD): these are certificates which are issued to depositors against the deposit of large sums of money, and they are for a stated maturity and attract a rate of interest which is fixed when the money is lodged with the bank. The advantage of a CD is that it is negotiable, and hence it can be sold in the market in case the depositor needs the money before the CD is due to mature.

Currency deposits: a significant proportion of the liabilities (and assets) of the commercial banks are denominated in foreign currencies.

Bank Assets

Notes and coin: these are held to meet cash withdrawals by a bank's customers, and, in the case of

retail banks, this item is likely to be relatively large.

Balances with the Central Bank: the Central Bank operates as banker to banking system (see 1.6).

Market loans: these represent highly liquid funds which have been lent in the short-term money market.

Certificates of deposit: as we have already mentioned, banks issue CDs, which are marketable; some of these certificates are acquired by other banks and held as assets.

Bills: these are mainly of short maturity and easily marketable, and they are extremely secure, too, since the parties liable on the bills are either government bodies, other banks or institutions of the highest standing.

Treasury bills: they are in effect promissory notes, usually undertaking to pay a given sum three months after issue. They are issued by the government through the Central Bank at a price below their face value, since the difference between the issue price and the face value represents the interest that can be earned on them.

Eligible bank bills: they are eligible in the sense that they are eligible for re-discount at the Central Bank; note that, since they have been accepted by banks, they enjoy the highest credit standing.

Other bills: banks also hold other bills which may not be eligible for re-discount at the Central Bank and other short-term instruments.

Investments: these are mainly the bank holdings of government securities and of stocks of other companies.

Advances: this item includes all types of lending to customers not separately itemized.

In addition to the above-mentioned assets, the banks have operating assets such as premises and equipment.

1.4. Financial Institutions and Markets – Non-Banking Financial Intermediaries

In addition to the banks which we have looked at in the previous section, there are other important financial intermediaries in every developed economy:

1. *Savings and Loans Association*: A savings and loans association is a financial institution the principal and permanent transactions of which are the following: (i) receive money for depositing from members of the association, (ii) grant loans (mainly for buying houses) to the members of the association, (iii) make transfers and payments from deposit accounts maintained in the savings and loans association, (iv) receive payments and transfers to deposit accounts, (v) purchase and sell foreign currency, (vi) provide intermediation services upon intermediation of credit resources, (vii) lease out safes, and (viii) advise clients on issues regarding economic activities (mainly real estate financing).

2. *Mutual Savings Bank*: A savings bank, in general, is a banking association which accepts customer deposits and funds mortgages. A mutual savings bank, in particular, is a savings bank that is owned by and operated for the benefit of its depositors.

3. *Credit Union*: A non-profit financial institution that is owned and operated entirely by its members. Credit unions provide financial services for their members, including savings and lending. In fact, large organizations and companies may organize credit unions for their members and employees, respectively. To join a credit union, a person must ordinarily belong to a participating organization, e.g. a labor union. When a person deposits money in a credit union, he/she becomes a member of the union because the deposit is considered partial ownership in the credit union.

4. *Insurance Company*: Insurance companies are

financial institutions that operate more in the long-term markets and sell insurance. Life insurance companies, in particular, offer mostly life assurance policies which pay a capital sum on the death of the insured person and endowment policies which pay a capital sum in the event of the survival of the insured person beyond the term of the policy. In both cases, the sum insured may be fixed or it may be variable through the addition of bonuses. In either case, life insurance companies offer long-term savings contracts, and therefore they are long-term investors.

5. *Pension Fund*: Pension funds behave in very much the same way with life insurance companies, but the range of the pension funds' activities is much narrower. In particular, pension funds receive contributions from employees and employers which are invested to provide income to pay pensions in the future. Thus, pension funds are long-term investors.

6. *Consumer Finance Company*: It is a financial institution that provides credit to consumers ("consumer credit"). In particular, it can provide credit to allow consumers to buy specific goods and services, which is called sales financing, or it can provide credit in cash, which is called consumer finance.

7. *Business Finance Company*: Business finance companies specialize in offering leasing and factoring services. By the term lease, we mean a written agreement under which a property owner allows a tenant to use the property for a specified period of time and rent. By the term factoring, we mean the selling of a company's accounts receivable, at a discount, to a factor, who then assumes the credit risk of the account debtors and receives cash as the debtors settle their accounts.

8. *Mutual Fund*: A mutual fund is an open-ended fund operated by an investment company which raises money from shareholders and invests in a group of

assets in accordance with a standard set of objectives. In fact, mutual funds raise money by selling shares of the fund to the public, and investors in mutual funds can make money in three ways: (i) income is earned from dividends on stocks and interest on bonds (a fund pays out nearly all income it receives over the year to fund owners in the form of a distribution); (ii) if the fund sells securities that have increased in price, then it has a capital gain which is also distributed to investors; and (iii) if fund holdings increase in price but are not sold by the fund manager, the fund's shares increase in price, and then investors can sell their mutual fund shares for a profit. Note that, for most mutual funds, shareholders are free to sell their shares at any time. Benefits of mutual funds include diversification (i.e. one invests in a large number of assets so that a loss in any particular investment is minimized by gains in others) and professional management. Moreover, mutual funds offer choice, liquidity, economies of scale (i.e. since a mutual fund buys and sells large amounts of securities at a time, its transaction costs are lower than an average individual investor would pay), and simplicity (anyone can buy mutual funds easily). On the other hand, mutual funds charge fees and may require a minimum investment. Additionally, it is possible to have too much diversification: because funds have small holdings in many different securities, high returns from a few investments may not make much difference on the overall return. At the fundamental level, there are three varieties of mutual funds: equity funds (they invest mostly in stock), fixed-income funds (they invest mostly in bonds), and money market funds (they invest mostly in short-term debt instruments such as T-bills).

9. *Hedge Fund*: A hedge fund is usually used by wealthy individuals and institutions and is allowed to

use aggressive strategies that are unavailable to mutual funds, including selling short, leverage, program trading, swaps, arbitrage and derivatives (see also Chapter 4). Hedge funds may be restricted by law to no more than 100 investors per fund, and usually most hedge funds set very high minimum investment amounts. As with traditional mutual funds, investors in hedge funds pay a management fee, and hedge funds also collect a percentage of the profits.

10. *Investment Bank*: An investment bank is a financial institution which acts as an underwriter or agent for corporations and municipalities issuing securities (see also section 1.5). Most investment banks maintain broker/dealer operations and offer advisory services to investors. Investment banks also have an active role in facilitating mergers and acquisitions, private equity placements and corporate restructuring. Unlike traditional banks, investment banks do not accept deposits and do not provide loans to individuals (thus, they are considered to be a non-banking financial institution).

11. *Venture Capital*: By the term venture capital, we mean money provided by professionals who invest alongside management in young, rapidly growing companies that have the potential to develop into large and healthy economic actors. Professionally managed venture capital firms generally are private partnerships or closely-held corporations funded by private and public pension funds, endowment funds, foundations, corporations, wealthy individuals, etc. The major common features of all venture capitalists are the following: (i) finance new and rapidly growing companies, (ii) purchase stocks, (iii) assist in the development of new products or services, (iv) add value to the company through active participation, (v) take higher risks with the expectation of higher rewards, and (vi) have a long-term orientation.

Moreover, venture capitalists mitigate the risk of venture investing by developing a portfolio of young companies in a single venture fund, and often they will co-invest with other professional venture capital firms. It must be stressed that venture capitalists will help companies grow but they eventually seek to exit the investment usually in three to seven years. Venture capitalists are an important source of equity and business know-how for start-up companies.

1.5. Trading Securities

One usage of the term market denotes the contexts of the primary market and the secondary market of securities.

Primary Market

The primary market is the market in which securities are created. It is in this market that firms sell (float) new stocks and bonds to the public for the first time. In other words, we can think of the primary market as being synonymous with an initial public offering (see also Chapter Two). An initial public offering (IPO) occurs when a private company sells stocks to the public for the first time.

Secondary Market

The secondary market is what people refer to when they talk about the "stock exchange". The defining characteristic of the secondary market is that investors trade among themselves, i.e., in the secondary market, investors trade previously-issued securities without the involvement of the issuing companies.

The secondary market can be further divided into the auction market and the dealer market. By the term *auction market*, we mean an area into which all

individuals and institutions wishing to trade securities congregate to announce the prices at which they are willing to buy and sell (bid and ask offers). The New York Stock Exchange is a characteristic example of an auction market. On the other hand, a *dealer market* does not require parties to converge. In a dealer market, individuals/institutions specialize in specific securities or commodities and then buy and sell according to the demand of the market. These "dealers" then earn profits through differences in the posted bidding and asking prices for their specific securities. In a dealer market, investors are not required to wait for other participants before a transaction can occur, and therefore many over-the-counter markets are classified as dealer markets (because the demand and supply for particular stocks is not always enough to meet the demands of different investors and thus specialists can intervene by buying and selling out of personal inventories). In fact, most bonds are traded in dealer markets, and the Nasdaq stock exchange can also be classified as a dealer market.

Third and Fourth Markets

Third and fourth markets involve significant volumes of shares to be transacted per trade. In particular, the third market began as a rogue over-the-counter market for large institutional investors not wishing to pay the set commissions determined by the auction-market authorities. However, since many of the commission schedules set by the auction-market authorities have been removed, this third market has slowly been phased out. The fourth market is very similar to the third market except for the fact that no brokers are involved in the transaction (an example of a fourth-market transaction is a direct trade between two large institutions).

1.6. Financial System and Economic Policy

The general objectives of a government's economic policy usually center around such things as the maintenance of high levels of employment, price stability and income redistribution. In particular, monetary policy is based upon the argument that monetary phenomena have significant influence upon the behavior of the real economy. These monetary phenomena may refer to the growth of the money supply, the level of interest rates, the volume of bank credit, and foreign exchange rates.

Money Supply

First of all, when the monetary authorities pursue a policy of controlling the money supply, they must choose an appropriate monetary aggregate. Having chosen a monetary aggregate, the monetary authorities are then faced with the problem of controlling it. To control the money supply, the monetary authorities can set limits on the amount of deposits that each bank may accept from the public in much the same way as the Central Bank can impose lending ceilings. However, deposit ceilings (as well as lending ceilings) can effectively control the money supply, but they may fail to control the demand for money since firms and individuals would seek ways of avoiding the impact of these controls, and thus borrowing would be diverted from the banks to non-banking financial institutions. An alternative approach to the control of the money supply is through interest rates: given that the demand for bank credit is related to the rate of interest, the higher the rate of interest, the lower will be the demand for bank loans, and the lower the rate of interest, the greater will be the demand. However, there is much more to the story. In fact, in case of companies, the demand for bank credit is not

determined only by the level of interest rates, but it is also determined by the prospect of the profits to be derived from the investment being financed. Higher interest rates will increase a company's costs, but interest is only one of a number of costs such as the cost of labor, raw materials, etc. Thus, only if interest represents a large proportion of total costs and if the company works to very small profit margins is the cost of borrowing likely to be of major importance.

Interest Rates

As we have already mentioned, the level of interest rates can be treated as a monetary target, but it is important to determine the extent to which interest rates are a major factor in decisions of either business, consumers or governments.

Bank Credit

This approach is based on the argument that the level of expenditure is influenced by the availability – as opposed to the cost – of credit. However, a major problem with the use of lending ceilings (by which the lending of a bank is limited to a prescribed percentage of the bank's previous year's lending) is that bank lending is only one source of borrowing and that financial innovation will occur which will allow borrowing to take place outside the control of the monetary authorities.

Exchange Rates

This approach is based on two principles: (i) if the value of a country's currency rises, then the cost of its imports will decrease and demand for its exports will fall, and thus a strong currency is good for inflation but bad for output and employment; (ii) if the value of a country's currency falls, then the cost of its imports

will increase but demand for its exports will rise, and therefore a weak currency is good for output and employment but bad for inflation (see also Chapter Five).

Expenditure

Governments attempt to control aggregate expenditure in money terms, and hence it would be possible to choose expenditure itself as a target. Nevertheless, policy-makers should bear in mind that there may be quite considerable time lags before expenditure responds to policy measures and that there may be a problem concerning the availability of reliable, up-to-date information on expenditure changes.

Central banks have at their disposal a number of policy instruments that can affect certain intermediate targets such as the money supply, interest rates, etc. The three major instruments of monetary policy are:

(i) *Open-market operations*: this is the activity of a central bank in buying or selling government bonds to influence the money supply, interest rates and bank reserves. In fact, if securities are bought, the money paid out by the central bank increases commercial-bank reserves, and the money supply increases. On the other hand, if securities are sold, then the money supply decreases.

(ii) *Discount-rate policy*: given that the discount rate is the interest rate charged by the central bank on a loan that it makes to a commercial bank, it follows that the central bank can increase the discount rate to reduce the money supply, whereas the central bank can reduce the discount rate to increase the money supply.

(iii) *Reserve-requirements policy*: by the term required reserves, we mean that portion of

deposits that a bank sets aside in the form of vault cash or non-interest-earning deposits with the central bank. In fact, if the central bank wants to tighten money overnight, then it can raise reserve requirements, whereas, if the central bank wants to ease credit conditions (and thus increase the money supply), then it can cut reserve requirements.

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CHAPTER 2

STOCKS

2.1. The Meaning of a Stock

By the term *stock*[1], we should always understand a share in the ownership of a company. Indeed, the key concept in the definition of a stock is that of ownership. For, stock represents a claim on the company's assets and earnings. Thus, as one acquires more stock, his/her ownership stake in the company becomes greater. Moreover, if one holds a company's stock, then he/she is entitled to any voting rights attached to the stock.

A stock is traditionally represented by a stock certificate. However, in today's technologically advanced era, stockholders, most probably, will not actually get to see this document because their brokerages keep these records electronically, which is also known as holding shares "in street name". The reason for this is to make the shares easier to trade. Whereas, in the past, when someone wanted to sell his/her shares, he/she had to physically take the certificates down to the brokerage, today investors can trade electronically.

1. *The terms stock, shares and equity mean the same thing.*

It is very important to mention that being a shareholder of a public company does not ipso facto mean that one has the right to participate in the day-to-day running of the business. One vote per share to elect the board of directors at annual meetings is the extent to which a shareholder has a say in the management of the company.

The goal of the management of the company is mainly to increase the value of the firm for shareholders. In case the management fails to achieve this goal, the shareholders can vote to have the management removed. It goes without saying that small individual investors do not own enough shares to have a decisive influence on the company's management. It is really the major shareholders, large institutional investors and big entrepreneurs who determine the company's policy.

Shareholders, even though they may not be engaged in the management of the company, are entitled to a portion of the company's profits and have a claim on its assets. Profits are usually paid out in the form of dividends, but shareholders benefit from capital gains as well. The more shares one owns, the larger the portion of the profits he/she gets. Claims on assets are only relevant if a company goes bankrupt. In case of liquidation, shareholders will receive what is left after all the creditors have been paid.

Finally, it should be mentioned that owners of corporations and limited liability companies are not personally liable if the company is not able to pay its debts (see also Chapter Six). In other words, in these cases, owning stock means that the maximum value one can lose is the value of his/her investment.

2.2. Different Types of Stock

There are two main types of stock – namely, common stock and preferred stock.

Common Stock

The majority of stock issued is in this form. As we have already mentioned, common shares represent ownership in a company and a claim on a portion of profits. Moreover, investors get one vote per share to elect the board members. In case a company goes bankrupt and liquidates, the common shareholders will not receive money until the creditors, bondholders and preferred shareholders are paid.

Preferred Stock

Preferred shares represent ownership in a company but usually do not come with the same voting rights. Whereas common shares have variable dividends that are never guaranteed, preferred shares usually guarantee a fixed dividend forever. In addition, in case of liquidation, preferred shareholders are paid off before the common shareholder, but still after debt holders. Moreover, preferred stock may be callable in the sense that the company has the option to purchase the shares from shareholders at any time and for any reason, usually for a premium.

Different Classes of Stock

Companies may decide to customize different classes of stock in various ways. For instance, one class of shares may be held by a select group of investors who are given five votes per share while a second class may be issued to the majority of investors who are given one vote per share.

2.3. Trading Stocks

As we mentioned in section 1.5, there are different markets of securities. Most stocks, in particular, are traded on exchanges, since a stock exchange facilitates

the exchange of stocks between buyers and sellers and thus reduces the risk of investing.

2.4. Initial Public Offering (IPO)

By the term Initial Public Offering (IPO), we should always understand the first sale of stock by a company to the public. Whereas private companies are privately held, public companies are those that have sold at least a portion of the business entity to the public and trade on a stock exchange.

The main reasons which usually motivate companies to do an IPO are the following: (i) they raise a lot of cash; (ii) they can issue more stock, provided, of course, that there is market demand, and thus mergers and acquisitions are easier, since stock can be issued as part of the deal; (iii) they can usually get better rates when they issue debt; (iv) they enjoy higher levels of liquidity.

When a company wants to do an IPO, it needs, first of all, to hire an investment bank. The main activity of an investment bank is the process of underwriting, i.e. the process of raising money by either debt or equity. In fact, an underwriter is a middleman between companies wanting to go public and the investing public.

