



NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF MANAGEMENT SCIENCES

COURSE CODE: MBA 703

COURSE TITLE: FINANCIAL MARKETING

UNIT 1

FINANCIAL WORLD

1.0 INTRODUCTION

Before getting carried away with specific financial issues and technical detail, it is important to gain a broad perspective by looking at the fundamental questions and the place of finance in the overall scheme of things. The finance function is a vital one, both within an individual organisation and for society as a whole. In the, for example, the financial services industry accounts for about as large a proportion of national output as the whole of manufacturing industry. This shift in demand and resources has accelerated rapidly since 1970 and, if the trend continues, it will not be long before finance employs more people and attracts more purchasing power than all the manufacturing industries put together. To some this is a cause of great alarm and regret but, given that this trend has occurred at a time when free choice in the marketplace largely dictates what is produced, presumably there must be something useful that financial firms are providing. We will examine the key role of financial intermediaries and markets in a modern economy, and how an efficient and innovative financial sector contributes greatly to the ability of other sectors to produce efficiently. One of the vital roles of the financial sector is to encourage the mobilisation of savings to put them to productive use through investment. Without a vibrant and adaptable finance sector all parts of the economy would be starved of investment and society would be poorer.

2.0 OBJECTIVES

When you complete this unit you should be able to:

- Explain the role of the Financial Manager
- Detail the value of Financial Intermediaries
- Explain appreciation of the function of the major Financial Institution and Market.

3.0 The role of the financial manager

To be able to carryon a business a company needs real assets. These real assets may be tangible, such as buildings, plant, machinery, vehicles and so on. Alternatively a firm may invest in intangible real assets, for example patents, expertise, licensing rights, etc. To obtain these real assets corporations sell

financial claims to raise money; to lenders a bundle of rights are sold within a loan contract, to shareholders rights over the ownership of a company are sold as well as the right to receive a proportion of profits produced. The financial manager has the task of both raising finance by selling financial claims and advising on the use of those funds within the business. The financial manager plays a pivotal role in the following:

Interaction with the financial markets

In order to raise finance a knowledge is needed of the financial markets and the way in which they operate. To raise share (equity) capital awareness of the rigours and processes involved in 'taking a new company to market' might be useful. For instance, what is the role of an issuing house? What services do brokers, accountants, solicitors, etc. provide to a company wishing to float? Once a company is quoted on a stock market it is going to be useful to know about ways of raising additional equity capital - what about rights issues and open offers?

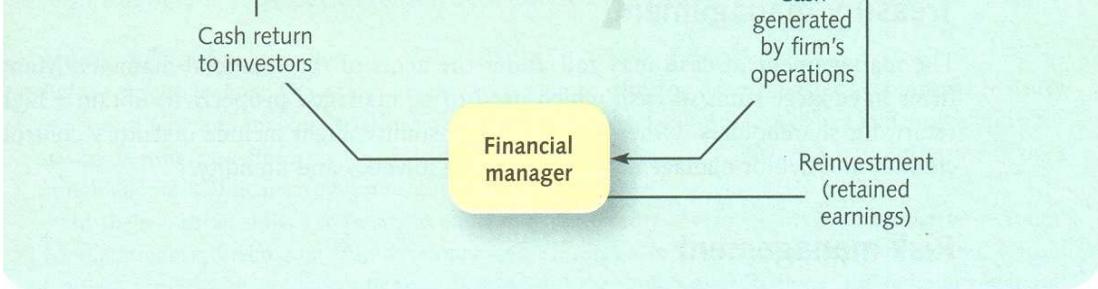
Knowledge of exchanges such as the Alternative Investment Market (NG) or the European market Euro next might be valuable. If the firm does not wish to have its shares quoted on an exchange perhaps an investigation needs to be made into the possibility of raising money through the venture capital industry.

Understanding how shares are priced and what it is that shareholders are looking for when sacrificing present consumption to make an investment could help the firm to tailor its strategy, operations and financing decisions to suit their owners. These, and dozens of other equity finance questions, are part of the remit of the finance expert within the firm.

Another major source of finance comes from banks. Understanding the operation of banks and what concerns them when lending to a firm may enable you to present your case better, to negotiate improved terms and obtain finance which fits the cash-flow patterns of the firm. Then there are ways of borrowing which by-pass banks. Bonds could be issued either domestically or internationally. Medium-term notes, commercial paper, leasing, hire purchase and factoring are other possibilities.

Once knowledge has been gained of each of these alternative financial instruments and of the operation of their respective financial markets, then the financial manager has to consider the issue of the correct balance between the different types. What proportion of debt to equity? What proportion of short-term finance to long-term finance and so on?

Perhaps you can already appreciate that the finance function is far from a boring 'bean-counting' role. It is a dynamic function with a constant need for up-to-date and relevant knowledge. The success or failure of the entire business may rest on the quality of the interaction between the firm and the financial markets. The financial manager stands at the interface between the two.



Investment

Decisions have to be made concerning how much to invest in real assets and which specific projects to undertake (capital budgeting decisions). In addition to providing analytical techniques to aid these sorts of decisions the financial expert has to be aware of a wide variety of factors which might have some influence on the wisdom of proceeding with a particular investment. These range from corporate strategy and budgeting restrictions to culture and the commitment of individuals likely to be called upon to support an activity.

Treasury management

The management of cash may fall under the aegis of the financial manager. Many firms have large sums of cash which need to be managed properly to obtain a high return for shareholders. Other areas of responsibility might include inventory control, creditor and debtor management and issues of solvency and liquidity.

Risk management

Companies that enter into transactions abroad, for example exporters, are often subject to risk: they may be uncertain about the sum of money (in their own currency) that they will actually receive on the deal. Three or four months after sending the goods they may receive a quantity of yen or dollars but at the time the deal was struck they did not know the quantity of the home currency that could be bought with the foreign currency. Managing and reducing exchange rate risk is yet another area calling on the skills of the finance director.

Likewise, exposure to interest rate changes and commodity price fluctuations can be reduced by using hedging techniques. These often employ instruments such as futures, options, swaps and forward agreements. Misunderstanding these derivatives and their appropriate employment can lead to disaster - for example, the Barings Bank fiasco, in which a major bank was brought to bankruptcy through the misuse and misunderstanding of derivatives. fail to match their revenues with their expenditure and therefore borrow significant sums from the financial institutions. The diagram in Exhibit 1.20 remains a gross simplification, it has not allowed for overseas financial transactions, for example, but it does demonstrate a crucial role for financial institutions in an advanced market economy.

Strategy

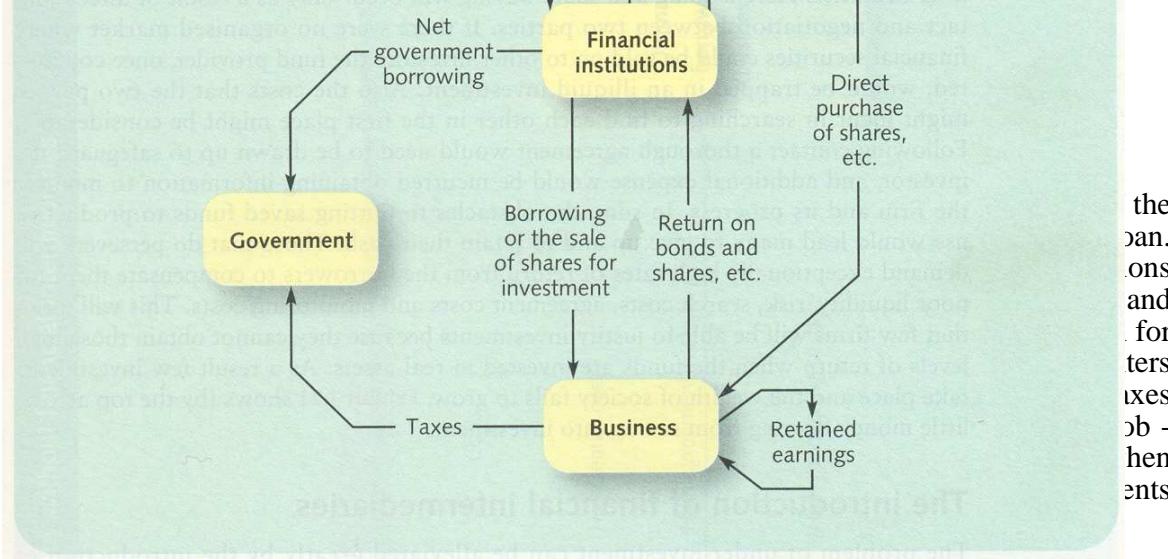
Managers need to formulate and implement long-term plans to maximise shareholder wealth. This means selecting markets and activities in which the firm, given its resources, has a competitive edge. Managers need to distinguish between those products or markets that generate value for the firm and those that destroy value. The financial manager has a pivotal role in this strategic analysis.