The firm which wants to be publicly traded must first meet with the investment bank to discuss the amount of money the firm will raise, the type of securities to be issued and all the details of the underwriting agreement. There are different variations as to how an underwriting agreement can be structured. In a *firm commitment*, the underwriter guarantees that a certain amount will be raised by buying the entire offer and then reselling the stocks all to the public. In a *best efforts* agreement, the underwriter sells securities for the company but does not guarantee the amount raised. Moreover, to mitigate the risk, investment banks may form a syndicate of

underwriters (one underwriter leads the syndicate and the others sell a part of the issue).

Once the firm and the investment bank (underwriter) agree to a deal, the latter puts together a registration statement that is to be filed with the capital market authorities (e.g. the SEC in the United States). This document contains information about the IPO as well as company information (e.g. financial statements, management background, where the money is to be used, any legal problems, etc.). The capital market authorities then investigate and make sure all necessary information has been disclosed. If the capital market authorities approve the IPO, then a date (the effective date) is set, when the stock will be offered to the public.

During the period in which the capital market authorities investigate the company, the underwriter puts together an initial prospectus that has all the information about the company (except for the offer price and the effective date, which are not known at that time), and, by using this prospectus, both the underwriter and the company attempt to build up interest for the issue, especially among the big institutional investors. Moreover, as the effective date approaches, the underwriter and the company decide together on the offer price. Finally, the securities are then sold on in the stock exchange.

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CHAPTER 3

BONDS

3.1. The Meaning of a Bond

Whereas stocks are equity, bonds are debt. This is the most important distinction between the two securities. In fact, a *bond* is a debt instrument issued for a period of more than one year with the purpose of raising capital by borrowing. By purchasing equity, an investor becomes an owner in a corporation. Intimately related to ownership are voting rights and the right to share in any future profits, too. By purchasing debt (bonds), an investor becomes a creditor of the issuer. Bonds may be issued by the central government, cities, corporations, banks, etc. The primary advantage of being a creditor is a higher claim on assets than that of shareholders. In particular, in case of bankruptcy, a bondholder will get paid before a shareholder does. On the other hand, a bondholder does not share in the profits if a company prospers, since he/she is entitled only to the principal along with interest on a specified date.

3.2. Bond Characteristics

1. Public and Private Issues

A public bond issue is approved by a securities agency which ensures disclosure through a prospectus. A private placement is an issue directly negotiated between the issuer (borrower) and a lender or a group of lenders and is restricted in trading under securities law. This means that only sophisticated investors may purchase or trade in these securities.

2. Type of Issuer

The issuer is an extremely important characteristic of a bond as the issuer's financial health is the lender's main assurance of getting paid back. For instance, the US Government is far more secure than any corporation, so that their default risk – namely, the chance of the debt not being paid back – is extremely small (since a government will always be able to bring in future revenue through taxation). In fact, corporations must continue to make profits in order to pay back their debts, which is far from guaranteed. Therefore, corporations must offer a higher yield in order to entice investors through an attractive risk/return tradeoff.

3. Bond Rating

In the sequel, we present the different rating scales from the major rating agencies in the United Sates. The bond rating system helps investors distinguish a company's credit risk.

Moody's	*S&P/Fitch*	*Grade*	*Risk*
Aaa	AAA	Investment	Highest Quality
Aa	AA	Investment	High Quality
A	A	Investment	Strong
Baa	BBB	Investment	Medium Grade
Ba, B	BB, B	Junk	Speculative
Caa/Ca/C	CCC/CC/C	Junk	Highly Speculative
C	D	Junk	In Default

4. Term to Maturity

In general, fixed income securities are classified according to the length of time before maturity. By the term maturity, we mean the date on which a debt becomes due for payment. These are the three main categories in the United States: (i) *Treasury Bill* (T-bill): a negotiable debt obligation issued by the US Government and backed by its full faith and credit, having a maturity of one year or less (exempt from state and local taxes); (ii) *Treasury Note* (T-note): a negotiable debt obligation issued by the US Government and backed by its full faith and credit, having a maturity between 1 and 7 years; (iii) *Treasury Bond* (T-bond): a negotiable interest-bearing debt obligation issued by the US Government and backed by its full faith and credit, having a maturity of more than 7 years (treasury bonds pay interest every 6 months at a fixed coupon rate and are exempt from state and local taxes).

5. Face Value/Par Value

The face value (also known as the par value or principal) is the amount of money a holder of a fixed income security will receive back once the given security matures. A newly issued bond usually sells at the par value. Corporate bonds usually have a par value of $1,000, but this amount can be much greater for government bonds. It must be stressed that the par value is not the price of a bond. A bond's price fluctuates throughout its life in response to different variables, mainly interest rates (see section 3.4). When a bond's price trades above the face value, it is said to be selling at a *premium*, and, when a bond sells below face value, it is said to be selling at a *discount*.

6. Coupon

The coupon is the amount that a holder of a fixed income security will receive as interest payments. The coupon is expressed as a percentage of the par value. A rate that stays as a fixed percentage of the par value is a fixed-rate bond, whereas, in case we have an adjustable interest payment, we are talking about a floating-rate bond. In case of floating-rate bonds, the coupon is tied to market rates through an index such as the rate on T-bills. It must be noted that, other things being equal, a lower coupon means that the price of the bond will be more volatile. A *zero-coupon* bond is a type of bond that makes no coupon payments but instead is issued at a considerable discount to par value (e.g. a zero-coupon bond with a $1,000 par value and ten years to maturity might be trading at $600).

7. Convertible Bonds

The holder of convertible bonds can convert them into stocks.

8. Callable Bonds

Callable bonds allow the issuer to redeem an issue prior to maturity.

3.3. Yield

Yield is a figure that shows the return one gets on a bond.

$$\text{Current Yield} = \frac{\text{coupon amount (annual)}}{\text{price}}.$$

When we buy a bond at par, yield is equal to the coupon. When the price changes, so does the yield.

Yield to Maturity is the most commonly used measure of value of a bond, and it includes the compounding of interests and assumes that the bond is held until maturity. Expressed mathematically, the relationship between the price P and the yield to maturity Y for a bond paying an annual coupon of R is, on a coupon date:

$$P = \sum_{i=1}^{N} \frac{R}{\left(1+\frac{Y}{100}\right)^{i}} + \frac{100}{\left(1+\frac{Y}{100}\right)^{N}},$$

where Y= yield to maturity expressed in %, R= coupon rate, P= price of the bond, N= the number of years to maturity.

In case of a zero-coupon bond,

$$Y = \left(\frac{M}{P}\right)^{1/N} - 1,$$

where Y= yield to maturity, M= the value of the given zero-coupon bond at the time of maturity, and P= price of the bond. For instance, a zero-coupon bond with N= 6 years (i.e. years to maturity), price equal to $59,853.10 and face value equal to $100,000 has yield to maturity equal to

$$Y = \left(\frac{\$100{,}000}{\$59{,}853.10}\right)^{1/6} - 1.$$

In business, knowing how to calculate YTM (yield to maturity) is not important, given that the calculation is rather sophisticated. Such calculations today take place electronically.

As we have seen, when price goes up, yield goes down and vice versa. The factor that influences a bond more than any other is the level of prevailing interest rates in the economy. When interest rates rise, the prices of bonds in the market fall, and thus we see an increase in the yield of the older bonds, which are brought into line with the newer bonds being issued with a higher coupon. On the other hand, when interest rates fall, the prices of bonds in the market rise, thereby lowering the yield of the older bonds and bringing them into line with the newer bonds being issued with a lower coupon. In the following section, we shall study the most important measures of a fixed-

income security's sensitivity to interest rates.

3.4. Duration and Convexity

Duration is a popular measure of a financial instrument's sensitivity to interest rates. In fact, any security that involves a stream of future cash flows that are discounted at some interest rate has duration. The formula for the present value of a set of future cash flows discounted at an interest rate i is the following:

$$PV = \sum_{t=1}^{n} c_t (1+i)^{-t}, \qquad (1)$$

where the c_t's represent the cash flows and t represents the times at which they occur (PV stands for present value). Frederick MacAuley, a British actuary (circa 1938), introduced the following formula, which is now known as the MacAuley duration:

$$D = \frac{\sum_{t=1}^{n} c_t t (1+i)^{-t}}{PV}. \qquad (2)$$

Note that the numerator of expression (2) is the same as equation (1), but it multiplies each discounted cash flow by the time at which it occurs. Thus, the MacAuley duration of a series of cash flows is often interpreted as the time-weighted present value of the cash flows divided by the present value of the cash flows. In fact, we treat the present value of a stream of cash flows as a function of the interest rate i, and then we can compute its derivative with respect to i. The derivative with respect to i measures the rate of change of the PV with respect to i and provides us with a measure of the instrument's sensitivity to changes in the interest rate:

$$\frac{dPV(i)}{di} = -(1+i)^{-1} \sum_{t=1}^{n} c_t t(1+i)^{-t},$$

where PV(i) stands for the present value as a function of i. If we take the previous expression and multiply by –1 and divide by PV(i), we obtain what is called Modified Duration:

$$MD = -\frac{1}{PV(i)} \frac{dPV(i)}{di} \qquad (3)$$

The relationship between expressions (2) and (3) is the following: D = (1+i)MD.

MacAuley duration is easier to compute than Modified duration, but, for the purpose of predicting price changes due to changes in the interest rate, MD will be the best tool to use.

Finally, by employing some elementary differential calculus and Taylor's famous theorem, it can be shown how duration allows us to approximately predict how a change in the interest rates affects the present value of a financial instrument:

$$PV(i + \Delta i) = PV(i)\ [1 - D\Delta i/(1+i)],$$

or equivalently

$$PV(i + \Delta i) = PV(i)\ (1 - MD\Delta i),$$

where Δi represents the change in the interest rate.

It must be noted that, in the formulas presented so far, the yield curve is assumed to be flat, which is not true in the real world. For small changes in yields, the percentage change in the bond price is roughly the same regardless of whether the yield changes are positive or negative. However, for large changes in yields, the percentage change in the bond price is larger for a decrease in yields than it is for an increase in yields. This property is referred to as the convexity of the bond.

Convexity is a measure of the curvature of the relation between a bond's price and the interest rate:

$$\text{Convexity} = \frac{1}{PV} \frac{d^2PV}{di^2},$$

where PV represents the price of a fixed income security and i the interest rate.

3.5. Bond Portfolio Management Strategies

In this section, we shall present the following bond portfolio management strategies:

1. Buy-and-Hold Strategy

According to this strategy, we buy a bond and hold it until maturity. To pursue this strategy, a bond investor must examine such factors as quality ratings, coupon levels, terms to maturity, call features and sinking funds. If an investor follows this strategy, then he/she does not trade actively to earn returns, rather he/she looks for bonds with maturities or durations that match his/her investment horizon. It must be noted that only default-free or very high quality securities should be included in the buy-and-hold strategy. Moreover, those investors seeking to lock in a rate of return may choose zero-coupon bonds (good strategy for retirement). In general, the buy-and-hold strategy minimizes transaction costs, and, if implemented consistently, it can be highly effective. For instance, if interest rates are currently high and are expected to remain so for an extended period of time, the buy-and-hold strategy is very promising.

2. Indexing Strategy

This strategy involves attempting to build a portfolio that will match the performance of a selected bond portfolio index, such as the Merrill Lynch Index, the Shearson Lehman Hutton Government/Corporate Bond Index, etc. The portfolio managers who follow the indexing strategy are judged on their ability to

track the index. It should be noted that buying every bond in a market index according to its weight in the index is rather impractical. However, a relevant subset is a more practical strategy. Alternatively, a bond portfolio manager can analyze a bond index to determine various stratification levels (e.g. what portion of securities that make up the index are Treasury, Aaa Industrial, of x years to maturity, of k% coupon rate, etc.) and then to select one security from each category (in fact, there could be few dozens of categories).

3. Interest-Rate Anticipation Strategy

This is a highly risky strategy because the investor must make decisions on the basis of uncertain forecasts of future interest rates. The major objectives of this strategy are to preserve capital (or at least lose as little as possible) when interest rates rise (and hence bond prices decrease) and to receive as much capital appreciation as possible when interest rates decrease (and hence bond prices increase). These objectives can be obtained by altering the maturity or duration of the bond portfolio. Longer maturity, or longer duration, fixed income securities will benefit the most from an interest rate decrease and vice versa. Hence, if a bond portfolio manager follows this strategy, he/she must be concerned with the direction of the change in interest rates, the magnitude of the change across maturities and the timing of the change.

4. Valuation Analysis

According to this strategy, we look for undervalued bonds; namely, those bonds whose "real value", according to the portfolio manager's computations, is higher than the current market price. This strategy is intellectually very demanding since it requires a lot of quantitative analysis (continuous evaluations) and a lot of trading based on the analysis. In particular, within

the framework of valuation analysis, we should examine the term structure of zero-coupon bonds and thus determine the value of US Treasuries as well as the default-free characteristics of any other type of bond, too. Furthermore, we can determine the other factors that affect bond yield by using multiple factor regression analysis (i.e. by examining such things as: quality rating, coupon level, sector effect, call provision, etc.). Thus, using this factor analysis, we can determine the expected yield for the security: if the expected yield is found to be lower than the current yield to maturity, then we should buy.

5. Credit Analysis

This strategy involves examining bond issuers to determine if any changes in the organization's default risk can be identified. In fact, the portfolio manager tries to determine if the bond rating agencies are going to change the issuer's rating. Rating changes may be prompted by changes in such factors as: financial ratios, GNP, inflation, etc. It goes without saying that, to be successful in utilizing bond rating changes, one must accurately predict when the bond rating change will occur and take action prior to the change.

6. Yield Spread Analysis

According to this strategy, the bond portfolio manager should monitor the yield relationships between various types of bonds and look for abnormalities. In fact, spread analysis involves anticipating changes in the relationships between different sectors. For instance, prices and yields of lower investment-grade bonds tend to move together and thus these bonds may be treated together as a particular "sector". In general, identifiable classes of securities are referred to as "sectors". Changes in relative yields (or the spread) may be prompted by: (i)

altered perceptions about the creditworthiness of a sector, (ii) changes in the market's valuation of some characteristic of the securities in the sector (e.g. callable bonds), and (iii) changes in supply/demand conditions. The portfolio manager's objective is to invest in the sector(s) that will display the strongest relative price movements. We must note that this strategy may demand numerous trades and that the investor who follows this strategy must face the risk of bad timing (it is unclear how long it will take for the market to realize the abnormal spread) as well as the risk that overall changes in interest rates can undermine the investor's efforts.

7. Pure Cash-Matched Dedicated Portfolio

This is the most conservative investment strategy. In fact, we construct a bond portfolio with a stream of payments, sinking funds and maturing principal payments to exactly match specific liability schedule (this requires estimating one's future obligations, such as pension fund payouts, college tuition, etc.). For instance, one can choose zero-coupon bonds that have maturity dates exactly when he/she needs the funds.

8. Portfolio Immunization

One of the major problems faced by bond portfolio managers is having the needed amount of funds at a specific date – one's investment horizon. If interest rates never changed during one's investment horizon, then he/she could reinvest his/her coupon payments at the stable interest rate and earn the promised yield to maturity (YTM). Indeed, there are two components of interest-rate risk: (i) price risk (if interest rates change before the end of one's investment horizon and the bond is sold prior to maturity), and (ii) coupon-reinvestment risk (the promised YTM assumes that all coupon payments are reinvested at the promised YTM, but, if interest rates change, this is

impossible). A bond portfolio is said to be immunized if its value at the end of the period is the same as, or higher than, it would have been if interest rates had not changed during the investment horizon. Let us assume that interest-rate changes will affect all rates by the same amount. Under the previous assumption, portfolio immunization can be achieved by holding a portfolio of bonds with a modified duration (MD) equal to the remaining investment horizon.

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CHAPTER 4

DERIVATIVES

4.1. Futures Markets

Futures markets originated to trade agricultural commodities, and it is only since the 1970s that financial futures have come to play an important role in these markets. Futures contracts are contracts which have been constructed on the basis of an underlying ("cash") product (e.g. agricultural commodities, stock indices, bonds, etc.) and always trade on an organized exchange. The Chicago Board of Trade (CBOT) – namely, the oldest and largest futures exchange in the world – is a characteristic case in point. The exchange is a voluntary, nonprofit association of its members, and exchange memberships (also called "seats") may be held only by individuals and are traded in an active market like other assets.

In the futures markets, the buyer is said to have a *long position*, and the seller has a *short position*. The act of buying is called going long, whereas the act of selling is called going short. It is straightforward that, in order for a futures contract to trade, there must be a long position and a short position. When one trader

buys and another sells a futures contract, the transaction generates one contract of trading *volume*. Moreover, at any moment in time, there is some number of futures contracts obligated for delivery, and this number is called the *open interest* (note that most futures contracts do not actually lead to delivery).

In general, a *futures contract* is a legally-binding agreement made on the trading floor of a futures exchange to buy or sell a standard quantity of one product (the *underlying* product) at a specified price and for delivery at a specified time in the future. Futures contracts always have standardized contract terms. In fact, the futures contract specifies the quantity and quality of the good that can be delivered to fulfill the futures contract, and, additionally, it specifies the delivery date and method for closing the contract as well as permissible minimum and maximum price fluctuations permitted in trading.

For instance, let us consider the Chicago Board of Trade wheat contract. One wheat contract consists of 5,000 bushels of wheat that must be of one of the following types: No.2 Soft Red, No.2 Hard Red Winter, No.2 Dark Northern Spring, or No.1 Northern Spring. The wheat contract trades for expiration in the following months of each year: July, September, December, March and May. To deliver wheat in completion of the contract, the wheat must be in a warehouse approved by the CBOT. Furthermore, the contract stipulates the minimum price fluctuation, or *tick* size. For wheat, one tick is 1/4 cent per bushel, and, with 5,000 bushels per contract, this gives a tick size of $12.50 per contract. The contract also specifies a *daily price limit*; e.g., for wheat, the trading price on a given day cannot differ from the preceding day's closing price by more than 20 cents per bushel, or $1,000 per contract. Note that, when the contract is trading in its delivery month, this price limit is not in

effect. Moreover, when a commodity enters a particularly volatile period, price limits are generally expanded over successive days.

The above-mentioned rules about futures contracts may appear highly restrictive, but they actually stimulate trading. Given that the good being traded is so highly standardized, all the participants in the market know exactly what is being offered for sale as well as the terms of the transactions. This uniformity increases the liquidity of the futures markets.

Each futures exchange has an associated *clearinghouse*, which may be constituted as a separate corporation or it may be part of the futures exchange. The clearinghouse plays a very important role in the futures market since it guarantees that all of the traders in the futures market will honor their obligations. In particular, the clearinghouse serves this role by adopting the position of buyer to every seller and seller to every buyer. Thus, every trader in the futures markets has obligations only to the clearinghouse and, of course, expects that the clearinghouse will maintain its side of the bargain, too. In other words, the clearinghouse substitutes its own credibility for the promise of each trader in the market, and all clearinghouses are well capitalized.

It should be stressed that the clearinghouse interposes itself between all parties to every transaction but it takes no active position in the market. In the futures market, for every party expecting to receive delivery of a commodity, the opposite trading partner must be prepared to make delivery. Hence, if we sum all outstanding long and short futures market positions, the total always equals zero. However, because of the clearinghouse, the two trading parties do not need to trust each other or even know each other's identity. Indeed, the two traders only have to be concerned about the reliability of the

clearinghouse; for, the clearinghouse's failure to perform on its guarantee to the two trading parties would have a devastating impact upon the futures market.

Beyond the clearinghouse, there are more safeguards for the futures market. The most important among these safeguards are the requirements for margin and daily settlement. Before trading a futures contract, the prospective investor must deposit funds with a broker. These funds serve as a good faith deposit by the trader and are known as *margin*. Thus, the main purpose of margin is to provide a financial safeguard to ensure that the traders will perform on their contract obligations. The amount of this margin varies from contract to contract, and also it may vary by broker. The margin may be posted in cash, a bank letter of credit, or in collateralizable securities (the investor who posts this margin retains title to it).

There are three types of margin. First of all, the initial deposit, which we mentioned above, is the *initial margin* – namely, the amount a trader must deposit before trading any futures. The initial margin is very reasonable, being approximately equal to the maximum daily price fluctuation permitted for the contract being traded. When all obligations associated with a trader's futures position are fully completed, the initial margin is returned to him/her. In case a trader has deposited a security as the initial margin, he/she earns the interest that accrues while the security has served as the margin.

In the futures market, traders are required to realize any losses in cash on the day they occur. This is known as *daily settlement* or *marking-to-market*. For instance, let us assume that Mr John bought one oat contract for 200 cents per bushel and that the contract closes on that day at 197 cents per bushel. Hence, Mr John has sustained a loss of 3 cents per bushel, and,

since there are 5,000 bushels in one contract, Mr John has lost $150, which are deduced from the margin deposited with his broker. When the value of the funds deposited with the broker reaches a certain level, called the *maintenance margin*, the trader is required to replenish the margin and thus bring it back to its initial level. This demand for additional margin is known as a *margin call*, and the addition amount the trader must deposit is called the *variation margin*. In general, the maintenance margin is about 75 percent of the amount of the initial margin. It goes without saying that, whereas losses can require a variation margin, the gains may entitle the trader to withdraw cash (due to the daily settlement of the position in the futures markets). Moreover, we must mention that, to avoid frequent market margin calls, a trader can deposit securities with a value well in excess of the initial margin, or he/she can deposit funds in excess of the initial margin into an interest-bearing account.

The members of a futures exchange may be classified as clearing members or nonclearing members. A *clearing member* is a member of the exchange and of the proper clearinghouse, too. The clearinghouse demands margin deposits from clearing members to cover all futures positions that are carried by that clearing member. All *nonclearing members* must clear their trades through clearing members.

There are different manners in which a trader can complete a futures contract: (i) *Delivery*: A trader can complete a futures contract through the physical delivery of a particular good. Nevertheless, exchanges have introduced futures contracts that allow completion through cash settlement, i.e. traders make payments at the expiration of the contract to settle any gains or losses, instead of making physical delivery. (ii) *Offset*: To complete a futures contract obligation

through offset, the trader enters the futures market again to bring his/her net position in a particular futures contract back to zero by making the reversing trade. Note that the reversing trade matches the original transaction in the good traded, the number of contracts and the maturity; for, otherwise, the trader undertakes a new obligation to the clearinghouse instead of canceling the old. (iii) *Exchange-for-Physicals*: In an exchange-for-physicals, two traders agree to a simultaneous exchange of a cash commodity and futures contracts based on that cash commodity. For instance, assume that Trader X is long one wheat contract and wishes to acquire wheat, whereas Trader Y is short one wheat contract and owns wheat. Then the two traders can agree on a price for the physical wheat and simultaneously they can agree to cancel the complementary futures against each other.

The types of futures contracts that are traded can be divided into four major categories: (i) agricultural and metallurgical contracts (e.g. wheat, corn, oats, soybeans, soymeal, soyoil, cattle, pork bellies, lumber, cotton, cocoa, coffee, rice, sugar, etc.); (ii) interest-earning assets (e.g. futures contracts are traded on bonds, T-bills, notes, Eurodollar deposits, etc.); (iii) foreign currencies; (iv) indices (e.g. the Standard and Poor's 500, the Dow Jones Industrial Average, the NASDAQ 100, the FTSE 100 on the LIFFE, the CAC-40 on the MATIF, the DAX 30 on the DTB, etc.).

The traders who trade in the futures markets fall into three fundamentally different groups: (i) those who wish to discover information about future prices of commodities, (ii) those who wish to speculate, and (iii) those who wish to hedge. In fact, investors try to reveal information about future cash market prices through the futures market. For, in buying or selling a futures contract, a trader agrees to receive or deliver, respectively, a given commodity at a certain time in

the future for a price that is determined now, and hence there is a relationship between the futures price and the price that people expect to prevail for a commodity at the delivery date specified in the futures contract. On the other hand, hedgers are traders who use the futures market as a substitute for a cash market transaction in order to reduce a preexisting level of risk exposure. For instance, if a farmer expects to harvest 100,000 bushels of wheat in six months, then he/she can establish a price for that harvest by selling 20 wheat futures contracts (each wheat contract consists of 5,000 bushels). In other words, by selling these futures contracts, the farmer seeks to establish a price today for the wheat that will be harvested in the future and hence to protect himself/herself from wheat price fluctuations that might occur between the present and the future moment. Hedgers are mainly business concerns dealing with a specific commodity. On the other hand, individual traders in the futures markets are mainly speculators, entering the futures market in pursuit of profit and increasing their risk in the process.

4.2. Options Markets

By the term *option*, we should always understand an agreement between two parties, giving the option buyer (option holder) the right, but not the obligation, either to buy or to sell a quantity of an item at a specified price, on or before a specified date in the future. If the option is exercised, then the option writer is obliged to sell or to buy the item on the terms specified in the option.

A *call option* is an option that gives owner the right to buy an underlying good at a specified price for a specified time. A *put option* is an option that gives its owner the right to sell the underlying good at a specified price for a specified time. An option's key

feature is the choice that the option holder is given whether to exercise the right to buy or sell the underlying good at the specified price or whether to do nothing and allow the option to lapse at expiry.

Today, many sophisticated institutional investors use options to execute complex strategies. For instance, large pension funds and investment banks trade options in conjunction with stock and bond portfolios to control risk and obtain additional profits. Moreover, corporations use options to execute their financing strategies and to hedge unwanted risks that they could not avoid in any other way.

Let us consider an option with a share of K stock as the underlying good. Assume that today is June 1 and that K shares trade at \$90. Moreover, assume that the market trades a call option to buy a share of K at \$85 with this right lasting until August 15, and the price of this option being \$12. In this example, the owner of a call option must pay \$85 to buy the stock. This \$85 price is called the *exercise price* or the *striking price*. The price of the option, or the *option premium*, is \$12. This option expires in 2.5 months. If the trader buys the call option, then he pays \$12 and receives the right to buy a share of K stock by paying an additional \$85, if he/she so chooses by August 15. The option premium is paid when the option trades. The premium the seller receives is his/hers to keep whether or not the owner of the call decides to exercise the option. If the owner of the call option exercises it, he/she will pay \$85 no matter what the current spot price of K stock may be. If the owner of the call option exercises it, then the seller of the option will receive the \$85 exercise price when he/she delivers the stock to the call owner as promised.

Additionally, put options will trade on K. Let us consider a put with a striking price of \$80 trading on June 1 that also expires on August 15. Assume that the

price of the put is $4. If a trader buys a put, he/she pays $4, and, in exchange, he/she receives the right to sell a share of K for $80 by August 15. The seller of the put receives $4, and he/she promises to buy the share of K for $80 if the owner of the put option decides to exercise it by August 15. The payment the seller of the put option receives (i.e. the option premium) is his/hers to keep whether or not the owner exercises the option.

A call option is said to be *in-the-money* if the price of the underlying good in the cash (or spot) market exceeds the exercise price. For instance, a call option with an exercise price of $100 on a stock trading at $110 is $10 in-the-money. A call option is *out-of-the-money* if the price of the underlying good in the cash (or spot) market is less than the exercise price. A call option is *at-the-money* if the price of the underlying good in the cash (or spot) market equals (or is very near to) the exercise price.

A put option is said to be *in-the-money* if the price of the underlying good in the cash (or spot) market is below the exercise price. A put option is *out-of-the-money* if the price of the underlying good in the cash (or spot) market exceeds the exercise price. A put option is *at-the-money* if the price of the underlying good in the cash (or spot) market equals (or is very near to) the exercise price.

In general, an option will be exercised only if the exercise price is more favorable than the prevailing price of the underlying good in the cash (or spot) market.

There are two fundamental kinds of options: An *American option* permits the owner to exercise at any time before or at expiration. On the other hand, the owner of a *European option* can exercise only at expiration.

Options can be purchased from two sources. *Over the counter options* (OTC options) are negotiated between a customer and a bank. The customer may be a non-banking financial entity or another bank. The bank agrees to write the option as specified by the particular customer's requirements and determines the premium the customer must pay. Such OTC options usually are European style options. In contrast, *exchange traded options* are written and purchased on an options exchange and usually are American style options. In fact, in 1973, the Chicago Board of Trade created the Chicago Board Options Exchange (CBOE), which is the leading options exchange in the United States. An options exchange is a more orderly options market, and, by standardizing the options contract, it helps promote liquidity.

To ensure that options contracts trade in a smoothly functioning market, each options exchange has an associated clearinghouse. After the day's trading, the options clearinghouse, such as the Options Clearing Corporation (OCC) in the US, first attempts to match all trades. In other words, the clearinghouse must match the paperwork from both sides of every option transaction. If the two records agree, then the trade is a matched trade. This process of matching trades and tracking payments is known as *clearing*, and every options trade must be cleared. Given that the trade matches, the clearinghouse guarantees both sides of the transaction, i.e. the clearinghouse interposes its own credibility for that of the individual traders.

In addition to the clearinghouse, there is another important safeguard for the options market –namely, the margin. In fact, the clearinghouse requires margin payments from its clearing members. A clearing member is a securities firm having an account with the clearinghouse, and all option trades must be channeled through a clearing member to the clearinghouse. Each clearing member in turn demands

margin payments from the traders it clears.

In the United States, the Federal Reserve Board requires specified minimum margin payments from option traders. Moreover, each exchange may impose additional margin requirements, and each broker may require margin payments beyond those required by the Federal Reserve Board and the exchanges.

The seller of a call option may be required to deliver the stock if the owner of a call exercises his/her option. Hence, the maximum amount the seller can lose is the value of the share. In case the seller keeps money on deposit with the broker equal to the share price, then the broker, the clearing member and the clearinghouse are completely protected. Moreover, the seller of a call option may have the share itself on deposit with the broker. In this case, we say that the seller has sold a *covered call.* The margin on a covered call is zero, since the stock is immediately available to deliver. If the seller of a call does not have the underlying share on deposit with the broker, then we say that the seller has sold an *uncovered* (or a *naked*) *call,* and his/her maximum possible loss is the value of the share. For the writer of a put, the worst result is being forced to buy an overvalued stock at the exercise price, i.e. his/her maximum possible loss is equal to the exercise price. Thus, if the margin were equal to the exercise price, then the broker, the clearing member and the clearinghouse are completely protected. However, instead of demanding complete protection, the seller of a call or a put must deposit only a fraction of the potential loss as an *initial margin.*

If the option is in-the-money, then the initial margin required from a seller equals 100 percent of the proceeds from selling the option plus an amount equal to 20 percent of the value of the underlying stock (according to the CBOE regulations). For

instance, assume that a stock currently sells for $100 and a trader sells a call for 100 shares with a striking price of $90 on this stock for $5 per share. Ignoring brokerage fees, the proceeds from selling the call would be $500. To this add 20 percent of the value of the underlying stock, or $2,000 for the 100 shares. Hence, the initial margin requirement is $2,500.

If the option is out-of-money, then the initial margin required from a seller equals the margin sale proceeds plus 20 percent of the value of the underlying stock minus the amount the option is out-of-money. Nevertheless, this margin rule can result in a negative margin, and hence the initial margin must also equal 100 percent of the option proceeds plus 10 percent of the value of the underlying security (this is the minimum margin).

In addition to the above-mentioned initial margins, the trader may be required to make additional margin payments in case prices move against him/her.

It must be mentioned that the trading of options on organized exchanges in the United States embraces different underlying stocks. Also, options trade on financial indices such as the S&P100. Furthermore, options trade on individual foreign currencies. Additionally, options trade on futures (in general, in the US, each futures exchange trades options on its own active futures contracts).

4.3. Option Pricing

Modern option pricing techniques are often considered among the most mathematically complex of all areas of finance. Indeed, calculation of the appropriate premiums for options with differing strike prices and differing expiry dates involves the use of sophisticated computer models. Most of these, however, are based upon the same basic principles, and, in the sequel, we shall highlight these by studying

two simplified modeling frameworks.

1. The Black and Scholes Model

This model is based on the following assumptions: (i) the stock pays no dividends during the option's life (however, since most companies pay dividends, a common way of adjusting the model for this situation is to subtract the discounted value of a future dividend from the stock price); (ii) European exercise terms are used (this limitation is not a major concern because few calls are ever exercised before the last few days of their life); (iii) markets are efficient; (iv) no commissions are charged; (v) interest rates remain constant and are known; (vi) returns are longnormally distributed. The model is the following:

$$C = SN(d_1) - Ke^{-rt} N(d_2)$$

where:
C= theoretical call premium
S= current stock price
t= time until option expiration
K= option striking price
r= risk-free interest rate
N= cumulative standard normal distribution
e= exponential term (≈2.7183)

$$d_1 = \frac{\ln(S/K) + \left(r+\sigma^2/2\right) t}{\sigma\sqrt{t}}$$

$$d_2 = d_1 - \sigma\sqrt{t}$$

σ = standard deviation of stock returns
ln = natural logarithm.

Note that the first part, i.e. $SN(d_1)$, derives the expected benefit from acquiring the underlying stock outright. The second part of the model, i.e. $Ke^{-rt}N(d_2)$, gives the present value of paying the exercise price on the expiration day. The fair market value of the call option is then calculated by taking the difference between these two parts.

2. The Binomial Option Pricing Model

This model breaks down the time to expiration into potentially a very large number of time intervals. Thus, a tree of stock prices is initially produced working forward from the present to expiration. At each step, it is assumed that the stock price will move up or down by an amount calculated using volatility and time to expiration. This produces a binomial distribution of underlying stock prices. This tree represents all the possible paths that the stock price could take during the life of the option. At the end of the tree –namely, at expiration of the option– all the terminal option prices for each of the final possible stock prices are known since they simply equal their intrinsic values. Next, the option prices at each step of the tree are calculated working back from expiration to the present. The option prices at each step are used to derive the option prices at the next step of the tree using risk neutral valuation based on the probabilities of the stock prices moving up or down, the risk-free rate and the time interval of each step. Moreover, any adjustments to stock prices (at an ex-divided date) or option prices (as a result of early exercise of American options) are worked into the calculations at the required point in time. Finally, at the top of the tree, we are left with one option price. A major advantage of the binomial model is that it can be used for the pricing of American-style options, too.

4.4. How Dangerous Can Derivatives Become?

As we have already mentioned, derivatives, like futures and options, were developed to allow investors hedge risks in financial markets (in effect, buy insurance against market movements). However, derivatives have quickly become a mean of investment in their own right.