3.1

The flow of funds and financial intermediation

Exhibit 1.17 looked at the simple relationship between a firm and investors. Unfortunately the real world is somewhat more complicated and the flow of funds within the financial system involves a number of other institutions and agencies. Exhibit 1.20 is a more realistic representation of the financial interactions between different groups in society.

Households generally place the largest proportion of their savings with financial institutions.



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Primary investors

Typically the household sector is in financial surplus. This sector contains the savers of society. It is these individuals who become the main providers of funds used for investment in the business sector. Primary investors tend to prefer to exchange their cash for financial assets which (a) allow them to get their money back quickly should they need to (with low transaction cost of doing so) and (b) have a high degree of certainty over the amount they will receive back. That is, primary investors like high liquidity and low risk. Lending directly to a firm with a project proposal to build a North Sea oil platform which will not be sold until five years have passed is not a high-liquidity and low-risk investment. However, putting money into a sock under the bed is (if we exclude the possibility of the risk of sock theft).

Ultimate borrowers

In our simplified model the ultimate borrowers are in the business sector. These firms are trying to maximise the wealth generated by their activities. To do these companies need to invest in real plant, equipment and other assets, often for long periods of time. The firms, in order to serve their social function, need to attract funds for use over many years. Also these funds are to be put at risk, sometimes very high risk. (Here we are using the term 'borrower' broadly to include all forms of finance, even 'borrowing' by selling shares.)

Conflict of preferences

We have a conflict of preference between the primary investors wanting low-cost liquidity and certainty, and the ultimate borrowers wanting long-term risk-bearing capital. A further complicating factor is that savers usually save on a small scale, N100 here or N200 there, whereas businesses are likely to need large sums of money. Imagine some of the problems that would occur in a society which did not have any financial intermediaries. Here lending and share buying will occur only as a result of direct contact and negotiation between two parties. If there were no organised market where financial securities could be sold on to other investors the fund provider, once committed, would be trapped in an illiquid investment. Also the costs that the two parties might incur in searching to find each other in the first place might be considerable. Following contact a thorough agreement would need to be drawn up

to safeguard the investor, and additional expense would be incurred obtaining information to monitor the firm and its progress. In sum, the obstacles to putting saved funds to productive use would lead many to give up and to retain their cash. Those that do persevere will demand exceptionally high rates of return from the borrowers to compensate them for poor liquidity, risk, search costs, agreement costs and monitoring costs. This will mean that few firms will be able to justify investments because they cannot obtain those high levels of return when the funds are invested in real assets. As a result few investments take place and the wealth of society fails to grow. Exhibit 1.21 shows (by the top arrow) little money flowing from saving into investment.

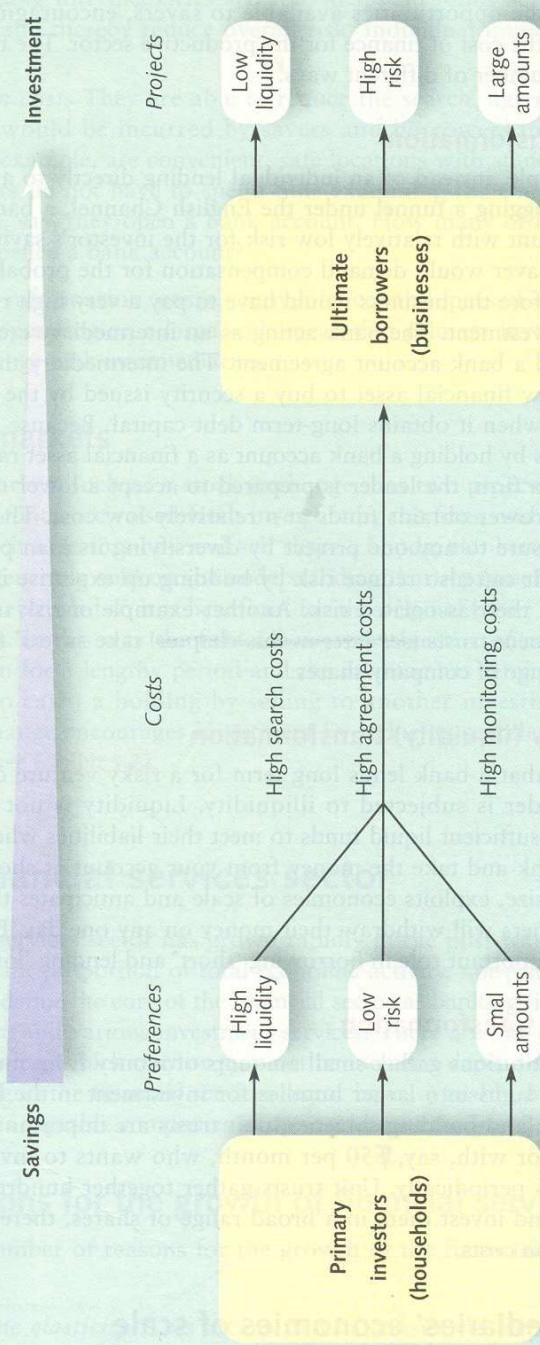
The introduction of financial intermediaries

The problem of under-investment can be alleviated greatly by the introduction of financial institutions (e.g. banks) and financial markets (e.g. a stock exchange). Their role is to facilitate the flow of funds from primary investors to ultimate borrowers at a low cost. They do this by solving the conflict of preferences. There are two types of financial intermediation; the first is an agency or brokerage type operation which brings together lenders and firms, the second is an asset-transforming type of intermediation, in which the conflict is resolved by creating intermediate securities which have the risk, liquidity and volume characteristics which the investors prefer. The financial institution raises money by offering these securities, and then uses the acquired funds to purchase primary securities issued by firms.

Brokers

At its simplest an intermediary is a 'go-between', someone who matches up a provider of finance with a user of funds. This type of intermediary is particularly useful for reducing the search costs for both parties. Stockbrokers, for example, make it easy for investors wanting to buy shares in a newly floated company. Brokers may also have some skill at collecting information on a firm and monitoring its activities, saving the investor time. They also act as middlemen when an investor wishes to sell to another, thus enhancing the liquidity of the fund providers.

Exhibit 1.21 Savings into investment in an economy without financial intermediaries



3.1.1 Asset transformers

Intermediaries, by creating a completely new security, the intermediate security, increase the opportunities available to savers, encouraging them to invest and thus reducing the cost of finance for the productive sector. The transformation function can act in a number of different ways.