Derivatives can threaten both the financial system

and the economy at large. First of all, derivatives pose a dangerous incentive for false accounting. For, the profits and losses from derivatives deals are booked straight away, even though no actual money changes hands, and, in many cases, the real costs hit companies only many years later. This can result in serious accounting errors. Some of them may be due to "honest" optimism, whereas others are the result of huge-scale fraud. The US energy market, which relies heavily on derivatives trading and resulted in the collapse of Enron, is a characteristic case in point. As the legendary investor Warren Buffett put it in 2003, "Derivatives generate reported earnings that are often wildly overstated and based on estimates whose inaccuracy may not be exposed for many years".

Since derivatives allow investors to speculate on the future price of, say, commodities or shares without buying the underlying investment, it follows that derivatives can become very dangerous if an investor uses high levels of leverage. Thus, as Warren Buffett put it, derivatives can be like "hell –easy to enter and almost impossible to exit".

Furthermore, Warren Buffett has argued that "Large amounts of risk have become concentrated in the hands of relatively few derivatives dealers... which can trigger serious systemic problems". In fact, the major money that most investment banks make is made in betting with their derivatives. For instance, in the beginning of 2003, JP Morgan alone had about $23 trillion of derivatives on their books. What will happen if one side of the ledger ends up not having the money to pay off their bets? This is a serious threat, indeed. Derivatives can take down the stock markets, and, in extreme cases, they can destabilize the economic system at large.

Finally, it must be mentioned that the exchange-traded derivatives do not have the same potential for

abuse as over-the-counter derivatives because the counterparty risk is policed by the exchanges. Moreover, whereas the prices of the exchange-traded derivatives are set in organized exchanges, in case of OTC derivatives, no one knows what the real values are. The price of an OTC derivative is mainly a function of guesswork and investors' ability to make the right asset valuations.

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CHAPTER 5

FOREIGN EXCHANGE

5.1. International Finance

The last quarter of the 20th century has been characterized by rapid growth in international trade, globalization of product markets and increasing moves toward economic and financial integration. Moreover, financial instruments have multiplied and become more sophisticated.

The growing importance of international trade for most industrialized countries is demonstrated in the following table:

	Import Penetration (%)				Export Ratio (%)			
	1958	1968	1980	1990	1958	1968	1980	1990
United States	3.2	4.0	9.6	9.4	3.9	3.9	8.2	7.1
Japan	9.5	8.8	13.3	8.0	9.0	8.8	12.3	9.7
France	9.6	11.2	20.3	19.8	8.8	10.4	17.5	18.3
Germany	13.9	15.2	23.1	22.8	16.0	18.7	23.7	27.1
United Kingdom	13.7	18.0	21.6	22.6	14.7	14.7	20.6	18.8
Korea	9.3	24.8	35.7	27.7	0.4	7.7	28.0	25.8
Mexico	11.0	7.2	10.4	12.7	7.1	4.6	8.4	11.5

Note that, by "import penetration", we mean the proportion of domestic demand satisfied by imports,

and, by "export ratio", we mean the proportion of gross domestic product which is exported.

The main reasons why international trade has grown much more rapidly than domestic economic activity are the following. First, there has been a reduction in barriers to trade and investment, e.g. the removal of tariffs, quotas, currency controls and other obstacles to the international flow of goods, services and capital. Second, there have been rapid improvements in transportation and communication infrastructures.

Much of the liberalization of trade has come from the development of free-trade areas such as the European Union (EU) and the North America Free Trade Agreement (NAFTA). Moreover, there has been rapid growth in trade among members of the Association of South East Asian Nations (ASEAN). The following table shows the percentage of trade that occurs within such regions (intra-regional) and contrasts this with trade across regions (extra-regional). Both measures take exports plus imports and divide by overall GDP.

	Intra-Regional Trade				Extra-Regional Trade			
	1958	1968	1980	1990	1958	1968	1980	1990
Western Europe	17.7	21.3	31.5	33.0	15.8	12.5	16.1	12.8
Eastern Europe	15.3	25.4	21.6	18.8	9.7	14.6	18.4	22.7
North America	2.9	3.5	5.8	6.0	6.3	6.0	13.6	13.2
Latin America	5.0	4.0	5.4	3.8	24.8	17.4	21.3	23.7
Asia	10.8	7.8	11.2	14.0	15.5	13.5	16.1	15.2
Africa	3.7	3.5	2.7	3.1	42.2	34.8	45.5	45.6
Middle East	7.0	3.0	3.6	3.3	51.0	34.2	52.5	50.0
World Economy	8.8	10.3	15.9	17.4	12.9	11.6	18.8	16.1

The previous table shows that international trade is growing most rapidly within *trading blocks*. This trend toward a concentration of trade within blocks has important currency implications. It suggests that the

Japanese yen is likely to become dominant as the settlement currency in Asia, the euro even more dominant in Europe, with the role of the US dollar as the dominant global currency consequently diminishing. Moreover, the concentration of trade within blocks implies that the impact of an individual country's monetary crisis on other countries within the same block and even on other countries around the world will be stronger.

International trade has the potential to benefit all nations by allowing each to specialize in the production of those goods and services at which it is relatively more efficient. This relative efficiency concept is referred to as *comparative advantage* and is based on the fact that different countries tend to have different ratios of land, labor, raw materials and capital. Specialization, therefore, can lead to larger-scale production and broader choice of products. In addition to comparative advantage, other dynamic factors which create *competitive advantage* play a major role in the growth of international trade. In fact, countries are usually successful in international markets when they also have discerning buyers at home. Thus, competition and innovation are created in the domestic market, leading to competitive advantage in export markets.

Hand in hand with the rapid growth in international trade goes a similar increase in the importance of international financial markets. Internationalization of financial investment has led to an improvement in the global allocation of capital and an enhanced ability to diversify investment portfolios. The gain from better allocation of capital derives from the fact that international investment reduces the extent to which investment opportunities with high returns in some countries are forgone for want of available capital, whereas low return investment

opportunities in other countries with abundant capital receive funding. The flow of capital between countries forces rates of return in different regions closer together and thus offers better returns overall. Moreover, internationalization of investment leads to smoother consumption over time by lending and borrowing overseas.

It must be mentioned that intimately related to growth in international trade and investment flows is the rise of the multi-national corporation (MNC). For instance, the United Nations estimates that corporate investment across borders grew four times faster than world output and three times faster than international trade between 1980 and 1995.

5.2. International Payments System

Within the domestic economy, the vast majority of payments –whether trading or investment– are settled through the banking system, mainly by the use of cheques. In the case of international payments, settlement through the banking system is still the normal procedure but with two major differences. Firstly, the banks involved in such transactions are situated in different countries and have balance sheets expressed in the appropriate national currency. Secondly, the parties to the transactions are likely to use different currencies.

The banks are the main participants in the foreign exchange (or simply FOREX) market, partly operating in the market on behalf of their customers and partly on their own account. In addition, within the market, there are specialist firms of foreign exchange brokers whose function is to bring buyers and sellers of foreign exchange together (for which service they charge a brokerage fee).

5.3. Spot Market

Where foreign exchange is traded for immediate delivery, the market is known as the *spot* market and the rates quoted are described as spot rates. In practice, to allow for the funds to be transferred and for the paper work to be completed, this usually means that settlement will be effected on the second working day after transaction.

It is necessary to determine exactly how the exchange rate is being quoted. There are two possibilities, known as direct and indirect quotations. According to the direct quotation method, it is the foreign currency (FC) which is expressed in terms of the home currency (HC), i.e. we write HC/FC. For instance, if we were located in the eurozone, the rate against the USD would be EUR/USD, whereas, if we were located in the US, the rate would be quoted as USD/EUR. According to the indirect method, it is the home currency which is quoted in terms of foreign currency, i.e. FC/HC. For instance, the euro-US dollar rate would be USD/EUR if we were located in the eurozone and EUR/USD if we were Americans. Throughout this book, we shall follow the direct quotation method.

In contrast to organized exchanges, e.g. stock exchanges, the spot market does not have a specific location, since it consists of a network of banks and brokers with offices all over the world. The Bank of International Settlements (BIS) estimates that total daily trading on foreign exchange markets exceeds $1 trillion, with major markets being London, New York and Tokyo; this trading is concentrated in two main segments of the FOREX market –namely, the spot market and the forward market (see also section 5.4).

As we have already mentioned, a transaction in the spot market involves a contract to buy or sell a quantity of foreign currency for immediate settlement

(actually, the exchange of currencies will usually occur two banking days after the contract has been agreed). Throughout this book, we shall denote the spot rate by $S_t = (HC/FC)_t$.

Interbank spot rates are the current buying and selling prices for wholesale transactions in a currency. These apply when foreign currency transactions are above a certain size. The exact size of transaction required before interbank rates apply depends on the currencies and the banks involved, and typically is in excess of USD 1 million. Interbank spot rates are published in daily newspapers.

The bid rate is the rate at which the bank is willing to pay in order to buy the currency of interest (and sell another currency), and the ask (or offer) rate is the rate at which the bank will offer to sell the currency of interest (and buy another currency). Obviously, if the exchange rate is being quoted with the currency of interest –namely, the currency which is being bought or sold– in the denominator, then the ask rate will be always higher than the bid rate, i.e.

$S_{bid,t} < S_{ask,t}$.

Many actors in the wholesale market are market makers, i.e. the rates which they quote are binding. Interested parties may ask market makers for both bid and ask rates without revealing whether they intend to buy or sell, since, in this way, they will be able to estimate the commission which the particular market maker is charging. Moreover, it should be noted that, by definition, the inverse of the (HC/FC) ask rate is the (HC/FC) bid rate.

The spread between bid and ask rates usually differs between banks and between financial centers. A major reason for this is that liquidity in a particular currency may vary. For instance, in Bangladesh, there is a liquid

spot market for the taka (BDT), but, outside Bangladesh, customers have much more difficulty finding banks willing to buy or sell at a competitive rate. An important characteristic of liquid markets is that competition between banks narrows the spread between bid and ask rates. In fact, the London market has narrow spreads for most currencies mainly due to the volume of trade that occurs.

If we study the history of the FOREX markets, we shall realize that, initially, foreign-exchange transactions were purely trade or investment related. In particular, in those early days, a bank which transacted a spot deal with a company and bought, say, USD, had to carry the exposure until a matching transaction, i.e. selling USD, squared its position. Nowadays, however, a bank can eliminate such exposure instantly by transacting with another bank. In addition to this interbank trading, speculation undertaken by bank dealers, investment managers and brokers now forms a major activity in the spot market.

When considering spot rate quotes for a particular currency by different market makers, we realize that arbitrage and least cost dealing tend to enforce the law of one price. In fact, in perfectly competitive markets, two assets with identical cash flows and levels of risk would have the same price. Similarly, if there were no market imperfections or transaction costs, markets in different parts of the world would all sell an identical product for the same price. These are examples of the *law of one price.*

Let us consider a situation in which a particular good was being sold at differing prices in various locations around the world. If we ignore all transaction costs and market imperfections, then there would be a tendency for entrepreneurs to purchase in the low-priced areas and resell in the high-priced areas, thus making a risk-free profit. The previous

transaction is called *arbitrage.* Such arbitrage transaction will generate an excess demand in low-priced areas and an excess supply in high-priced areas, thus pushing prices overall closer into line. In a perfect market, arbitrage would stop when the prices were identical. However, if there are transaction costs, the buying and selling transactions undertaken by arbitrageurs stop when price differentials are the same as the costs involved. A similar process known as *least cost dealing* can also lead to an equalization of prices if there are no transaction costs or any other market imperfections. Anyone wishing to purchase a particular good would shop around the world looking for the cheapest price. The previous behavior tends to generate an excess demand in underpriced areas and an excess supply in overpriced areas, thus pushing prices overall closer into line. It is worth pointing out that the difference between prices in underpriced and overpriced areas would again eventually be determined by the transaction costs involved.

Moreover, arbitrage and least cost dealing explain why there are relationships between spot rates quoted in different currencies, i.e. *cross rates.* Triangular arbitrage involves sequentially buying and selling currencies with the aim of making a profit when we finally convert back into the original currency. For instance, one can convert GBP into EUR and then immediately convert the EUR into USD and the USD back into GBP. Hence, to rule out such arbitrage opportunities, exchange rates must be such as to make any risk-free instantaneous profits after paying transaction costs impossible.

5.4. Forward Market

Forward markets involve contracts made now for payment and delivery of foreign currency at some specified date in the future, the exchange rate at

which the transaction will occur being determined at the time the contract is entered into. Such contracts are usually for periods of 7, 14, 30, 60, 90, 180, 270 and 360 days, but it is possible to obtain quotes for a few years forward (months are indicated as thirty days). Further flexibility in forward maturity dates can be provided by using forward option contracts, which allow customers to choose any date within specified limits as the date for settling the contract (usually these limits are confined to the final 10 days of the contract). In case the maturity date for a forward contract is not a working day, then the maturity date is brought forward to the nearest prior working day.

The vast majority of forward contracts are *swap agreements*. A swap contract involves two forward transactions –namely, an agreement to exchange specific amounts of currencies on one date and then reverse the exchange on some later date, usually at an exchange rate that differs from that of the first exchange. In most forward swaps, one of the exchanges is a spot transaction, and thus the swap is said to be a *spot-forward swap*. For instance, a contract to buy JPY spot and sell JPY forward is a spot-forward swap. In addition, there are *forward-forward swaps*, in which one forward contract is reversed by another forward contract with a later maturity. For instance, a contract to buy JPY 1 month forward and sell JPY 2 months forward is a forward-forward swap.

Swaps can be very useful for investors and borrowers in foreign currency. For instance, a person who invests in a foreign bond can use a spot-forward swap to avoid foreign-exchange risk. In particular, he/she can buy foreign currency spot and at the same time sell the foreign-currency maturity value of the bond. Moreover, a person who borrows foreign currency can immediately exchange the funds into home currency at the spot rate, and at the same time

he/she can sell forward the amount of foreign currency necessary to pay off the loan. Finally, currency swaps are very useful to importers and exporters who undertake exchange-rate risk.

Forward exchange rates show the current price of buying or selling currency for exchange at some specified future date. In the sequel, we shall denote the forward rate now (time t) for maturity at some time in the future (time T) as follows: $F_{t,T}$. Forward rates are regularly published in financial newspapers such as the *Financial Times*. For instance, forward rates for CHF against GBP can be written as follows:

1 month $(CHF/GBP)_{t,30} = 1.9175$

3 months $(CHF/GBP)_{t,90} = 1.9067$.

The previous forward rates are known as outright quotes. Alternatively, we may see swap rates quoted. Swap rates represent the difference between the forward rate and the spot rate. Thus, we may write, for instance:

swap rate 1 month (CHF/GBP)=1.9175–1.9225=–0.005

swap rate 3 months (CHF/GBP)=1.9067–1.9225=–0.0158

When a currency costs less for forward delivery than it does for spot delivery, as is the case for GBP in the above example, the foreign currency (GBP) is said to be trading at a *forward discount*. When a currency costs more for forward delivery than it does for spot delivery, the foreign currency is said to be trading at a *forward premium*. If the two rates are identical, then the currency is said to be *trading at par*.

Forward premiums and discounts are frequently put into annual terms since interest rates are quoted in annual terms, and it can be useful to compare interest rates and forward premiums/discounts on equivalent terms. Thus, we divide a k-month forward exchange rate by the spot rate and then annualize by raising the result to the power of 12 (if k=1 month), or 4 (if k=3 months), etc. Going back to the previous example, to

turn the forward rates for CHF/GBP into equivalent annual figures, we work as follows:
$(1.9175/1.9225)^{12} = 0.9692$
$(1.9067/1.9225)^{4} = 0.9676$.

Hence, the 1 month forward discount on sterling is 0.9692 (or 3.08%) when annualized, and the 3 month forward discount is 0.9676 (or 3.24%).

If there is an interest-rate differential between two countries, then it must be reflected in the forward premium or discount. This condition is known as *interest rate parity*. For instance, if short-term interest rates in the UK are higher than those in the US, then interest rate parity means that the forward USD/GBP will be at a discount sufficient to prevent arbitrageurs from moving funds from the US to the UK and then looking for gains based on the interest rate differential by entering into a forward contract. In general, we have:

Interest Rate Parity: $F_{t,T} = S_t(1+r_{t,T})/(1+r^*_{t,T})$,

where r = the home currency interest rate and r* = the foreign currency interest rate. Note that, in the previous equation, we ignore bid-ask spreads and transaction costs, and also we assume that all relevant information is known, there are no barriers to financial mobility and that there are no differences in risk internationally (in case these assumptions are relaxed, then interest rate parity may not hold exactly and at all points in time, but it would still provide a satisfactory approximation).

5.5. Currency Futures and Currency Options

The forward market for foreign exchange is much larger than the futures market. Futures contracts on different currencies are traded on a number of futures exchanges around the world, such as the Chicago Mercantile Exchange, the Tokyo International Financial

Futures Exchange, the Singapore International Monetary Exchange, etc. The differences between currency futures and currency forward contracts are the following:

Currency Futures	Forward Contracts
Exchange-traded	Over-the-counter arrangement between bank and customer
A single market price at any given time (it is the price at which sellers are willing to sell and buyers willing to buy)	Two-way prices are quoted (spread between bid and ask rates)
Bought and sold by brokers on behalf of customers	Arranged directly between bank and customers
Exchange becomes the counter-party to every transaction	Banks take on the risk of a customer defaulting
Standardized quantities and only certain currencies	Any amount of any currency
Standardized delivery dates set by the exchange	Settlement dates agreed between bank and customer
Customers required to post margins	Banks frequently ask for no deposit
Daily settlement	No payment before maturity

As far as currency options are concerned, one of the principal options exchanges around the world is the Philadelphia Stock Exchange.

In the 1990s, many regulatory agencies and financial analysts in general were concerned about the fact that big banks swap all kinds of promises all the time (e.g. interest-rate swaps, forward currency swaps, options on futures, etc.). They try to balance all these promises (hedging), but there is the big danger that one big player will go bankrupt. Such a collapse could cascade as more and more speculators (banks) cannot meet their obligations because they were counting on defaulted contracts to protect them from losses.

5.6. Exchange-Rate Determination

In some economies, exchange rates are fixed as a matter of administrative decisions, whereas, in some others, exchange rates are market determined. However, to say that exchange rates are determined by the law of supply and demand does not explain the mechanism which itself determines the levels of supply and demand and thus establishes an equilibrium exchange rate. There are mainly four possible explanations of exchange-rate movements –namely:

1. Relative Price Movements

According to this approach, exchange rates are determined by the relative purchasing power of currencies, the so-called *Purchasing Power Parity Theory*. This theory suggests that, if x units of currency in country A buy a given volume of goods and services and y units of currency in country B buy the same volume of goods and services, then the exchange rate will be x=y. For instance, if €1 will buy goods in the eurozone which would cost $1.30 in the United States, then the rate of exchange will be €1 to $1.30. There is no clear evidence that the Purchasing Power Parity theory holds in the short-term, but, in the longer-term, it is probably the case that relative rates of inflation in different countries do affect exchange rates (e.g. if a country experiences high inflation, its exports will become less competitive and this will exert a downward pressure on the exchange rate).

2. Interest Rates

Differences between the level of interest rates in two countries will influence the flow of funds from the one to the other for investment purposes. The exact way this occurs was described in section 5.4, where we discussed the notion of Interest Rate Parity.

3. Speculation

Speculative influences on exchange rates derive from some players in the FOREX market believing that a currency will move in a particular direction and attempting to profit from that anticipated movement by selling out of those currencies whose values are expected to fall and buying into those whose value is expected to rise. In the long-term, currency speculation may not suffice to determine exchange rates unless the underlying economic factors indicate inherent strength or weakness in the country under consideration. Nevertheless, in the short-term, currency speculation can exert a more decisive influence on exchange rates.

4. Central Bank Intervention

Central banks can influence exchange rates by intervening in the foreign exchange market (see Chapter One). However, if the underlying forces in the market are strong, then central banks cannot resist them in the long-term. In fact, the power of a central bank to buy its own currency (in order to pursue a policy of "hard currency" in the FOREX market) is limited by its reserves; the power of a central bank to increase the supply of money is limited by the risk of inflation.

5.7. Exchange-Rate Regimes

The most fundamental question in international monetary relations is to determine which exchange rate system can better serve the objective of encouraging multi-lateral trade so that the benefits of international specialization and the division of labor may be maximized. In the sequel, we shall study the alternative exchange rate systems.

1. Fixed Exchange Rates

Under a system of fixed exchange rates, the value of

each currency in the system is linked to some commonly accepted standard. For instance, throughout the 18th and the 19th centuries, the gold standard was offering stability to the international monetary system. For, under the gold standard, the value of each country's currency was fixed by the gold content of its coinage and exchange rates were established between two currencies by the amount of gold that each currency represented (e.g. if the GBP contained four times as much gold as the USD, then the exchange rate would be £1= $4).

As an alternative to the use of gold, the standard chosen may be a national currency. The Bretton Woods system agreed upon in 1945 by most major Western countries heralded about three decades of fixed exchange rates by obliging the countries in this system to tie their own currencies to the US dollar (e.g. between 1949 and 1967, the UK Government set a central rate with respect to the USD of £1.00= $2.80 and instructed the Bank of England to intervene whenever the GBP rose to $2.821 or fell to $2.779).

Advocates of fixed exchange rates argue that this system has two major advantages: (i) Fixed rates remove some of the uncertainty from international transactions by eliminating the exchange risk. The removal of the exchange risk, so it is argued, encourages international trade and investment, and thus it brings about a more efficient allocation of resources on a global scale as well as an improvement in global welfare. (ii) Moreover, fixed exchange rates enforce financial discipline upon countries. In fact, under this system, governments would be disciplined by the need to maintain the fixed parity. If a country is to maintain the value of its currency against whatever standard is chosen, then the monetary authorities must be in a position to intervene in the foreign exchange market to maintain the fixed parity.

Thus, consideration of the fact that, under this type of system, balance of payments disequilibrium cannot be solved by devaluation or revaluation of the currency obliges governments to abstain from policies which are likely to lead to balance of payments difficulties, especially to deficits.

On the other hand, two main objections can be advanced against the fixed exchange rates system: (i) This system requires countries to maintain large reserves in order to intervene effectively in the foreign exchange market. For instance, under the Bretton Woods system, in the intermediate post-1945 period, the world suffered from a dollar shortage, and, when the dollar became plentiful in the 1960s, it started to lose its value against other currencies and the problem of adequate reserves was transferred from one set of nations to another. (ii) Given that devaluation is not a possible solution to a country's balance of payments problem, the only solution remaining is a deflation of domestic demand, unless the country abandons free trade politics and relies on import and other direct controls. Deflation may, indeed, prove a difficult policy to impose because of the rigidity of prices in a modern economy, particularly the price of labor, and therefore deflation is likely to manifest itself in reduced output and employment rather than in lower prices. Hence, the maintenance of a system of fixed exchange rates requires the inflation rate across countries to be approximately equal. For instance, after 1945, this did not happen, and therefore pressure was put on the whole Bretton Woods system, leading to its collapse in 1972.

2. Floating Exchange Rates

Under a system of freely floating exchange rates, the determination of the exchange rates is left solely to the forces of supply and demand in the foreign exchange market. In theory, under such a system, governments would not intervene in the foreign

exchange market with the result that they would neither lose nor accumulate reserves. Nevertheless, in practice, governments –especially if they are under political pressure at home– will not allow exchange rates to float freely. In fact, under a system of freely floating exchange rates, nations can pursue mutually incompatible exchange rate policies, being well aware that exchange rate changes can have significant effects on such things as the level of domestic demand, employment and inflation.

The major advantage of the freely floating rate system is that the determination of exchange rates is a matter for the market rather than for government intervention. However, as we have already mentioned, in practice, such a system can lead to economic nationalism. Therefore, for a freely floating rate system to work in the way that theory suggests, it is necessary that governments agree not only to abstain from direct intervention in the FOREX market but also to avoid other policies, such as export subsidies and import quotas, which would not allow market forces to determine the exchange rate.

Finally, it should be mentioned that, under a freely floating exchange rate system, there is an exchange rate risk which is eliminated under the fixed exchange rate system. However, this risk can be reduced by the use of various means of currency hedging.

3. Managed Exchange Rates

After the collapse of the Bretton Woods system, the major OECD currencies have floated with respect to the USD. The G8 governments have been attempting to coordinate exchange rates, however. In general, central banks often intervene in the FOREX market on both unilateral and coordinated basis to maintain some unofficial target range. This is known as managed exchange rate system. Moreover, the International Monetary Fund (IMF) has as one of its objectives the promotion of exchange rates stability, ensuring orderly exchange rate arrangements, whether they involve floating, pegging the exchange rate to another currency, or the adoption of a system such as the European Monetary System.

4. European Monetary System

The European Monetary System (EMS) came into being in March 1979 mainly in order (i) to establish a zone of monetary stability in Europe and (ii) to bring about a greater convergence of financial and economic policies among member states thereby facilitating an increased integration of their economies.

The Maastricht Treaty, which in the 1990s established the European Union (EU), requires EU members to satisfy a number of criteria before joining the Economic and Monetary Union (EMU). With the start of EMU in 1999, the currencies of participants were irrevocably locked and then replaced by a single currency, the euro.

The adoption of the euro as the single legal tender of the countries which form the EMU aims at solving the problem of exchange rate instability among the currencies of the member states and in effect establishing a central monetary authority –the European Central Bank (ECB)– controlling the Union's money supply. In such an environment, market interest rates are equalized across boundaries, allowing only minor regional variations and differentials due to the risk rating and fiscal treatment of the investment involved. Moreover, open market and foreign exchange operations are carried out by the ECB, subject to policy determinations by a board on which the national central banks are represented. The ECB is autonomous with a very clear cut mandate, focusing on price stability.

The EMU imposes a central monetary policy on all member states whose hitherto independent monetary

policies are rendered inoperative. Under such a system, national central banks play a role, more or less, similar to the regional Federal Reserve Banks in the US.

However, what is different in the EMU context versus that of the US is the lack of central fiscal policy and the lack of effective labor mobility. Even though labor is free to move, language, culture and other socio-political factors create substantial barriers which tend to deny effective labor mobility to the EMU. The lack of central fiscal policy is partially compensated by the instrumentality of the regional development policies of the EU. In addition, it must be noted that the resources commanded by the fiscal arm of the EMU are very meager in comparison to those of the member states.

Enormous benefits from EMU are likely for all participants, at least to their business and political elite. In a larger and more uniform market, there are more choices and opportunities and less obstacles for someone to develop one's resourcefulness and creativity. On the other hand, a major problem might be where tight monetary policy is applied when there is substantial economic dislocation or unemployment in some member states. Under EMU, monetary policy is centralized, and mobility of traded goods and services as well as capital can effectively circumscribe member country fiscal initiatives. Therefore, EMU needs to encourage formation of EU coalitions for the purpose of pursuing central government action. In other words, EMU requires significant increases in European central government fiscal powers.

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CHAPTER 6

FINANCIAL ACCOUNTING AND FINANCIAL INVESTMENTS

6.1. Accounting: Rudiments and Ramifications

Familiarity with the key concepts of accounting is a necessity for a full understanding of economics and business. For, accounting is the most important tool by which economic actors organize and summarize information about economic activities. In particular, this information is provided to decision makers in the form of financial statements. To prepare these statements, accountants analyze, record, quantify, accumulate, summarize, classify, report and interpret economic events as well as their financial effects on the organization.

Accounting is of paramount importance in decision making since it shows where and when money has been spent and commitments have been made, it evaluates economic performance and it indicates the financial implications of choosing one plan rather than another. Additionally, accounting helps predict the future effects of decisions and it helps direct

attention to current problems, imperfections and economic opportunities.

In the financial system, there are many different decision makers and all of them have to make several decisions which presuppose analysis of financial statements. For instance, managers of organizations must decide where to expand or reduce operations and evaluate the performance of subordinates. Lenders of money must decide whether or not they will grant a loan and specify lending terms. Suppliers of goods and services must decide whether or not they will extend credit. Shareholders of organizations must decide whether they will increase or reduce their investments. Income tax authorities must decide if taxable income has been measured properly. A Securities and Exchange Commission must decide if the financial statements of a publicly held corporation conform to requirements of securities laws.

As we have already mentioned in Chapter One, all organizations have financial goals. For instance, business firms must make a profit to continue in business. The *scorekeeping role* of accounting consists in the task of measuring the financial results of the activities of an organization and reporting those results in financial statements. Decision makers use the financial statements to help assess how successfully an organization has met its financial goals.

Investors are strongly interested in the financial success of a firm as indicated in its financial statements, since investors provide resources to the firm, usually by investing cash. This invested cash is used by the firm to produce goods and services, which are sold to customers or clients. The goal is to sell the goods and services for more than it costs to provide them so as to create a profit (the excess of receipts over disbursements), which can be distributed to the investors. Thus, investors in business firms use

financial statements to evaluate the performance of managers in generating profits and to predict a firm's ability to generate future profits.

Managers are concerned with financial statements, too, since managers are paid to generate profits for investors. In addition, many companies pay bonuses to managers based directly on results reported in the firm's financial statements. Thus, managers predict the effects of their decisions on the financial statements and try to take actions that enhance the values shown in the statements.

Decision makers use four major financial statements to measure the financial success of an organization: *balance sheet, income statement, statement of cash flows,* and *statement of retained income.* In fact, the balance sheet focuses on the financial picture as of a given day, whereas the other financial statements focus on the performance over time.

The most common source of the information contained in the financial statements is the *annual report.* The annual report is a combination of financial statements, management discussion and analysis as well as graphs and charts that is provided annually to investors. In fact, firms distribute their annual report to stockholders, and interested investors may request the report by calling the investor relations department of the company.

It must be stressed that earnings information often affects the prices of securities. These price changes often occur very quickly. Within minutes of the announcement of the earnings news, informed investors may begin to buy or sell securities based on their revised beliefs about the company. *Barron's,* a weekly magazine, helps its readers by publishing the actual quarterly earnings from the previous year and the earnings that analysts expect to be reported for this year. Similar types of information can be found in

the *Wall Street Journal,* the *Financial Times* and in other financial newspapers.

6.2. The Quarterly and Annual Reports

Financial statements are required by law and must include a balance sheet, an income statement, a statement of cash flows, an auditor's report, and a relatively detailed description of the company's operations and prospects for the upcoming year.

The annual report is sometimes also referred as the 10-K; yet, the 10-K contains the same information but in much more detail than many annual reports. In general, the following information is presented in most financial reports (the order in which these are presented might vary):

(i) Summary of the previous year.
(ii) Information about the company in general (history, products and line of business).
(iii) Letter to shareholders from the President or the Chief Executive Officer.
(iv) Auditor's report assuring the reader that the results are accurate.
(v) An in-depth discussion about the financial results and other factors within the business.
(vi) The complete set of financial statements (balance sheet, income statement, cash flow statement, and statement of retained earnings).
(vii) Notes to the financial statements.
(viii) Other information on the company's management, offices, etc.

In an annual (or a quarterly) report, as a preface to the financial statements, the organization's management will typically spend a few pages talking about the recent year (or quarter) and give a background on the company. When we read the management's analysis, we must pay attention to the following points:

(i) The managers' comments must be accurate and candid.
(ii) The managers must discuss significant financial trends over the past two years.
(iii) The managers must mention potential risks or uncertainties moving forward.
(iv) The managers must give a decent amount of information in the MD&A (Management Discussion and Analysis) without trying to confuse the reader with big words and jargon.

Finally, regarding the auditor's report, it must be mentioned that, by law, every public company with stocks or bonds trading on an exchange must have their annual reports audited by a Certified Public Accountant firm. An auditor's report is meant to give credibility to the figures reported by the management.

The typical auditor's report is almost always divided in three paragraphs as follows:

Paragraph 1: It describes the responsibilities of the auditor and directors in general and lists the areas of the financial statements that were audited.

Paragraph 2: It lists how the proper accounting principles (see paragraph 2.3) were applied and what areas of the company were assessed.

Paragraph 3: It gives the auditor's opinion on the financial statements of the company being audited (this is not a guarantee of accuracy, but only an opinion).

6.3. Generally Accepted Accounting Principles

Financial statements are based on a measurement process which takes place according to a set of principles; for, otherwise, if every accountant used a different set of measurement principles, decision

makers would find it difficult to use and compare financial statements. By the term *generally accepted accounting principles* (GAAP), we mean the broad concepts or guidelines and detailed practices in accounting, including all the conventions, rules and procedures that together determine accounting practice at a given segment of space-time.

The first basic concept or principle in accounting is the entity concept. By the term accounting *entity*, we mean an organization, or a section of an organization, that constitutes a separate economic unit.

Furthermore, another basic concept or principle in accounting is the *reliability* concept. By the term reliability, we mean the quality of information that assures decision makers that the information captures the conditions or events it purports to represent.

6.4. The Balance Sheet

The *balance sheet* is a financial statement which shows the financial status of a business entity at a particular instant in time. The reason it is called a balance sheet is that both the sides balance. The right side lists *liabilities* and *owners' equity*, which represent claims against the resources. The left side lists *assets*, which represent the resources of the firm. The items in the balance sheet form the balance sheet equation:

Assets = Liabilities + Owners' equity.

Assets, liabilities and equity are divided into the following sub-categories:

Balance Sheet

Left Hand Side (Assets)	*Right Hand Side (Liabilities & Stockholders' Equity)*
Current Assets: it includes cash, accounts receivable, and other assets that can be converted into cash relatively quickly.	*Current Liabilities:* it includes a company's liabilities that will come due within the next 12 months.
Property & Equipment: it can be more accurately described as long-term operating assets (less depreciation on these assets).	*Long-term Liabilities:* debt not maturing in the next 12 months (e.g. outstanding bonds that do not mature for several years).
Other Assets: includes anything that does not fit in the above categories.	*Stockholders' Equity:* it reveals how the remainder of the company's assets are financed, including common and preferred stock, treasury stock and retained earnings.
Goodwill: the excess of the purchase price over the fair market value of an asset.	