Risk transformation

For example, instead of an individual lending directly to a business with a great idea, such as digging a tunnel under the English Channel, a bank creates a deposit or current account with relatively low risk for the investor's savings. Lending directly to the firm the saver would demand compensation for the probability of default on the loan and therefore the business would have to pay a very high rate of interest which would inhibit investment. The bank acting as an intermediary creates a special kind of security called a bank account agreement. The intermediary then uses the funds attracted by the new financial asset to buy a security issued by the tunnel owner. (the primary, security) when it obtains long-term debt capital. Because of the extra security that a lender has by holding a bank account as a financial asset rather than by making a loan direct to a firm, the lender is prepared to accept a lower rate of interest and the ultimate borrower obtains funds at a relatively low cost. The bank is able to reduce its risk exposure to anyone project by diversifying its loan portfolio amongst a number of firms. It can also reduce risk by building up expertise in assessing and monitoring firms and their associated risk. Another example of risk transformation is when unit or investment trusts, take savers' funds and spread these over a wide range of company shares

Maturity (liquidity) transformation

The fact that a bank lends long term for a risky venture does not mean that the primary lender is subjected to illiquidity. Liquidity is not a problem because banks maintain sufficient liquid funds to meet their liabilities when they arise. You can walk into a bank and take the money from your account at short notice because the bank, given its size, exploits economies of scale and anticipates that only a small fraction of its customers will withdraw their money on anyone day. Banks play an important role in borrowing 'short' and lending 'long'.

Volume transformation

Many institutions gather small amounts of money from numerous savers and re-package these sums into larger bundles for investment in the business sector. Apart from the banks and building societies, unit trusts are important here. It is uneconomic for an investor with, say, N50 per month, who wants to invest in shares, to buy small quantities periodically. Unit trusts gather together hundreds of individuals' monthly savings and invest them in a broad range of shares, thereby exploiting economies in transaction costs.

3.1.2

Intermediaries' economies of scale

The intermediary is able to accept lending to (and investing in shares of) companies at a relatively low rate of return because of the economies of scale enjoyed compared with the primary investor. These economies of scale include:

- a) Efficiencies in gathering information on the riskiness of lending to a particular firm. Individuals do not have access to the same data sources or expert analysis.
- b) Risk spreading Intermediaries are able to spread funds across a large number of borrowers and thereby reduce overall risk. Individual investors may be unable to do this.
- c) Transaction costs: They are able to reduce the search, agreement and monitoring costs that would be incurred by savers and borrowers in a direct transaction. Banks, for example, are

convenient, safe locations with standardised types of securities. Savers do not have to spend time examining the contract they are entering upon when, say, they open a bank account. How many of us read the small print when we opened a bank account?

The reduced information costs, convenience and passed-on benefits from the economies of operating on a large scale mean that primary investors are motivated to place their savings with intermediaries.

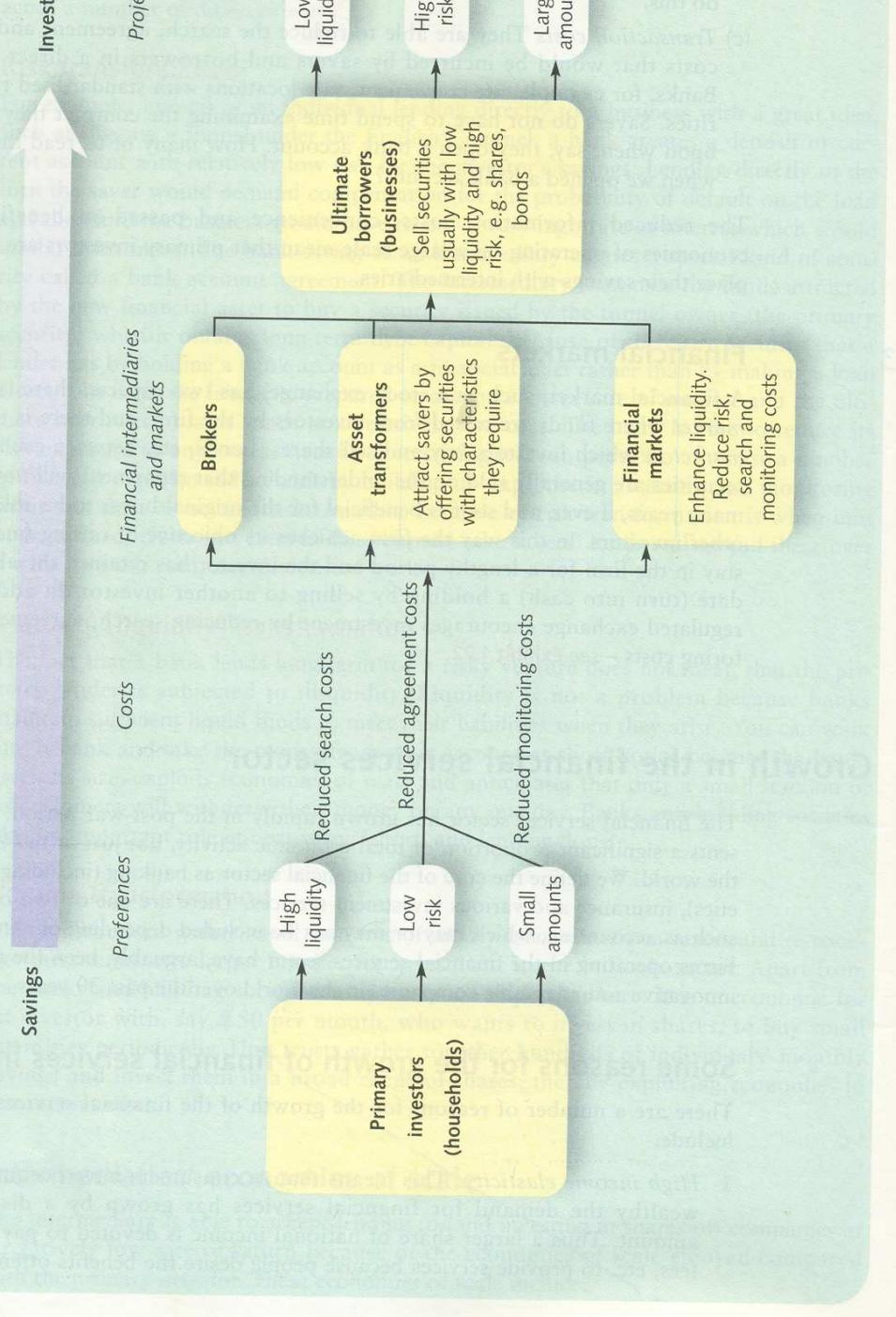
3.1.3 Financial markets

A financial market, such as a stock exchange, has two aspects; there is the primary market where funds are raised from investors by the firm, and there is the secondary market in which investors buy and sell shares, bonds, etc. between each other. These securities are generally sold on the understanding that repayment will not be made for many years, if ever, and so it is beneficial for the original buyer to be able to sell on to other investors. In this way the firm achieves its objective of raising finance that will stay in the firm for a lengthy period and the investor has retained the ability to liquidate (turn into cash) a holding by selling to another investor. In addition a well-regulated exchange encourages investment by reducing search, agreement and monitoring cost.

3.2 Growth in the financial services sector

The financial services sector has grown rapidly in the post-war period. It now represents a significant proportion of total economic activity across the world. We define the core of the financial sector as banking (including building societies), insurance and various investment services. There are one or two other activities, such as accounting, which may or may not be included depending on your perspective. Firms operating in the financial services sector have, arguably, been the most dynamic, innovative and adaptable companies in the world over the past 30 years.

Exhibit 1.22 Savings into investment in an economy with financial intermediaries and financial markets



3.3 THE FINANCIAL SYSTEM

To assist with orientating the reader within the financial system and to carry out more jargon busting, a brief outline of the main financial services sectors and markets is given here.

The institutions

The banking sector

Retail banks

Put at its simplest, the retail banks take (small) deposits from the public which are repackaged and lent to businesses and households. This is generally high-volume and low-value business which contrasts with wholesale banking which is low volume but each transaction is for high value. The distinction between retail and wholesale banks has become blurred over recent years as the large institutions have diversified their operations. The retail

banks operate nationwide branch networks and a subset of banks provide a cheque clearance system (transferring money from one account to another) these are the *clearing* banks. Loans, overdrafts and mortgages are the main forms of retail bank lending. The trend has been for retail banks to reduce their reliance on retail deposits and raise more wholesale funds from the money markets. They also get together with other banks if a large loan is required by a borrower rather than provide the full amount themselves as this would create an excessive exposure to one customer - this is called syndicate lending.