In the sequel, we present a sample balance sheet (there are many different styles of presenting the balance sheet, but all balance sheets contain the same information):

XYZ Co Consolidated Balance Sheet

ASSETS

Current assets:
- Cash and equivalents
- Short-term investments
- Accounts receivable, net of allowances for doubtful accounts
- Inventories, net
- Deferred income taxes
- Prepaid expenses and other current assets

Total current assets

Investments

Restricted investments

Property and equipment, net

Other assets

TOTAL ASSETS

LIABILITIES AND SHAREHOLDERS' EQUITY

Current liabilities:
- Accounts payable
- Income taxes payable
- Accrued payroll and related expenses
- Other accrued liabilities

Total current liabilities

Commitments and contingencies

Minority Interest

Shareholders' equity:
- Preferred stock
- Common stock and additional paid-in capital
- Retained earnings
- Accumulated other comprehensive income

Total shareholders' equity

TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY

6.5. Types of Ownership

Business entities can be organized by their owners as sole proprietorships, partnerships, or corporations.

A *sole proprietorship* is a separate organization with a single owner, who is usually the manager, too. Most often, sole proprietorships are small retail establishments and individual professional businesses, e.g. those of physicians, attorneys, etc. From an accounting point of view, each sole proprietorship is an individual entity that is separate and distinct from the proprietor.

A *partnership* is a special form of organization that joins at least two individuals together as co-owners. Again, from an accounting point of view, each partnership is an individual entity that is separate from the personal activities of each partner. Many retail establishments, physicians, attorneys, accountants, etc. conduct their activities as partnerships.

A *corporation* is a special form of organization

created under state law in the United States. In particular, individuals form a corporation by applying to the state for approval of the company's articles of incorporation, which include information on shares of ownership. Most large corporations are publicly owned in that shares in the ownership are sold to the public, so that the owners of the corporation are identified as shareholders (or stockholders). Some corporations are privately owned and shares of ownership are not publicly sold. Many states allow having only one shareholder.

Internationally, distinct legal organizations are very common. In the United Kingdom, they are frequently indicated by the word *limited* (Ltd) in the name. In many countries whose laws trace back to Spain, the initials S.A. refer to a *society anonymous*.

A corporation is a legal and an accounting entity apart from its owners, and the management and business activities are conducted completely apart from the activities of the owners. It goes without saying that the corporate form of organization has many advantages. Arguably, the most important advantage is the *limited liability* of owners, i.e. corporate creditors (such as banks or suppliers) ordinarily have claims against the corporate assets only (in general, the owners' personal assets are not subject to the creditors' grasp). On the other hand, the owners of proprietorships and partnerships typically have *unlimited liability*, i.e. business creditors can look to the owners' personal assets for repayment. Another advantage of the corporation is easy transfer of ownership – namely, the corporation usually issues capital stock certificates which may be sold and resold among present and potential owners. Thus, in contrast to proprietorships and partnerships, corporations have the advantage of ease in raising ownership capital from many potential stockholders. Furthermore, the

corporation has the advantage of continuity of existence, i.e. life continues even if its ownership changes, whereas proprietorships and partnerships officially terminate upon the death or complete withdrawal of an owner.

6.6. Income Measurement

Income is a measure of the increase in the wealth of an economic entity over a period of time. Thus, accountants have decided that a common set of rules for measuring income should be applied by all companies so that decision makers can more easily compare the performance of one company with that of another.

Most accounting entities follow a similar, somewhat rhythmic, pattern of economic activity during which income is measured. By the term *operating cycle* (or *earnings cycle*), we should always understand the time span during which cash is used to acquire goods and services, which in turn are sold to customers, who in turn pay for their purchases in cash. It is straightforward that every business entity's objective is to sell goods and services at a price higher than the acquisition cost. The total amount of profit earned during a particular period depends on the excess of selling prices over costs of the goods-services and additional expenses and on the speed of the operating cycle.

The calendar year is the most popular time period for measuring income or profits. Nevertheless, many large companies use a *fiscal year*, i.e. the year established for accounting purposes that ends on some date other than December 31. In many cases, the fiscal year ends at the low point in annual business activity. For instance, many retailers use a fiscal year ending on January 31 because Christmas sales and post-Christmas sales are over, and hence inventories, which are at

their lowest point of the year, can be counted more easily and valued more accurately. Moreover, because decision makers want to know how well the business is doing each month, each quarter and each half-year, companies prepare financial statements for *interim periods*.

The key components in measuring income are revenues and expenses. *Revenues* are gross increases in owners' equity which are due to increases in assets received in exchange for the delivery of goods or services to customers. *Expenses* are decreases in owners' equity which are due to the fact that goods or services are delivered to customers. *Income* (or *profit*, or *earnings*) is the excess of revenues over expenses. The additional owners' equity generated by income is called *retained income*.

There are two different methods for measuring income: the accrual basis and the cash basis. The *accrual basis* recognizes the impact of transactions on the financial statements in the time periods when revenues and expenses occur, and therefore revenue is recorded as it is earned and expenses are recorded as they are incurred (not necessarily when cash changes hands). On the other hand, the *cash basis* recognizes the impact of transactions on the financial statements only when cash is received or disbursed.

Supporters of the accrual basis argue that the cash basis provides an incomplete measure of performance, since it ignores activities that increase or decrease assets other than cash. Indeed, the accrual basis includes a more complete summary of the entity's value-producing activities, and hence income under the accrual basis is the better measure for relating overall operating accomplishments to efforts. The cash basis focuses on the narrow but important issue of an entity's ability to generate cash from its current operations.

Under the accrual basis, revenues are *recognized* if they meet the following two criteria:

(i) Be *earned*: revenues are considered to be earned if the goods or services are fully rendered (delivered to customers).

(ii) Be *realized*: revenues are considered to be realized when cash or claims to cash are received in exchange for goods or services. The usual evidence is a market transaction whereby the buyer pays or promises to pay cash and the seller delivers merchandise or services.

Moreover, under the accrual basis, expenses are recognized and recorded in the financial statements of the period in which their economic benefits are consumed or used up. *Product costs* are costs which are naturally linked with revenues (e.g. cost of goods sold, sales commissions, etc.) and are charged as expenses when revenue from the goods/services is recognized. By the term *matching*, we should always understand the recording of expenses in the same time period as the related revenues are recognized. *Period costs* are costs which occur regardless of the level of sales in a particular period (e.g. rent expense, many administrative expenses, etc.).

Intimately related to the concept of recognizing expenses in the accounts is the *cost recovery* concept. Cost recovery refers to the fact that some purchases of goods or services are recorded as assets because the costs are expected to be recovered in the form of cash inflows (or reduced cash outflows) in future periods; for example, rent paid in advance is such an asset.

In addition, it must be mentioned that assets, such as inventory, prepaid rent, and equipment, may be thought of as stored costs that are carried forward to future periods rather than immediately charged against revenue. In other words, assets are unexpired costs held back from the expenses and carried in the

balance sheet to await expiration in the future.

It is a thought-provoking question to determine when an unexpired cost expires and becomes an expense. For instance, some accountants argue that research and development costs should be accounted for as unexpired costs (assets) and written off to expense in some systematic manner over a period of years. On the other hand, regulations in the United States and most other countries have ruled that research costs have vague future benefits and therefore have required writing them off as expenses immediately.

Finally, another important remark is that revenue and expense accounts are subdivisions of stockholders' equity:

Assets = Liabilities + Stockholders' Equity
Stockholders' Equity = Paid-in capital + Retained income
Retained income = Revenue – Expenses
Hence,
Assets = Liabilities + Paid-in capital + Revenue – Expenses

6.7. The Income Statement

An income statement is a report of how much money a company brought in (its revenues), how much it spent (its expenses) and the difference between the two (its profit/ loss) over a specified time[1]. In the United States, public companies generally publish income statements quarterly.

The typical layout of an income statement is as follows:

1. Note that the balance sheet provides a *snapshot* of an entity's financial position at an instant of time, but the income statement provides a moving picture of events over a time period.

	Income Statement
Revenue:	the proceeds that come from sales to customers
Cost of Goods Sold (COGS):	an expense that reflects the cost of the product or good that generates revenue
Gross Margin:	this is revenue minus COGS
Operating Expenses:	any expense that does not fit under COGS (e.g. administration and marketing expenses)
Net Income before Interest & Tax:	net income before taking interest and income tax expenses into account
Interest Expense:	the payments made on the company's outstanding debt
Income Tax Expense:	the amount payable to federal and state governments
Net Income:	the final profit after deducting all expense from revenue
Net Income Per Share:	the net income divided by the number of shares owned by the public (otherwise known as Earnings Per Share, or EPS)

6.8. The Cash Flow Statement

The cash flow statement is similar to the income statement in that it records a company's performance over a specified period of time, usually over the quarter or year. The difference between the two is that the income statement also takes into account some non-cash accounting items such as depreciation. The cash flow statement tells one how much actual money the company has generated, and it helps one evaluate

the company's performance in managing inflows and outflows of cash.

The cash flow statement is divided into the following three parts:

Statement of Cash Flows

Cash from Operations:	this is cash generated from day-to-day business operations
Cash from Investing:	cash used for investing in assets and the proceeds from the sale of other businesses, equipment or other long-term assets
Cash from Financing:	cash paid or received from issuing and borrowing of funds (it includes dividends paid, but it is sometimes listed under cash from operations)
Net Increase or Decrease in Cash:	increases in cash from previous year will be written normally and decreases in cash are typically written in brackets.

In the sequel, we present a sample statement of cash flows:

Cash flows from operating activities:
- Net income
- Adjustments to reconcile net income to net cash provided by operating activities:
  - Depreciation and amortization
  - Provision for doubtful accounts
  - Provision for inventory allowances
  - Deferred income taxes
  - Tax benefits from employee stock plans
  - Adjustment to conform fiscal year ends of pooled acquisitions
  - Purchased research and development from acquisitions
  - Change in operating assets and liabilities:
    - Accounts receivable
    - Inventories
    - Prepaid expenses and other current assets
    - Accounts payable
    - Accrued payroll and related expenses
    - Other accrued liabilities

NET CASH PROVIDED BY OPERATING ACTIVITIES

Cash flows from investing activities:
- Purchases of short-term investments
- Proceeds from sales and maturities of short-term investments
- Purchases of investments
- Proceeds from sales and maturities of investments
- Purchases of restricted investments
- Proceeds from sales and maturities of restricted investments
- Acquisition of property and equipment
- Acquisition of business, net of cash acquired and purchased research and development
- Net investment leases
- Other

NET CASH USED IN INVESTING ACTIVITIES

Cash flows from financing activities:
- Issuance of common stock
- Common stock repurchases
- Other

NET CASH PROVIDED BY (USED IN) FINANCING ACTIVITIES

Net increase in cash and equivalents
Cash and equivalents, beginning of year

CASH AND EQUIVALENTS, END OF YEAR

Non-cash investing and financing activities:
Transfers of securities to restricted investments

6.9. Notes to the Financial Statements

The notes to the financial statements (sometimes called footnotes) list important information that could

not be included in the actual ledgers. In general, there are two types of footnotes:

(i) *Accounting Methods*: This type of footnote tells us the nature of the company's business, when its fiscal year starts and ends, how inventory costs are determined as well as any other significant accounting policies that the company feels that one should be aware of.

(ii) *Disclosure*: The second type of footnote provides additional disclosure, e.g. details of long-term debt such as maturity dates and the interest rates at which debt was issued, pension plan liabilities for existing employees, ominous legal proceedings the company is involved in.

6.10. Analysis of Financial Statements

By the term *financial statement analysis*, we should always understand the use of financial statement data to assess a company's performance. Financial statement analysis includes trend analysis and assessing the components of the business. *Trend analysis* examines changes over time, since past performance is often a good indicator of future performance and current position is the base on which future performance must be built (e.g. trends in past sales, operating expenses and net income may continue, and the management's past performance, the assets a company owns, the liabilities it must pay, its levels of receivables and inventories as well as its cash balance all provide clues to the company's future prospects). *Component analysis* has different meanings. First, component analysis can concentrate on the components of the financial statements themselves, the relative size of current assets, the level of investment in fixed assets, the gross profit percentage, etc. Second, component analysis can mean sorting out the parts of the company's business. In fact, the company can be separated into different

business units or kinds of businesses, different geographic areas of production or marketing, or different customer groups (such as private versus government).

The cornerstone of financial statement analysis is the computation and interpretation of financial ratios. Ratio analysis is not just comparing different numbers from financial statements. It is comparing the number against previous years, other companies, the industry, or even the economy in general. In the sequel, we shall delve into 19 different financial ratios:

1. Average Interest Rate

$$= \frac{\text{Interest Expense - Accounts Payable}}{\text{Liabilities}}.$$

This ratio indicates the average interest rate that a company borrows at, and it is very useful in an interest-rate sensitive environment. If we compare it to previous years, then we are able to tell what rate the company had to take on more debt at. Note that there are several versions of this ratio, since some accountants prefer to just use interest bearing liabilities, such as bonds and other short term loans. Moreover, using the before tax or after tax interest expense will produce different results.

2. Book Value Per Share

$$= \frac{\text{Stockholders' Equity - Preferred Stock}}{\text{Average Outstanding Shares}}.$$

This ratio (known as BV) gives us the accounting value of each share. Market value is determined by the investment community's expectations, whereas book value is based on costs and retained earnings. During bull markets, the market value is more likely to trade significantly higher than book value, whereas in bear markets the two values may be close to equal. If the market value is trading below the book value (this is a

rather rare phenomenon), then this could mean that the company is undervalued and might be attractive buy.

3. Cash Flow to Assets

$$= \frac{\text{Cash from Operations}}{\text{Total Assets}}.$$

This ratio indicates the cash a company can generate in relation to its assets. A ratio of 0.3 is quite good, but when this ratio declines below 0.1 then there may be some cause for concern.

4. Common Size Analysis

$$= \frac{\text{Entity}}{\text{Total Entity}}.$$

This ratio indicates the proportion of an asset/ liability/ expense to total assets/ liabilities/ revenue.

5. Dividend Payout Ratio

$$= \frac{\text{Yearly Dividend per Share}}{\text{Earnings per Share}}.$$

This ratio indicates the proportion of earnings that are used to pay dividends to shareholders. In addition to revenues and expenses, cash dividends are recorded in the Retained Income account. Cash dividends are distributions of cash to stockholders that reduce retained income. Corporations pay out cash dividends to stockholders to provide a return on the stockholders' investment in the corporation. The amount of cash dividends declared by the board of directors of a company depends on various factors. For instance, the amount of a dividend often is some fraction of net income. Moreover, although profitable operations and the existence of a balance in Retained Income are generally essential, dividend policy is influenced by the company's cash position and future needs for cash to pay debts or to purchase additional assets. Dividends are also influenced by whether the company is committed

to stable dividend policy or to a policy that normally ties dividends to fluctuations in net income. Under a stable policy, dividends may be paid consistently even if a company encounters a few years of little or no net income.

6. Earnings Per Share

$$= \frac{\text{Net Income} - \text{Dividends of Preferred Stock}}{\text{Average Outstanding Shares}}.$$

This ratio (known as EPS) indicates how much profit was generated on a per share basis. Diluted EPS means that the outstanding shares include any convertible securities or warrants outstanding.

7. Gross Profit Margin

$$= \frac{\text{Revenue} - \text{Cost of Goods Sold}}{\text{Revenue}}.$$

This ratio indicates what the company's pricing policy is and what the true mark-up margins are. In general, a company's gross profit margin should not fluctuate much from one period to another, unless the industry it is in has been undergoing drastic changes which affect the cost of goods sold and/or pricing policies.

8. Price to Earnings Ratio

$$= \frac{\text{Market Value per Share}}{\text{Earnings per Share}}.$$

This ratio (known as P/E) compares the current price with earnings to see if a stock is overvalued or undervalued. However, if a company has a low P/E ratio, it does not necessarily mean that it is undervalued; it may mean that the company's earnings are flat, or that the company faces increased expenses and/or financial trouble. In general, the P/E ratio does not tell a whole lot, but it is mainly useful to compare the P/E ratios of

other companies in the same industry, or to the market in general, or against the company's own historical P/E ratios.

9. Profit Margin

$$= \frac{\text{Net Income}}{\text{Revenue}}.$$

This ratio indicates what portion of sales contributes to the income of a company. Note that a low profit margin can indicate pricing strategy and/or the impact competition has on profit margins.

10. Return on Assets

$$= \frac{\text{Net Income + Interest Expense}}{\text{Total Assets}}.$$

This ratio (known as ROA) indicates what return a company generates on the firm's assets/investments (the ROA is often referred to as ROI, i.e. Return on Investment). This is an important ratio for companies deciding whether or not to initiate a new project. In particular, if ROA is above the rate that the company borrows at, then the project should be accepted, if not then it is rejected.

11. Return on Equity

$$= \frac{\text{Net Income}}{\text{Stockholders' Equity}}.$$

This ratio (known as ROE) indicates what return a company generates on the owners' investment. If new shares are issued, then we must use the weighted average of the number of shares throughout the year. Moreover, averaging ROE over the past 5-10 years can give us a better idea of the historical growth.