Wholesale banks

The terms wholesale bank, merchant bank and investment bank are often used interchangeably. There are subtle differences but for most practical purposes they can be regarded as the same. These institutions tend to deal in large sums of money other large organisations, corporations, institutional investors and governments. While they undertake some lending their main focus is on generating commission income by providing advice and facilitating deals. There are five main areas of activity:

Raising external finance for companies: These banks provide advice and arrange finance for corporate clients. Sometimes they provide loans themselves, but often they assist the setting up of a bank syndicate or make arrangements with other institutions. They will advise and assist a firm issuing a bond, they have expertise in helping firms float on the Stock Exchange and make rights issues. They may 'underwrite' a bond or share issue. (This means that they will buy any part of the issue not taken up by other investors.) This assures the corporation that it will receive the funds it needs for its investment programme

Broking and dealing: They act as agents for the buying and selling of securities on the financial markets, including shares, bonds and Eurobonds. Some also have market-making arms which assist the operation of secondary markets. They also trade in the markets on their own account and assist companies with export finance.

Fund management (asset management): The investment banks offer services to rich individuals who lack the time or expertise to deal with their own investment strategies. They also manage unit and investment trusts as well as the portfolios of some pension funds and insurance companies. In addition corporations often have short-term cash flows which need managing efficiently (treasury management).

Assistance in corporate restructuring: Merchant banks earn large fees from advising acquirers on mergers and assisting with the merger process. They also gain by helping target firms avoid being taken over too cheaply. Advising governments on privatisations has become an important source of fee income. Corporate disposal programmes, such as selling off a division in a management buyout (MBO), may also need the services of an investment bank.

Assisting risk management using derivatives: Risk can be reduced through hedging strategies using futures, options, swaps and the like. However this is a complex area with large room for error and terrible penalties if a mistake is made. The banks may have specialist knowledge to offer in this area

International banks

There are two types of international banking:

Foreign banking transactions in sterling with non-NG residents
(lending/borrowing, etc.) by NG banks.

Eurocurrency banking for transactions in a currency other than that of the host country, e.g. yen transactions in Canada. Thus for NG banks this involves transactions in currencies other than naira with both residents and non-residents.

The major part of international banking these days is borrowing and lending in foreign currencies. There are over 470 non-NG banks operating in London, the most prominent of which are American, German and Japanese. Their initial function was mainly to provide services for their own nationals, for example for export and import transactions, but nowadays their main emphasis is in the Eurocurrency market and international securities (shares, bonds, etc.) trading. Often funds are held in the NG j the purpose of trading and speculation on the foreign exchange market.

Building societies

Building societies collect funds from millions of savers by enticing them to put their money in interest-bearing accounts. The vast majority of that deposited money is then lent to people wishing to buy a home - in the form of a mortgage. Thus, they take short-term deposits and they lend money for long periods, usually for 25 years. Mo. recently building societies have diversified their sources of finance (e.g. using d wholesale financial markets) and increased the range of services they offer.

Finance houses

Finance houses are responsible for the financing of hire purchase agreements and other installment credit, for example, leasing. If you buy a large durable good such as a ca or a washing machine you often find that the sales assistant also tries to get you interested in taking the item on credit, so you pay for it over a period of, say, three years. I is usually not the retailer that provides the finance for the credit. The retailer usually works in conjunction with a finance house which pays the retailer the full purchase price of the good and therefore becomes the owner. You, the customer, get to use the good, but in return you have to make regular payments to the finance house, including interest. Under a hire purchase agreement, when you have made enough payments you will become the owner. Under leasing the finance house retains ownership. Finance houses also provide factoring services - providing cash to firms in return for receiving income from the firms' debtors when they pay up. Most of the large finance houses are subsidiaries of the major conglomerate banks.

Long-term savings institutions

Pension funds

Pension funds are set up to provide pensions for members. For example, the University Superannuation Scheme (USS), to which university lecturers belong, takes about 6.35 per cent of working members' salaries each month and puts it into the fund. In addition the employing organisation pays money into the scheme. When a member retires the USS will pay a pension. Between the time of making a contribution and retirement, which may be decades, the pension trustees oversee the management of the fund. They may place some or all of the fund with specialist investment managers. This is a particularly attractive form of saving because of the generous tax relief provided. The long time horizon of the pension business means that large sums are built up and available for investment.

Insurance Funds

Insurance companies engage in two types of activities:

General insurance: This is insurance against specific contingencies such as fire, theft,

accident, generally for a one-year period. The money collected in premiums is mostly held in financial assets which are relatively short term and liquid so that short-term commitments can be met

Life assurance With term assurance, your life is assured for a specified period. If you die your beneficiaries get a payout. If you live you get nothing at the end of the period. With whole-of-life policies, the insurance company pays a capital sum upon death whenever this occurs. Endowment policies are more interesting from a financial systems perspective because they act as a savings vehicle as well as cover against death. The premium will be larger but after a number of years have passed the insurance company pays a substantial sum of money even if you are still alive. The life company has to take the premiums paid over, say, 10 or 25 years, and invest them wisely to satisfy its commitment to the policy holder. They simply pay interest to the lender (e.g. a building society) while also placing premiums into an endowment fund. The hope is that after 25 years or so the value of the accumulated fund will equal or be greater than the capital value of the loan.

Life assurance companies also provide *annuities*. Here a policy holder pays an initial lump sum and in return receives regular payments in subsequent years. They have also moved into personal pensions.

The Risk Spreaders

These institutions allow small savers a stake in a large diversified portfolio.

Unit trusts

Unit trusts are 'open-ended' funds, so the size of the fund and the number of units depends on the amount of money investors wish to put into the fund. If a fund of one million units suddenly doubled in size because of an inflow of investor funds it would become a fund of two million units through the creation and selling of more units. The buying and selling prices of the units are determined by the value of the fund. So if a two-million unit fund is invested in N2m worth of shares in the NG stock market the value of each unit will be. If over a period the value of the shares rises to N3m, the units will be worth (N1.50 each). Unit holders sell units back to the managers of the unit trust if they want to liquidate their holding. The manager would then either sell the units to another investor or sell some of the underlying investments to raise cash to pay the unit holder. The units are usually quoted at two prices depending on whether you are buying (higher) or selling. There is also usually an initial charge and an ongoing management charge for running the fund. Trustees supervise the funds to safeguard the interests of unit holders but employ managers to make the investment decisions.

There is a wide choice of unit trust (over 1,000) specializing in different types of investments ranging from Japanese equities to privatized European companies.

Investment Trusts

Investment trusts differ from unit trusts by virtue of the fact that they are companies (rather than trusts!) able to issue shares and other securities. Investors can purchase these securities when the investment trust is first launched or purchase shares in the secondary market from other investors. These are known as closed-end funds because the company itself is closed to new investors - if you wished to invest your money you would go to an existing investor and not buy from the company. Investment trust~ usually spread the investors' funds across a range of other companies' shares. They an also more inclined to invest in a broader range of assets than unit trusts - even property and unlisted shares. Approximately one-half of the money devoted to NG investment trusts (£60bn) is put into NG securities, with the remainder placed in overseas securities. The managers of these funds are able to borrow in order to

invest. This has the effect of increasing returns to shareholders when things go well. Correspondingly if the value of the underlying investments falls the return to shareholders falls even more, because of the obligation to meet interest charges.

Open-ended investment companies (OEICs)

Open-ended investment companies are hybrid risk-spreading instruments which allow an investment in an open-ended fund. Designed to be more flexible and transparent than either investment or unit trusts, OEICs have just one price. However, as with unit trusts, OEICs can issue more shares, in line with demand from investors, and they can borrow.

The markets

The money markets

The money markets are wholesale markets which enable borrowing on a short-term basis (less than one year). The banks are particularly active in this market - both as lenders and as borrowers. Large corporations, local government bodies and non-banking financial institutions also lend when they have surplus cash and borrow when short of money.