12. Asset Turnover

$$= \frac{\text{Revenue}}{\text{Total Assets}}.$$

This ratio indicates the relationship between revenue and assets. Companies with low profit margins tend to have high asset turnover, and those with high profit margins tend to have low asset turnover (it indicates pricing strategy). In fact, this ratio helps us determine the amount of sales that is generated from each dollar of assets.

13. Collection Ratio

$$= \frac{\text{Accounts Receivable}}{\text{(Revenue/365)}}.$$

This ratio indicates the average number of days it takes a company to collect unpaid invoices. Thus, a high ratio indicates that the company has problems getting paid for services or goods.

14. Inventory Turnover

$$= \frac{\text{Cost of Goods Sold}}{\text{Average or Current Period Inventory}}.$$

Retailers often attempt to increase total profits by increasing sales levels. In particular, they lower prices and hope to increase their gross profits by selling their inventories more quickly, replenishing, selling again, etc. Thus, managers aim at increasing their inventory turnover.

15. Debt-Asset Ratio

$$= \frac{\text{Total Liabilities}}{\text{Total Assets}}.$$

This ratio indicates what proportion of the company's assets are being financed through debt. A ratio under 1 means that the majority of assets are financed through equity, whereas above means they are financed more by debt.

16. Debt-Equity Ratio

$$= \frac{\text{Total Liabilities}}{\text{Shareholders' Equity}}.$$

Note that many high debt-equity ratios result from leveraged buyouts (LBOs). In an LBO, a buyer takes over a company using the company's assets as collateral to borrow the money necessary for the buyout.

17. Acid Test

$$= \frac{\text{Cash+Accounts Receivable+Short-term Investments}}{\text{Current Liabilities}}.$$

This ratio (known as Quick Ratio, too) indicates if a firm has enough short-term assets to cover its immediate liabilities (without selling inventory).

18. Interest Coverage

$$= \frac{\text{EBITDA}}{\text{Interest Expense}}$$

where EBITDA stands for Earnings Before Interest, Taxes, Depreciation[2] and Amortization[3]. This ratio indicates what portion of debt interest is covered by a company's cash flow situation, and ideally this ratio should be over 1.5.

19. Working Capital Ratio

$$= \frac{\text{Current Assets}}{\text{Current Liabilities}}.$$

2. Depreciation is the systematic allocation of the acquisition cost of long-lived or fixed assets to the expense accounts of particular periods that benefit from the use of the assets.

3. Amortization is the systematic reduction of a lump-sum amount. When referring to long-lived assets, it usually means the allocation of the costs of intangible assets to the periods that benefit from these assets.

This ratio (known as Current Ratio, too) indicates if a company has enough short-term assets to cover its immediate liabilities.

6.11. Value Investing

Value investing is an investment strategy according to which stock-market investors should look for stocks whose prices are low for their companies' estimated intrinsic value, which is determined by an analysis of certain characteristics and fundamentals of companies. *Intrinsic value* is based on the simple and powerful notion that investors commit capital to businesses in order to get paid – in dividends, capital gains or other distributions – out of the cash profits the business generates over its life. In fact, the intrinsic value of a business is the present value of the stream of free cash flows – i.e. after-tax cash profits less capital ploughed back in the business – that it will produce over its lifetime, less any debt or other obligations, divided by the number of shares. In other words, intrinsic value is roughly what a knowledgeable investor would be willing to pay, in cash, for a company if he/she knew he/she could own it forever. Thus, buying stocks at below intrinsic value is what value investors propose.

Warren Buffett's value-investing strategy has been one of the most successful ever. For instance, a $10,000 investment in Berkshire Hathaway in 1965 – when Buffett took control of it – would have worth of over $50 million in 2003, whereas $10,000 in the S&P500 would have grown to only $500,000. Buffett approaches stock-market investments by using shopping as a good analogy. Consider, says Buffett, a man walking through a department store who sees a beautiful suit and wants to buy it. Unfortunately, the price is too high, and the shopper shrugs and walks away. Imagine the surprise when few weeks later he returns and finds the very same suit on sale at a 25

percent discount. Thrilled with the newfound bounty, he buys it. However, a few days later, he learns that a friend of his found the very same suit on the clearance rack at 50 percent off the original price.

Buffett argues that anyone who approaches the stock market with a fear that prices might go down should not be involved in the first place. In fact, he has always said that his happiest days are when stocks that he wants to be included in his portfolio go down in value; for, he puts a lot of effort into selecting good companies and is committed to owning these stocks for many years. Investing, says Buffett, has to be approached as a long-term venture. Thus, since any weakness in quality stock prices should be viewed as a buying opportunity, establishing a plan for regular investments is a necessity.

A value investor can ride out the volatility of the stock market and remain unemotional about the ups and downs that are part of the process. According to what we have argued in Chapter One, trying to anticipate what the market or any individual stock might do in the next week, month or year is an arduous task undertaken at a very high risk of failure. The stock-market investor need not – and should not – be concerned with the supply and demand intricacies of the market. In fact, he/she should not be concerned with the activities of the stock market at all. Instead, he/she should choose stocks solely on the basis of their overall potential as companies, approaching each company as a whole. In other words, *the stock-market investor must not be concerned whether the market will eventually be bull or bear, but he/she must be concerned with how well the company in which he/she has invested can make money as a business. Thus, holding these stocks for many years, he/she must not aim at capital gain, but his/her goal must be ownership in quality companies that are highly*

capable of generating earnings. So how can we find low-priced value, as Warren Buffett does? It goes without saying that the financial-accounting concepts which we have studied until now are necessary. In the sequel, we shall study specific questions which must be answered in order to evaluate the relationship between a stock's optimal level and its price:

1. Has the company consistently performed well?

The investor must always look at the ROE to decide whether or not a company has consistently performed well in comparison to other companies within the same industry. In fact, the investor should examine the ROE from the past five to ten years to be able to evaluate the historical growth. However, in economies with very low interest rates, such as the Japanese economy of the 1990s, certain adjustments must be made to better understand the ROE. Let us consider a company which has equity of $100 million and earnings of $7 million, so that its ROE is 7%. With interest rates so low, companies earn nothing on their cash. Therefore, if the previous company has $50 million in cash, we must subtract it, and the true ROE is 14% ($7 million divided by $50 million).

2. Are the company's earnings per share overstated?

As the case of Enron's bankruptcy[4] in 2001 demonst-

4. Its bankruptcy became the biggest chapter 11 case in US history. Enron was using other companies it controlled to hold troubled assets. One of those companies was Enron Global Power & Pipelines, a 52 percent-controlled subsidiary, which was merely a «dumping ground» for troubled Enron projects and liabilities. Moreover, Enron was using overly aggressive accounting methods to keep the costs of failed bids for international power plant projects off its books; for instance, they would capitalize the cost of their losing bids instead of expensing it.

rated, the earnings per share of many companies are overstated. A major cause is that many executives care only about making their numbers this quarter so they can get their bonus and their attitude is "We'll worry about troubled projects and liabilities next year next year". In fact, management can grant itself stock options[5] that become more valuable as the stock price rises. There is the potential for that group to become truly rich if the stock goes up sharply enough and quickly enough, and that's the main key to understanding the Enron phenomenon. Hence, to figure out what a company is really worth, we must make adjustments to reported earnings. First, we must calculate and subtract from earnings the expense of the stock options. Moreover, we must determine how companies depreciate their assets; for, the conventions differ by country and by industry. A company with a longer depreciation period will have a lower depreciation expense and higher current earnings. Furthermore, we must perform a sum-of-the-parts analysis, which is important for companies that generate a lot of cash.

3. Has the company avoided excess debt?

The debt/equity ratio is another key ratio that we must carefully consider. In fact, we should prefer to see a very small amount of debt, which means earnings growth is being generated mainly from shareholders' equity. A high level of debt compared to equity can result in volatile earnings and large interest expenses. In addition, enterprise value can be a useful tool. It represents total capital minus liquid assets, where total capital includes equity at market value and preferred equity, minority interests and debt at book value,

5. For instance, the late Roberto Goizueta, a former Chief Executive Officer of Coca-Cola Co., at the time of his death in 1997, held free shares of Coke stock worth almost $700 million.

whereas liquid assets include cash and equivalents. The ratio of enterprise value to EBITDA is a useful valuation tool.

4. Are profit margins high? Are they increasing?

To get a good indication of historical profit margins, investors should look back at least five years.

5. How long has the company been public?

Value investors tend to prefer companies that have stood the test of time but are currently undervalued. In particular, Warren Buffett typically considers only companies that have been public for at least ten years.

6. Do the company's products rely on a commodity?

Buffett normally does not invest in companies whose products are indistinguishable from competitors and those that rely solely on a commodity such as oil and gas.

7. Is the stock selling at a 25 percent discount to its real value?

That's the absolute key to understanding the strategy of value investing. In other words, we must determine the intrinsic value of a company by analyzing a number of business fundamentals and then we must buy only at a discount to our estimate; that discount is what value investors call a margin of safety. If this measurement of intrinsic value is at least 25 per cent higher than the company's market capitalization, Buffett sees the company as one that has value. And when should an investor sell? If an investor follows the strategy of value investing, then this means that he/she has no reason to worry about selling. In fact, a value investor should sell in the following cases: (i) if he/she finds out that he/she has picked up the wrong stock, i.e. if his/her judgments about future value divers (e.g. sales growth,

profit margins, tax rates, capital requirements, interest rates and other parameters one must have to build financial statements for each future year) are proved to be wrong; (ii) if the company's management is deteriorating; (iii) if he/she has found another company which is a better investment opportunity.

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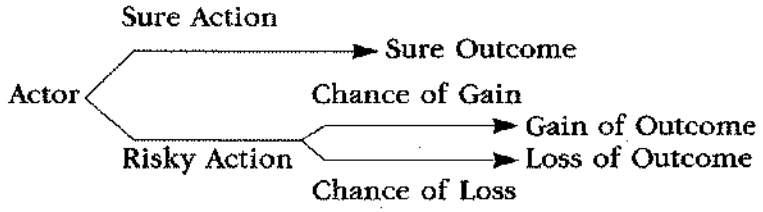
CHAPTER 7

RISK ANALYSIS AND PORTFOLIO MANAGEMENT

7.1. Decision-Making under Uncertainty

Uncertainty refers to unmeasurable risk, and decision-making under uncertainty can be described in the following diagram:



Variability is a direct measure of both downside risk and upside potential. In other words, variability quantifies the extent to which share prices fluctuate. Variability can be split into two parts – namely, market risk and non-market risk. Market risk refers to general market movements. Non-market, or "specific", risk is related to events that are specific to the

particular company under consideration or its immediate partners.

Let us look first at *market risk*. Almost all securities respond to some extent to movements in the market. In fact, some securities are very responsive to market conditions, whereas others are relatively unresponsive. *Beta*[1] measures the sensitivity of the security price to movements in the market. For instance, a share with a beta of 1.5 will on average move 1.5 percent for each 1 percent move by the market.

Deciding on the right level of beta involves trading off the higher expected return against the greater downside risk. Thus, to decide what level of beta one is happy with, he/ she should look at how downside risk increases with beta. For instance, if the portfolio beta is 0.5 and the market's variability is 14 percent, then the portfolio's variability is its beta multiplied by the market's variability, i.e. 7 percent.

Let us look now at the *specific risk*. The acceptable level of specific risk depends entirely on how good one is at security analysis. If one is really good, then he/she will hold a concentrated portfolio and trade it actively – good value investors are a characteristic example. But if one's investment skills are not that good, then he/she should hold a very diversified portfolio and leave it alone.

7.2. Portfolio Analysis

Let us assume that one has invested 50% of his/her money in share X, 30% in Y and 20% in Z and wishes to analyze the risk and performance of his/her portfolio. Assume also that the given investor comes up with the following information on the risks and annual returns of his/her shares:

1. *See Appendix I at the end of this book.*

Share	*Beta*	*Specific Risk*	*Actual Return*	*Abnormal Return*
X	0.5	20	18	5.65
Y	0.8	40	21	8.65
Z	1.3	75	15	2.65

Measuring Portfolio Risk

The beta of the given portfolio is the weighted average of the betas of the individual holdings. This can be calculated as follows:

Share	*Fraction of Portfolio*	*Beta*	*Fraction x Beta*
X	0.5	0.5	0.25
Y	0.3	0.8	0.24
Z	0.2	1.3	0.26
			Portfolio beta = 0.75

The given portfolio's beta is 0.75. This tells us that this portfolio has 0.75 times as much market risk as the corresponding market index, say I (X, Y and Z belong to the index I). Let us assume that the variability of the index I is reported to be 23%. Hence, the market risk of the portfolio under consideration is:

Portfolio Market Risk = Beta x Market Variability
= 0.75 x 23 = 17.25%

The specific risk of the given portfolio is slightly more difficult to calculate. We square column 4 before summing (note that our specific risk and variability measures are standard deviations):

Share	*Fraction of Portfolio*	*Specific Risk*	*(Fraction x Specific Risk)²*
X	0.5	20	100
Y	0.3	40	144
Z	0.2	75	225
			Total = 469

Portfolio Specific Risk = $\sqrt{469}$ = 21.7%.

Notice that the specific risk of the portfolio is significantly less than the specific risk of the individual shares because diversification reduces

specific risk.

To calculate the variability of the given portfolio, we add the squared values of market risk and specific risk:

$$(\text{Portfolio Variability})^2 = (\text{Portfolio Market Risk})^2 + (\text{Portfolio Specific Risk})^2$$
$$= (17.25)^2 + (21.7)^2 = 768.5.$$

$$\text{Portfolio Variability} = \sqrt{768.5} = 27.7\%.$$

Analyzing Portfolio Composition

As we have already argued in Chapter Six, the most profitable manner in which one can build his/her portfolio is value investing. If one is a good value investor, then he/she does not care a lot about the behavior of the market in general, since he/she invests in undervalued securities with very good fundamentals and is a long-term investor. Thus, diversification can be considered as the safety margin of the ignorant investor. For, the more ignorant an investor is the more he/she must care about his/her portfolio's diversification. However, usually, growth investors and short-term speculators have to monitor and improve their portfolio's diversification on a regular basis.

Assessing Portfolio Performance

The actual return on one's portfolio shows how well his/her portfolio has performed in terms of its capital appreciation and its dividend yield. An important indication of one's ability to select good shares is the abnormal return on the portfolio. Like the actual return, the abnormal return is a weighted average of the abnormal returns on the individual holdings:

Share	*Fraction x Actual Return*	*Fraction x Abnormal Return*
X	0.5 x 18 = 9	0.5 x 5.65 = 2.825
Y	0.3 x 21 = 6.3	0.3 x 8.65 = 2.595
Z	0.2 x 15 = 3	0.2 x 2.65 = 0.53
	Total = 18.3%	Total = 5.95%

Therefore, the portfolio's actual return is 18.3%, and its abnormal return is 5.95%. In fact, the abnormal return shows that the portfolio manager has earned 5.95% more than he/she would have expected, given the beta of his/her shares and the market conditions.

The abnormal return is equal to the difference between the actual return and the return which can be available from a "benchmark" portfolio with the same market risk. In our example, the portfolio's beta is 0.75, and therefore our portfolio has the same risk as a portfolio which is 25% liquid (invested, say, in T-bills yielding 9%) and 75% invested in the Index I. Assume that the actual return on the market index was 13.5%. Hence, over the past year, the return one would have earned form this benchmark portfolio is:

$$\text{Benchmark Return} = \text{Beta} \times \text{Market Return} + (1\text{-Beta}) \times \text{Interest Rate}$$
$$= 0.75 \times 13.5 + (1 - 0.75) \times 9$$
$$= 12.35\%.$$

The abnormal return is thus the difference between the actual return and this benchmark return – namely:

$$\text{Abnormal Return} = \text{Actual Return} - \text{Benchmark Return}$$
$$= 18.3\% - 12.35\% = 5.95\%$$

Notice that the benchmark return depends on the interest rate –which is known– and the market return for the coming year –which is not known. We can use past experience to estimate how equities will perform next year. Let us assume that, over the last fifty years, the annual return on equities has averaged 9% more than the T-bill rate; this suggests an expected return on the market of 9+9=18%. Thus, the expected return on our portfolio is:

$$\text{Expected Return} = \text{Beta} \times \text{Expected Market Return} + (1\text{–Beta}) \times \text{Interest Rate}$$
$$= 0.75x18+0.25x9=13.5+2.25=15.75\%.$$

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CHAPTER 8

FINANCIAL MANAGEMENT

8.1. Economic Theory and Financial Decisions

The main types of decision problems that are related to the financial management of a firm can be classified under three headings: capital investment, working capital and capital structure. Before delving into these problems, it must be mentioned that, arguably, the goal of the firm is to maximize the wealth of its shareholders. In general, shareholder wealth is constituted by the value of the shares in issue plus any dividend paid minus any money that has to be contributed by way of a rights issue (a rights issue is a new issue of ordinary shares made to existing shareholders, and shareholders are given rights to apply for new shares in proportion to their existing holdings). It goes without saying that the value of shares – namely, the number of shares in issue multiplied by the price per share – is determined by the forces of supply and demand in the stock market. Nevertheless, as we have argued in Chapter Six, at a more fundamental level, the value of shares represents the value of the net assets of the firm less the value of long-term debt, preference stock and any other claims

against those assets. Moreover, dividend policy involves a balance between increasing cash payments to shareholders and a corresponding increase in either long-term debts or rights issues, or a reduction in the value of depleted net assets.