The bond markets

A bond is merely a document which set out a borrower's promise to pay sums of money in the future – usually regular interest plus a capital amount upon the maturity of the bond. These are long-dated securities (in excess of one year) issued by a variety of organizations including governments and corporations.

The foreign exchange markets (Forex or FX)

The foreign exchange markets are the markets in which one currency is exchanged for another. They include the *spot* market where currencies are bought and sold for 'immediate' delivery (in reality, one or two days later) and the forward markets, where the deal is agreed now to exchange currencies at some fixed point in the future. Also currency futures and options and other forex derivatives are employed to hedge risk and to speculate. The forex markets are dominated by the major banks, with dealing taking place 24 hours a day around the globe.

The share markets

The Nigeria Stock Exchange is an important potential source of long-term equity (ownership) capital. Firms can raise finance in the primary market by a new issue, a rights issue, open offer, etc., in the main listed Market (the Official List). Subsequently investors are able to buy and sell to each other on the very active secondary market.

The derivative markets

A derivative is a financial instrument derived from other financial securities or some other underlying asset. For example, a future is the right to buy something (e.g. currency, shares, bond) at some date in the future at an agreed price. This right becomes a saleable derived financial instrument. The performance of the derivative depends on the behaviour of the underlying asset. Companies can use these markets for the management and transfer of risk. They can be used to reduce risk (hedging) or to speculate. The London International Financial Futures and Options Exchange (LIFFE, now Euronext.liffe) trades options and futures in shares, bonds and interest rates. This used to be the only one of the markets listed here to have a trading floor where face-to-face dealing took place on an open outcry system (traders shouting and signalling to each other, face to face in a trading pit, the price at which they are willing to buy and sell). Now all the financial markets (money, bond, forex, derivative and share markets) are conducted using computers (and telephones) from isolated trading rooms located in the major financial institutions. In the derivative markets a high proportion of trade takes place on what is called the over-the-counter (OTC) market rather

than on a regulated exchange. The OTC market flexibility allows the creation of tailor-made derivatives to suit a client's risk situation.

EXERCISES: List as many financial intermediaries as you can. Describe the nature of their intermediation and explain the intermediate security they create.

4.0 CONCLUSION

There is an old joke about financial service firms: they just shovel money from one place to another making sure that some of it sticks to the shovel. The implication is that they contribute little to the well-being of society. Extremists even go so far as to regard these firms as parasites on the 'really productive' parts of the economies. And yet very few people avoid extensive use of financial services. Most have bank and building society accounts, pay insurance premiums and contribute to pension schemes. People do not put their money into a bank account unless they get something in return. Likewise building societies, insurance companies, pension funds, unit trusts, investment banks and so on can only survive if they offer a service people find beneficial and are willing to pay for.

5.0 SUMMARY

Describing the mobilisation and employment of money in the service of productive investment as pointless or merely 'shovelling it around the system' is as logical as saying that the transport firms which bring goods to the high street do not provide a valuable service because there is an absence of a tangible 'thing' created by their activities.

6.0 REFERENCES

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7.0 TUTOR MARKED ASSIGNMENT

Briefly explain the role of the following

- a. The money markets
- b. The bond markets
- c. The foreign exchange markets
- d. The share markets
- e. The derivatives markets

UNIT 2

FINANCIAL INSTITUTIONS AND INTERMEDIATION

3.0 INTRODUCTION

Financial institutions facilitate economic growth in modern society by performing essential intermediation and distribution functions. When they act as intermediaries, financial institutions channel funds to productive uses while providing investors with a variety of outlets for their savings. Securities brokers and dealers efficiently distribute securities that companies issue to finance productive undertakings. Smooth-running and well-developed financial markets facilitate this process.

4.0 OBJECTIVES

When you complete this unit you should be able to:

- Analyses the role of financial institutions in society
- Describe the process of financial intermediation
- Differentiate between direct and indirect financing
- Outline recent changes in the financial services industry in terms of domestic and international competition
- Describe financial markets

THE ROLE OF FINANCIAL INSTITUTIONS

The term financial institutions describe a wide array of firms. The most familiar financial institution is probably a commercial bank. In fact, commercial banks are the oldest financial institutions in most countries, and they handle a significant portion of every country's financial assets. Financial institutions include:

Commercial banks
Savings and loan associations
Credit unions
Insurance companies Pension funds
Investment companies Investment bankers
Securities brokers and dealers Finance companies

Why do financial institutions exist, and why are they so diverse? In fact, they share common attributes. All have at least some contact with the general public; all accept money and provide services in return. The discussion of their development starts with a simple world that assumes the existence of money and works toward the complex system of financial markets today.

EXAMPLE OF A FINANCIAL TRANSACTION

Savings units

First, assume a tiny economy, a world populated by only two people-person A and person B. Person A works throughout the year to obtain all necessities of life-food, shelter, and clothing. Person A now has \$100 of excess resources. Assuming no liabilities, person A has wealth of \$100, or $W_o = \$100$. When income exceeds expenditures for the year, person A becomes a surplus savings unit.

Surplus savings unit (SSU):

An economic entity, whose income for a particular period exceeds expenditures.

The amount of person A's wealth will stay the same without any productive application for the excess resources, that is, without investment opportunities.

Now consider person B, who also has worked successfully during the year to satisfy basic needs but without accumulating excess resources like person A. Person B's current wealth is zero. Hence, the summation of wealth of the two citizens of this small economy is \$100. Person B, however, has come up with a 1-year project that promises to return 20 percent on investment. Yet, with no funds available for investment, B will be unable to take advantage of the lucrative opportunity. All other things being equal, the wealth of this society 1 year from now, WI, will be identical to its current wealth.

Direct Financing

The clear solution to this dilemma is for person A to lend person B the funds necessary for the project. If this happens, person B becomes a deficit savings unit.

Deficit savings unit (DSU):

An economic unit, whose income for a particular period is less than expenditures.

When the ultimate user of funds-a DSU or an entrepreneur-obtains necessary resources from an investor or SSU, the process is called direct financing.

Direct financing:

This is the provision of funds for investment to the ultimate user of the funds (DSU) by an ultimate investor (SSU).

This arrangement makes it possible for a person with an idea or an opportunity to undertake a worthwhile project what would, otherwise, have been forgone. The benefits of direct financing reach beyond one individual, however. They are an important source of growth in an economy.

If we assume that person A is willing to provide financing in the amount of \$100 at an agreed-upon rate of 10 percent (probably documented in a promissory note signed by person B), A earns N10; total wealth 1 year from now will be \$110 [$\$100(1.10) = \110], or WI = \$110, as also shown in Exhibit 1-1. Person B's wealth also increases. After repayment of principal and interest, B's wealth will have increased to \$10 [$\$100(1.20) - \$110 = \10]. On an aggregate basis then, the wealth of the economy grows to \$120, increasing by the 20 percent return on B's project. In the absence of financing, this growth would not have occurred. Notice that the economy grows by the rate of return available from investment and that this rate of return is shared, in negotiated proportions, between SSUs and DSUs.

Direct financing works only when mutual agreement on all terms of the arrangement is possible. In this example person A had confidence in the proposed project and did not object to the required holding period. Person B agreed to the 10 percent interest rate.

3.1 FINANCIAL INTERMEDIATION

An Expanded Example

Direct financing in a world of more than a handful of people can be an inefficient way to allocate capital. Suppose there are 100 SSUs and 100 DSUs, all of them as interested in financing their projects at favorable terms as the original person B. If each DSU investigates a direct financing arrangement with each ultimate investor, search and information costs become unreasonable (up to 10,000 searches, with 100 DSUs each investigating 100 SSUs). If each of the ultimate investors also looks for the "right" investment, information costs will mount even faster.

Enter a financial intermediary, a commercial bank, as shown in Exhibit 1-2. The bank, not the individuals, can analyze each of the projects proposed by the entrepreneurs (B₁ through B₁₀₀). Because no more than 100 "feasibility studies" are required, information costs are reduced. In fact, the bank may be able to offer the ultimate investors (A₁ through A₁₀₀) a wider range of financial opportunities than would have been available through direct financing. This is indirect financing.

Indirect financing:

This is the process by which entrepreneurs obtain money for investment from a financial intermediary who, accumulate the funds from ultimate investors.

Exhibit 1-2 illustrates how investment dollars flow from SSUs through the intermediary to the entrepreneurs, producing essentially the same net result as with direct financing. The distinction is that the commercial bank holds promissory notes. The ultimate investor now holds a bank deposit, a different financial instrument. The promissory note is a primary security; the deposit is a secondary security.

Primary security:

A financial claim issued by the ultimate user of the funds, the DSU.

Secondary security:

A financial claim issued by a financial intermediary.

Change in the financial instrument held by ultimate investors is the essence of financial intermediation.

Financial intermediation:

The process of facilitating the flow of funds from surplus savings units (SSUs) to deficit savings units (DSUs), with primary securities (issued by DSUs) held by financial institutions and secondary securities (issued by financial institutions) held by SSUs.

Forms of Financial Intermediation:

Indirect financing through financial intermediaries, like direct financing, facilitates economic growth by allowing capital to be channeled to investment projects. The effect of indirect financing is a significant change in the type of securities held by the investing public. It may be described in four broad categories:

1. **Denomination intermediation.** A number of relatively small investments may be a pool to finance projects that require large amounts of capital.
2. **Maturity intermediation.** Deposits and other secondary securities may have short-term maturity and be payable to the investor upon demand.
3. **Risk intermediation.** The SSUs do not bear direct risk of default (nonpayment of principal or interest) by DSUs. The secondary securities issued to the SSU are backed by the financial strength of the intermediary (and, in the case of federally insured deposits., by the federal government).
4. **Information intermediation.** The SSUs do not need to research all projects in which they ultimately invest. Investors instead rely on the management skill and financial position of the intermediary.

Other Financial Intermediaries-Briefly

Banks are but one of several financial institutions that perform intermediation functions and serves an industrial economy. Other financial intermediaries are savings and loan associations, mutual savings banks, credit unions, investment companies, pension funds, insurance companies, and finance companies.

Depository Institutions Commercial banks, savings and loan associations, mutual savings banks, and credit unions are depository institutions. That is, they all issue secondary securities in the form of the customer's deposit, money that can be withdrawn upon demand or according to terms of the deposit agreement. Mutual savings and loan associations, mutual savings banks, and credit unions technically issue ownership shares, not deposits.

Savings and loan associations (S&Ls) were established to provide real estate finance by accepting small savers' deposits and investing in residential mortgages. To this traditional function have been added consumer and commercial loans. Savings and loan associations now also accept checking and large-denomination deposits.

Mutual savings banks were also originally geared to the small investor. These institutions made mortgage loans and accepted primarily savings deposits. Their activities have grown in ways similar to S&Ls.

Like S&Ls and mutual savings banks, credit unions provide a savings vehicle for the small investor. They invest these funds in small consumer loans for purposes other than residential housing. Members of credit unions share some form of common bond, frequently employment or occupation. As credit unions have evolved, they, too, have begun to offer a full range of consumer services.

Non-depository Financial Institutions Investment companies, pension funds, insurance companies, and finance companies are financial intermediaries that are not depository institutions. Thus, the secondary securities that they issue are different. Investment companies pool money in small denominations to make large purchases of corporate and government securities. To this extent, they are similar to commercial banks, but investment companies issue ownership shares, not deposits, to their investors. The rate of return from an investment company share depends on the rate of return of the securities in which the company invests, with no guarantee or insurance for the investor.

Pension funds offer the secondary security of deferred income. Contributors to pension funds receive the promise of lump-sum or periodic payments at or during retirement from employment. Contributions into pension funds are made by both employers and employees. Pension funds are major providers of money for industrial expansion.

Insurance companies promise protection from a variety of specified risks in exchange for investor funds. This promised protection is documented in an insurance policy. The two major types of insurance companies are life insurers and property and casualty insurers. Life insurers protect investors from death and disability during the term of the policy.

AN ANALYSIS OF FINANCIAL INTERMEDIATION

This section provides an introductory analysis of intermediation by examining one transaction in which a commercial bank acts as intermediary. This is with a variety of changes in all the financial position of parties.

THE BALANCE SHEET

The bank then makes a loan of N10,000 to a third party, entrepreneur B. After the loan is made, the bank's N10,000 addition to vault cash is reclassified as loans. On B's balance sheet, cash in bank (asset) and notes payable (liability) accounts both increase by N10,000. .

Without the intermediary – that is, if A had provided direct loan financing to

B-A's and B's balance sheets would have changed in exactly the same amount, but the asset held by A would have been a promissory note executed by B, not a bank deposit.

Income and Expense

To analyze the compensation to each of the parties in the intermediation process, assume first that these balances are unchanged for 1 year. Also assume that the bank pays interest on deposits at 8 percent and charges 11 percent interest on loans and that B's investment project has a rate of return of 20 percent.

According to Exhibit 1-4, A earns \$800 (8 percent of the \$10,000), which the bank is obligated to pay because of its contractual commitment. Once the bank enters into this contract with A, the liability of the bank to A is not affected by the bank's investment decision. Yet because interest expense for the bank (interest income for A) begins accruing immediately on deposit, it is in the bank's best interest to put the \$10,000 to productive use as soon as possible. Assuming that the bank makes the loan to B on the day of A's deposit, the bank's interest income from the loan to B (interest expense for B) begins accruing right away. Likewise, B promptly invests the loan proceeds in the proposed project.

At the end of the year, the bank's (pretax) net interest earnings are \$300—the \$1100 loan income less the \$800 deposit interest expense payable to A. The earnings of B before taxes are \$900-\$2000 in project revenues less \$1100 in interest expense. The total amount earned depends on the return on B's investment, assumed here to be 20 percent, or \$2000. That \$2000 is distributed among the three participants in the intermediation process: \$800 + \$300 + \$900.

What is important in terms of financial intermediation is the nature of the bank's earnings. They depend on the spread, or the difference between the bank's cost of money (the deposit rate in this example) and its investment rate of return (the loan rate). In the case of commercial banks, the spread is referred to as net interest margin.

Net Interest Margin

The difference between the average rate earned on earning assets and the average rate paid on interest-bearing liabilities.

The spread or net interest margin is a basic measure of profitability for the financial intermediary and is the institution's compensation for lending risks—for example, the risk of non-repayment. The intermediary incurs additional expense in the form of information gathering and customer service that also must be covered by the spread. Moreover, it cannot lend all its assets long-term. To ensure that customers can withdraw cash on demand, the bank must invest some deposits (its liabilities) in assets that can be quickly converted to cash. These more liquid assets do not earn as high a rate of return as loans to entrepreneurs and other clients, which reduce the intermediary's profitability. (See Exhibit 1-5.)

The example shows how a financial intermediary facilitates the productive investment function of the economy—this is the reason for being. It performs services that transform the financial instruments available to the public so that they have more appealing denomination, maturity, and risk characteristics. It is a source of information that the public

EXHIBIT 1-5 THE THEORY OF FINANCIAL INTERMEDIATION

Ernst Baltensperger's bank theory overview classifies models in three basic categories:*(1) those that assume that the bank is a price setter in deposit and credit markets, (2) those that apply portfolio theory and rely heavily on the assumption of risk aversion, and (3) those that emphasize the real resource cost of providing banking services. Many of these models do not address the issue of scale, that is, the bank's optimal size.