8.2. The Management of the Capital Structure

A firm can maximize the wealth of its shareholders in two different ways. First, in choosing between debt, new issues of equity, and retained profits, the firm should minimize the cost of capital. This approach regards the firm as buying capital and paying for it with future payments. Thus, the problem is that different types of long-term finance appear to have different costs because of different cost to investors. Alternatively, we can regard the firm as selling its future income stream to different security holders, and the objective is to sell it for the highest price, i.e. to maximize the value to book ratio.

In 1958, Franco Modigliani and Merton Miller proved the theorem that, in the absence of market imperfections and particularly of taxes, the value of the net assets of a firm is independent of the debt-equity ratio. In fact, the previous theorem, known as the "MM Theorem", states that the way the income stream from an asset is divided between debt holders and shareholders will not affect its total value. Thus, as a result of the MM Theorem, the value of net assets depends on what the firm does with them, not on their financing. A straightforward corollary is that the cost of capital for the firm is independent of the debt ratio[1].

Just as the debt-equity decision involves different ways of distributing the income generated from assets between debt and equity holders, the dividend decision

1. *See also Chapter Six.*

is about different ways of giving shareholders their money back. In 1961, Modigliani and Miller defined a dividend policy change as a change in payout to shareholders while holding investment constant. In the previous context, Modigliani and Miller showed that, in the absence of market imperfections and of taxes, dividend policy merely determines the division of the shareholder's return between dividends and capital gains and not the size of that return.

The above-mentioned theorems proved by Modigliani and Miller provide a foundation for the theory of capital structure. For instance, the raising of cheap debt is unlikely to lower the overall cost of capital and an increase in dividend payout is unlikely to have the desired effect on share price. However, it must be stressed that, in the real world, there are many complications that are relevant to policy. For instance, in the real world, tax systems are rarely neutral when it comes to financial policy[2]. Hence, in practice, the goal of debt-equity policy reduces to the minimization of taxes subject to constraints imposed by the tax authority and by financial institutions which have great problems controlling loans to risky companies. Additionally, high interest rates due to high inflation expectations lead to increased uncertainty as to the real cost of long-term borrowing and a reluctance to issue long-term debt.

Finally, it must be stressed that the essential preconditions for the arguments of Modigliani and Miller are established under the Efficient Market Hypothesis. Therefore, given that, in practice, bond and stock markets are not necessarily efficient, debt-equity can, indeed, affect the value of net assets (apart from tax effects).

2. Under most tax systems, debt interest is allowable against corporate tax, whereas dividends are not. Also, the personal tax rate on dividends tends to be different from that on capital gains.

8.3. Management of Capital Investment

Investment decisions concern the level of output and how to produce a given output. In other words, capital investment may be made in order to expand production capacity or to produce existing output more cost effectively. In general, capital investments should be made if they are worth more than they cost.

A useful tool for valuation of an investment project is its cash flow. Cash flow is defined as follows:

Cash flow (year t) = Cash receipts (t) – Cash costs (t)
= Profit after tax before interest (t)
+ Depreciation (t)
– Capital expenditure (t)
– Change in working capital (t).

Discounted Cash Flow (DCF) Methods

The wealth generated for shareholders by accepting an investment project is the difference between its value and its book cost. The net present value (NPV) of a project is an estimate of this excess of value over cost. If i is the rate of interest assumed constant over time (for convenience only), then NPV is defined as:

$$NPV = \frac{X_1}{1+i} + \frac{X_2}{(1+i)^2} + \ldots + \frac{X_n}{(1+i)^n} - C_0, \qquad (1)$$

where X_t (t = 1, 2, ..., n) is cash flow in year t, C_o is the capital cost of the project at year 0, and n is the project life.

In 1961, Modigliani and Miller showed that, if the following assumptions were made: (a) cash flows are certain, (b) the capital market is perfect, (c) investors are rational, and (d) there are no taxes, then the value of the company would be equal to discounted value of cash flows. In case assumptions (a) and (d) are not satisfied, then, if (b) and (c) are retained, equation (1) can be modified as follows:

$$NPV = \frac{\tilde{X}_1}{1+r} + \frac{\tilde{X}_2}{(1+r)^2} + \ldots + \frac{\tilde{X}_n}{(1+r)^n} - C_0, \qquad (2)$$

where the certain cash flows are replaced by the (mathematical) expected cash flows and the interest rate by a discount rate r (r includes a risk premium reflecting the risk aversion of investors, and also it accounts for the various taxes imposed on investors as well as the impact of the firm's capital structure and dividend policy upon these).

The Capital Asset Pricing Model (CAPM)

The CAPM is a theory of valuation under uncertainty. The basic CAPM proposition is that the required return on a risky security (and thus on a new investment in the company) is a linear function of its beta (ß). In fact, the CAPM says that $E(k_j)$, the expected rate of return on a stock j, satisfies the following formula:

$$E(k_j) = r + ERP \times \beta_j$$

where r is the risk-free interest rate and ERP is the equity risk premium for the overall market portfolio. For instance, if r = 5% and ERP = 5.5.% (note that ERP is a measure of how much better the market portfolio has performed relative to r), then, if one buys a stock with beta 1.2%, he/she should – according to the CAPM – expect a return from this purchase equal to 5+5.5x1.2=11.60%.

A major problem with the CAPM is that it does not say anything about the company. As Warren Buffett has pointed out, one company might make Barbie dolls and the other pet rocks; if they have the same beta, then CAPM says that one is as good as the other. Furthermore, the CAPM depends on the Efficient Market Hypothesis, which is not necessarily satisfied in the real world (see also Appendix II). Therefore, value-investing tools must find their place in the

financial management of the firm (see Chapter Six).

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APPENDIX I

STATISTICAL TOOLS

The *standard deviation* is the most commonly used measure of dispersion. Its symbol is σ; and σ^2 is known as the *variance*. Let us consider a list of values: $X_1, X_2, \ldots, X_N$. The common method of computing the standard deviation is: (i) calculate the arithmetic mean $\overline{X} = (X_1 + X_2 + \ldots + X_N)/N$, (ii) record the deviation of each value X_i ($i = 1, 2, \ldots, N$) from the arithmetic mean $(X_i - \overline{X} = x_i)$, (iii) square these deviations (x_i^2), (iv) summate the squared deviations and divide by N (this is how we compute the variance), and (v) extract the square root to obtain σ, i.e.

$$\sigma = \left(\frac{\sum_{i=1}^{N} x_i^2}{N} \right)^{1/2}$$

The *covariance* of two random variables X and Y is

$$\text{Cov}(X,Y) = E\left[(X-\overline{X})(Y-\overline{Y})\right],$$

where E stands for "expected", and $\overline{X}$ and $\overline{Y}$ are the population means of X and Y, respectively. The covariance is positive when the two random variables move together in the same direction, it is negative when the two random variables move in opposite directions, and it is zero when the two random variables are not linearly related. However, its magnitude cannot be interpreted as an indication of the degree of linear association between the two random variables because covariance magnitude depends on the magnitudes of the standard deviations σ_X and σ_Y of X and Y, respectively. The population *correlation coefficient*, ρ, is defined as follows:

$$\rho = \frac{Cov(X,Y)}{\sigma_X \sigma_Y}$$

and conveys information about the relative strength of the linear relationship between X and Y.

Let us denote by k_j and k_M the returns of a security j and of the market M, respectively. Moreover, let us denote by σ_M^2 the variance of market returns. Then β_j is the *beta coefficient* of security j and is defined as follows:

$$\beta_j = \frac{Cov(k_j, k_M)}{\sigma_M^2},$$

i.e. β_j is a measure of the volatility of the individual security's returns relative to market returns.

APPENDIX II

MARKET MANIPULATION

Both in developed and emerging economies, the stock markets can be manipulated. The possibility that the markets can be manipulated is an important issue for both the regulation of trading and the efficiency of the market. Manipulation can take place in a variety of ways, from insiders taking actions that influence the stock price (e.g. accounting and earnings manipulation such as in the Enron case) to the release of false information or rumors in Internet chat rooms. In addition, by purchasing a large amount of stock, a trader can drive the price up. If the trader can then sell shares and if the price does not adjust to the sales, then he/she can profit. However, we should expect that such a strategy will not work; for, selling shares will depress the stock price, so that, on average, the trader buys at higher prices and sells at lower prices. To avoid this scenario, manipulators resort to specific illegal practices such as "wash sales" or "matched orders", which involve transactions where there is no change in the beneficial ownership of the security, or where there are matched sales by parties in collusion; in both cases, the aim is to convey an appearance of

increased turnover in a security to attempt to induce others to buy the given security. If enough new investors are attracted, the price of the security will rise and the manipulator is able to sell at a higher price.

To help the student of finance fix ideas, we shall provide summaries of two manipulation cases according to Securities and Exchange Commission (SEC) complaints filed in US district courts:

1. WAMEX Holding Inc.

WAMEX Holding Inc. is a New York-based company with its common stock traded on the OTC Bulletin Board. The company apparently had plans to operate an electronic trading system for stocks. From December 1999 through June 2000, M.H. Cushing (WAMEX's CEO), R.A. Chimenti, Jr. (Chief Administrative Officer), E.A. Durante (a stock promoter) and several others engaged in a market-manipulation scheme which drove WAMEX's stock price from $1.375 per share to a high of $22.00 per share. As part of the scheme, several million WAMEX shares were transferred to Durante-controlled nominee accounts at Union Securities Ltd, a Canadian brokerage firm. Durante then instructed his broker for these accounts to execute a series of public trades to create artificial price increases in WAMEX stock. In addition, Cushing, Chimenti and Durante made false public statements through press releases, SEC filings and Internet publications. Durante also entered into a series of block deals. The block deals involved pre-arranged public market purchases of large blocks of WAMEX stock that were sold at a discount. The block deals misled investors into believing that there was a highly liquid market for WAMEX shares and thus led to artificially inflated prices.

2. Paravant Computer Systems Inc.

In June 1996, Duke & Company, a broker-dealer, served as the underwriter for the initial public offering (IPO) of common stock of Paravant Computer Systems Inc. in the NASDAQ market. In the IPO, Paravant's common stock was offered to the public at $5.0 per share. On June 3, the IPO was declared effective and trading commenced in Paravant securities. During the first day of trading, the price of Paravant's common stock increased to $9.875 per share. This increase occurred because Duke, which served as a market maker for Paravant securities, artificially restricted the supply of Paravant common stock and also created significant demand for the common stock. In particular, Duke allocated a large percentage of the common stock issued in the Paravant IPO to affiliated customer accounts on the condition that these customers immediately flip this common stock back to Duke after the commencement of trading following the IPO. Thus, Duke had a large supply of Paravant common stock in its inventory. Prior to the IPO, Duke representatives pre-solicited customers to purchase Paravant common stock once aftermarket trading in Paravant securities commenced to ensure demand for the common stock. On June 4, 1996, after the price of Paravant common stock had increased to prices ranging form $10.75 to $13.375 per share, Duke resold the common stock that it had purchased from the affiliated customer accounts as well as stock Duke did not own to retail customers Duke had pre-solicited to purchase Paravant common stock. In this way, Duke generated over $10,000,000 in illegal profits (the manipulation ceased on June 21, 1996).

In most developed stock markets, there are strict regulations against market manipulation. However, phenomena of market manipulation still occur, and this shows that the efficiency of the financial markets should not be taken for granted. Moreover, from what we have argued in the present book, it follows that the

most effective way one can protect himself/herself from market manipulation is the strategy of value investing.

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APPENDIX III

A G8 DECLARATION ON FINANCE AND THE WORLD ECONOMY

The G8 Summit brings together the leaders of Germany, Canada, the United States, France, Italy, Japan, the United Kingdom and Russia. In addition, the European Union participates and is represented by the president of the European Council and the President of the European Commission.

Since its establishment, the G8 has developed policy proposals and conducted research toward achieving better management of the world economy. In the era of globalization, policy-makers and managers must necessarily develop the habit of thinking in global terms about what's going on. Moreover, they must keep markets open and continue opening them. That's the way to be competitive and that's the way to give consumers the kind of choice and prices they deserve. Additionally, policy-makers must never forget the diplomatic side of the equation. It is important that all of the G8 leaders maintain the strength needed to support diplomacy. Because just as they regularly emphasize the importance of rules of the game in economic matters, it is also true that there need to be rules of the game in the way nations deal with each

other politically.

The most developed economies of the world should have as a target a non-inflationary sustainable growth. If they are to do that, they must make quite sure that they do not allow the demands of special interest groups to undermine free-market capitalism. At the same time, we must recognize that, if our societies are to remain whole and healthy and capable of providing the kind of political stability that has been an example to some parts of the world, policy-makers should take account of the needs of those people who are at the present time losing out as a result of competitive and technological change. Finally, if the G8 members are to provide effective assistance to those nations which need their help, the G8 must trade with them (instead of adopting economic protectionism) and promote the liberalization and efficiency of the financial markets worldwide.

The participants at the 2003 G8 Summit were (alphabetically): Silvio Berlusconi, President of the Council of Ministers of the Italian Republic, Tony Blair, Prime Minister of the United Kingdom of Great Britain and Northern Ireland, George W. Bush, President of the United States of America, Jacques Chirac, President of France, Jean Chrétien, Prime Minister of Canada, Junichiro Koizumi, Prime Minister of Japan, Romano Prodi, President of the European Commission, Vladimir Putin, President of the Russian Federation, Konstantinos Simitis, Prime Minister of the Hellenic Republic President-in-Office of the European Council, and Gerhard Schröder, Chancellor of the Federal Republic of Germany.

The 2003 G8 Summit issued the following Declaration:

Fostering Growth and Promoting a Responsible Market Economy

Efficient capital markets are critical to achieving and maintaining economic growth. To support growth, economies need sound legal systems, effective regulation and transparent corporate governance practices. These factors underpin effective disclosure that is fundamental to well-functioning markets. Sound social frameworks and attention to the long-term impacts, including on the environment, of investment decisions and business processes are also important for sustainable growth. Timely and accurate information assists shareholders in exercising control and investors in allocating funds to their most productive uses. In support, governmental authorities should ensure that corporate reporting assists them in monitoring markets and in identifying vulnerabilities.

Trust and confidence are key ingredients of a well-functioning market economy. Restoring investor confidence through sound corporate governance, as well as corporate structures and market intermediaries that are more accountable, is essential to promoting growth in our economies. We encourage the many initiatives underway, in national capitals, international financial institutions and by international standard-setting bodies, to strengthen governance standards and disclosure regimes.

Corporate integrity, strengthened market discipline, increased transparency through improved disclosure, effective regulation and corporate social responsibility are common principles that are the foundations for sound macro-economic growth.

Common values and principles

1. Corporate governance

1.1. Market integrity

We commit to pursue with strong resolve our fight to further improve the integrity of the international economy (including efforts against money laundering, financial crime and terrorist financing), which is essential for its efficiency, fairness and transparency. We will continue to work towards investor protection, enhanced regulatory compliance and vigorous law enforcement, including thorough comprehensive cross-border assistance.

1.2. Strengthened market discipline and effective regulation

We re-affirm our support of sound regulatory regimes that encourage and promote market dynamism and foster fair and effective competition among market participants. In order to support the beneficial process of globalization, we aim in particular to enhance international cooperation and to foster a sound level playing field. We strongly support the work undertaken by the Financial Stability Forum (FSF).

1.3. Accountability and enhanced corporate governance

We reaffirm that companies must be accountable to their shareholders. As underscored in the OECD Principles of Corporate Governance, other stakeholders also have strong interests in these issues. To this end, we call for continued efforts globally to enhance corporate governance.

We also strongly support the on-going review of the OECD Principles and the implementation of the International Organization of Securities Commission (IOSCO) principles relating to corporate governance.

1.4. Increased transparency and quality of financial information

Integrity, quality and accessibility are the cornerstones of reliable financial information. We call on all information providers –first and foremost companies and their auditors, as well as financial analysts, investment banks and rating agencies– to abide by these principles.

Recognizing the need for financial stability, we commit to promoting high quality, internationally recognized accounting standards that are capable of consistent application, interpretation and enforcement, especially for listed companies.

2. Corporate social responsibility

Consistent with the outcomes of the World Summit on Sustainable Development, we support voluntary efforts to enhance corporate social and environmental responsibility.

We will work with all interested countries on initiatives that support sustainable economic growth, including the creation of an environment in which business can act responsibly. We also welcome voluntary initiatives by companies that promote corporate social and environmental responsibility, such as the OECD Guidelines for Multinational Enterprises and the UN Global Compact principles consistent with their economic interest. We encourage companies to work with other parties to complement and foster the implementation of existing instruments, such as the OECD guidelines and the ILO 1998 Declarations on Fundamental Principles and Rights at work.

3. Corruption and transparency

We emphasize our determination to fight corruption, one of the key obstacles to economic and social

development, and mismanagement of public revenue and expenditure.

Significant and lasting progress in these areas can only be achieved through the concerted efforts of all governments, international institutions, the private sector and civil society. To this end we set out the attached G8 action plan.

We will jointly ask UN bodies, the IFIs, FSF, standard-setting bodies and other relevant international organizations to work with us on these issues and to further integrate them in their programs and actions.

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