Baltensperger's synthesis of the earlier work develops a model addressing both the bank's

asset mix and scale. The bank's expected profit is specified as:

$$E(7r) = rE - iD - C - L$$

where $E(7r)$ = the bank's expected profit'

r = rate of return on earning assets

E = dollar amount of earning assets

i = rate' of interest paid on deposits

O = naira amount of deposits

C = naira production cost (especially labor cost) of providing real re-source banking services
(such as check clearing, credit evaluation,
safe-keeping, and bookkeeping)

L = opportunity cost of holding liquid assets

The bank's deposits O are assumed to equal earning assets E plus reserves R . Baltensperger shows that the bank will maximize expected profit with respect to Rand O (and thus E) by investing in earning assets until marginal revenue exactly equals the sum of marginal production and liquidity costs. To finance these investments, deposits should expand until marginal revenue and costs become equal.

This model could be applied beyond commercial banking. Because a number of financial institutions offer deposit and loan services, Baltensperger's framework can be useful in analyzing the general case of financial intermediaries. For these services it earns money itself-the spread reduced by the cost of doing business (information processing and customer service).

3.3 DIRECT FINANCING

Not all financial institutions are intermediaries, that is, not all change the security held by the ultimate investor. Other financial institutions that are not intermediaries perform vital roles in the distribution of primary securities. Investment bankers and securities brokers and dealers sell to the public the same debt and equity securities issued by non-financial firms. Investment bankers advise corporations on the terms and conditions of issuing securities, including the proper timing, pricing, and maturity. Securities issued in this way include stocks, bonds, and commercial paper. As compensation for their security issuing services, investment bankers receive fee income. They also underwrite securities or assume the risk of selling the entire issue. Compensation for this service is the spread, or the difference between the price the investment bank pays to the issuing firm and the price at which it sells the security to the investing public.

While not engaging in intermediation, securities brokers and dealers perform a vital function by placing new securities issues in the hands of investors. After stocks and bonds have been issued, investors may resell securities (to other investors) through brokers in a number of markets. The existence of smoothly functioning markets, which let investors convert stock or bond holdings into cash or more liquid assets, facilitates the sale of additional securities whenever they are offered.

3.4 FINANCIAL MARKETS

The financial markets of many countries, where securities transactions take place, are efficient and well organized, with a variety of institutions to help capital flow throughout the economy. Until recently, virtually all financial markets had physical locations, such as in New York or Chicago. With the advent of technological change, some are now computer or telephone networks performing the same functions. The over-the-counter (OTC) market for stocks, National Association of Securities Dealers Automated Quotation System (NASDAQ), and the foreign currency markets that operate 24 hours a day are examples.

Primary and Secondary Markets

Financial markets may be classified in one of two fundamental categories, primary and secondary markets.

Primary markets:

These are markets that bring surplus savings units together with deficit savings units in the process of financing productive activities. Securities are sold for the first time in primary markets.

When a company, for example, International Business Machines (IBM), wants to raise equity capital, it issues securities in addition to those outstanding and now held by investors. It does this through a transaction in the primary markets, and the aggregate number and value of securities in the economy increases. Thus, IBM thereby receives a capital infusion for investment in presumably profitable projects that facilitate economic growth.

Secondary markets:

These are markets in which already existing securities change hands. In effect, securities are transferred from one surplus savings unit to another.

Examples of N.G secondary markets are the Nigeria Stock Exchange, and the over-the-counter market. Of course, in secondary-market transactions the firm that originally issued the securities does not receive additional financing. Without strong secondary markets for existing securities, investors would be less inclined to purchase them in the primary market in the first place (that is, less inclined to provide corporate financing). Active secondary markets let investors buy or sell securities with minimal expense. Secondary markets also give borrowing firms such as IBM (deficit savings units) valuable information about market conditions for new issues of securities, including rates of return that the market is likely to demand of a new issue.

Money and Capital Markets

Beyond the primary-secondary market distinction, financial markets may be classified in terms of the time to maturity of the securities traded. Short-term securities (with 1 year or less to maturity) are traded in money markets. Money markets help investors and borrowers manage liquid assets that they do not want to tie up for long periods. ~s Treasury bills, commercial paper, and negotiable bank certificates of deposit are examples of instruments that are traded in these markets. Long-term securities (those with more than 1 year to maturity or with perpetual life) are traded in capital markets. These securities help finance industrial projects that enhance economic development, such as high-technology manufacturing facilities. Stocks, bonds, and mortgages are traded in capital markets.

Competition and deregulation (fewer government constraints) have brought major changes to the financial services industry. The industry continues to evolve to meet both domestic and foreign challenges.

3.5 FINANCIAL SERVICES: A CHANGING INDUSTRY

All financial intermediaries originally operated in market niches in which they tended to specialize. Historically, for example, commercial banks have been an important part of the economy's payments system and a major source of short-term finance for industry. Banks now offer consumer, real estate, and longer-term commercial services. Over time, many institutions diversified into other activities so that functions may now overlap

Competition in financial services has blurred the difference between many formerly distinct institutions. For example, all depository institutions along with life insurance companies now provide mortgage finance. All depository institutions, investment companies, and securities brokers and dealers offer accounts that are checking accounts for all intents and purposes. Investment companies offer rates of return to small investors that are often more attractive than rates available at depository institutions.

Exercise: 1.1 Describe the four types of financial intermediation

1.2 How do financial intermediaries affect transaction between surplus savings units and deficit saving unit

4.0 CONCLUSION

Financial institutions continue to evolve. Although the provider may change, the needed services remain fairly constant. Liquidity and capital investment funds must be channeled from surplus savings units to deficit savings units. Depository institutions (commercial banks, savings and loan associations, mutual savings banks, and credit unions) are now competing with other institutions for market share. Traditional banking services can be obtained now from any number of financial institutions-including investment companies, insurance companies, and pension funds-and finance companies. One consequence is that savings and loan associations and commercial banks have failed at alarming rates.

5.0 SUMMARY

Competition between domestic and foreign institutions is becoming much keener. The economies of the world clearly are becoming more integrated. If anything is a constant in the changing financial services industry, it may be the continuing trend toward integration of institutions, markets, and economies.

6.0 REFERENCES

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7.0 TUTOR MARKED ASSIGNMENT

Differentiate between primary and secondary financial markets.

UNIT 3

MONEY MARKET (INTERNATIONAL)

1.0 INTRODUCTION

Smoothly functioning financial markets allow financial institutions to perform distribution and intermediation functions efficiently and effectively. Financial markets are either money or capital markets, depending on the maturity of the specific financial instruments that are traded. This Unit discusses money markets, which are markets for short-term loans, and the next two units describe capital markets.

Treasury bills are auctioned in the primary market and traded in an active secondary market created by government securities dealers. A number of other financial instruments have evolved to complement the T-bill market. Commercial banks and other depository institutions participate in markets for federal funds and repurchase agreements, both of which constitute short-term agreements to borrow and lend. Negotiable certificates of deposit, issued by banks, are widely held as liquid assets by non-financial corporations, personal trusts, pension funds, state and local governments, and others. Commercial paper (short-term liabilities of corporations) is another vehicle for short-term financing that has grown rapidly in recent years; finance companies and bank holding companies use commercial paper. Banker's acceptances (bank liabilities) accommodate financing needs associated primarily with international trade.

These markets, or markets like them, are found in virtually every industrialized While the configuration of money markets may vary from one country to another, whatever their format, money markets are the mechanism allowing a variety of participants to meet a wide range of liquidity objectives in any economy,

This unit first discusses the nature of money markets and the participants in them.

2.0 OBJECTIVES

When you complete this unit, you should be able to:-

- Define money market
- Explain the role of money market participants
- Describes financial instruments traded in money market and analyses their pricing
- Examine recent trends in international markets.

3.0 WHAT IS A MONEY MARKET?

The maturity of financial instruments that are traded is one way to differentiate markets. If the securities traded are short-term instruments, the market is called a money market.

When maturities exceed 1 year, the market is considered a capital market

Another differentiation is whether the securities are new (offered in the primary market) or already existing (traded in the secondary market)

When T-bills are sold to the public for the first time, the sale takes place in a primary money market. Investors buy or sell existing T -bills through dealers and these transactions occur in secondary money markets. A counterpart in the capital market would be an initial public offering of common stock-a primary capital market transaction-while the subsequent exchange of stock through stockbrokers occurs in the secondary capital market.

Treasury bills are issued only in maturities of under 1 year, while common stock has no maturity date, which makes common stock a long-term financial instrument.

Money market:

A market in which financial instruments matures up to 1 year are bought and sold.

Money markets enable market participants to borrow or lend liquid assets and thereby meet needs for cash or investment of cash.

Liquid assets:

These are assets that may be converted into cash quickly, without significant loss of value.

Investing excess liquid assets-that is, lending-reduces the opportunity cost of holding cash or cash equivalents. Borrowing short-term funds eliminates disruption that would be caused by temporary cash flow deficits.

Opportunity cost of holding cash:

That rate of return that could be earned if the next best alternative to cash were held by an investor, that is, that rate of return that is forgone when an investor holds cash.

The federal government uses the money market to effectuate certain phases of government monetary policy, such as adjustments to the money supply. It does this through the Central Bank which establishes government objectives with respect to the money supply, interest rates, and credit availability.

3.1 MONEY MARKET PARTICIPANTS

The United States

The major money market participants are:

- The Federal Reserve System
- Government securities dealers
- Commercial banks

The U.S. Treasury issues the T-bills and other securities that are the foundation of the money market. Short-term issues enable the government to raise money to meet necessary expenditures between receipts of tax revenue. The Treasury also arranges for the re-financing of maturing issues.

The Federal Reserve System historically holds over 75 percent of its financial assets in the form of U.S. government securities (6 percent of the total outstanding in 1991), and its role in the operation of money markets is a crucial one. The Federal Reserve (Fed) as the fiscal agent for the Treasury accepts bids for and distributes all government securities in the primary market. If it appears that the money supply should be contracted to guard against inflation, the Federal Reserve will enter the secondary money market and sell government securities, increasing the amount of securities held by the private sector and decreasing the money supply. If the economy appears to need stimulation in the face of potential stagnation, the Fed purchases securities, thereby increasing the money supply. The Federal Reserve frequently uses repurchase agreements (repos) and reverse repos to effect these adjustments. Its ultimate responsibility for the money supply makes the Federal Reserve the single most influential participant in U.S. money markets.

Government securities dealers make markets in Treasury securities by buying large blocks of securities from the Federal Reserve in the primary market and distributing them to customers. The dealers hold inventories of securities that facilitate secondary trading by their customers. Dealers also buy and sell for their own accounts, further helping support an active and liquid market.

In the United States, commercial banks are major money market participants. In 1991 they provided 79 percent of negotiable certificates of deposit (CDs) and 69 percent of federal funds and repurchase agreements.² Bank holding companies are issuers of approximately 4 percent of commercial paper outstanding. Banks extend lines of credit supporting the commercial paper of non-financial firms, making the paper safer and more appealing to investors. As a group, banks hold a larger percentage of U.S. government securities than any other group of financial institutions (approximately 12 percent in 1991). Fractional reserve requirements give commercial banks significant influence on the expansion and contraction of the overall money supply whenever liquidity changes occur in the economy.

The United Kingdom and Japan

In many other countries the money market functions of commercial banks, government entities, and securities dealers parallel those of their U.S. counterparts. Such markets may vary in degree of development, but the basic functions take place in a comparable fashion. Two financial systems, however, have institutions for which there are no U.S. parallels. In the United Kingdom, discount houses act as intermediaries between the government and the commercial (clearing) banks. These private firms absorb the entire weekly U.K. Treasury bill offering, can borrow from the Bank of England (the United Kingdom's central bank), are active dealers in short-term government securities, and make a secondary market with merchant banks in negotiable CDs and acceptances.

In the United States, commercial banks may borrow directly from the Federal Reserve. British clearing banks must make their liquidity adjustments through the discount houses; they may not borrow directly from the Bank of England. It is this function of U.K. discount houses that distinguishes them from any U.S. financial institution. The Bank of England carries out its monetary policy largely by purchase and sale of Treasury and commercial bills through the intermediary discount houses. Only recently, in the "big

bang" of 1986, did banks gain the right to operate in the government securities market as U.S. banks do. The U.K. discount house model is also used in Singapore.

Another unique set of financial firms is the Tanshi houses of Japan. The Japanese government has licensed these six private companies in perpetuity to act as intermediaries in all money markets except the gensaki (repurchase agreement) market. Like discount houses, these non bank firms may borrow from the central bank (the Bank of Japan), which frequently carries out its monetary policy through the Tanshi. They are the primary means through which large banks maintain reserve requirements. Because of their close relationship with the Bank of Japan, these nongovernmental companies essentially supervise bill-discount and call money markets, important components of Japan's money markets.

33.2 MONEY MARKET INSTRUMENT

In the United States, the most widely traded money market instruments are:

- U.S. Treasury bills
- Federal funds
- Repurchase agreements
- Negotiable certificates of deposit
- Commercial paper
- Banker's acceptances

Of these, the last three are traded in physical form, while the remaining instruments are kept track of in book-entry form (electronic record keeping) with written confirmations. Money market instruments share certain qualities that make them useful for wholesale (large) transactions:

- Liquidity, which describes the ability to convert an asset into cash with relative ease while not significantly depressing its price in the process, is perhaps the most important quality.
- Default risk, which is the risk of nonpayment of principal or interest, must be minimal in order for the security to be considered a safe haven for excess liquidity.
- Short time to maturity, given that adverse price movements attributable to interest rate changes are smaller for shorter-term assets, helps ensure that interest rate changes will not affect the security's market value materially.

Treasury Securities

Treasury securities are obligations of the U.S. government. They are issued to cover government budget deficits (excess of expenditures over revenues) and to refinance maturing government debt. The most common are bills, notes, and bonds. Treasury bills have original maturities of 1 year or less, while notes are for 1 to 10 years, and bonds have maturities greater than 10 years.

Treasury bills (T-bills):

This is short-term obligations of the U.S. Treasury Department with original maturities of 1 year or less.

Treasury bills and other Treasury securities (with less than 1 year of remaining life) are

the most important instruments in U.S. money markets.

The Primary Market

The Bidding Process of the Treasury Department auctions an announced quantity of new bills each week through Federal Reserve district banks and their branches. Bids may be submitted by government securities firms (for clients or for their own accounts), individuals, or financial and non-financial corporations. Submitted bids are either competitive or noncompetitive. Competitive bids specify the desired quantity of bills and the lowest interest rate the buyer is willing to accept. Large investors usually submit competitive bids, which make up the bulk of the aggregate dollar value of total bids. Treasury rules prohibit any single bidder from obtaining more than 35 percent of any new issue, however. Noncompetitive bids are limited to \$1 million or less and state only the quantity of bills desired. A noncompetitive bidder accepts the weighted average interest rate of the winning competitive bids. Historically, noncompetitive bids have constituted 10 to 25 percent of the total.

The day of the auction, Federal Reserve banks and branches accept bids until 1:00 P.M. Eastern time, when all bids are forwarded to the Treasury. Noncompetitive bids receive their quantity allocations first, but at then-unspecified rates. Then competitive bids are considered. The bidder with the lowest interest rate receives the next allocation, followed by the bidder with the second-lowest interest rate. The process continues until all bills have been allocated. The Treasury computes the weighted average interest rate of the winning competitive bids and uses this rate to price all noncompetitive bids.

T-Bill Pricing and Delivery Treasury bills are sold at a discount price.

Discount pricing:

Setting the price of a financial instrument at the face value less the amount of interest that will be earned through the maturity date.

Interest earned is the difference between the price paid to purchase the instrument and the amount received upon maturity. A T-bill price is face value (for example, \$19,000) less applicable discount according to the given rate of interest. The discount is based on a 360-day year and the number of days between date of purchase and maturity date and is quoted per \$100 of face value. Once the interest rate is set through the auction, the price is determined by this formula:

$$\begin{aligned}P &= 100 - \text{discount} \\&= 100 - 100 (k) (N/360) \\&= 100 [1 - k (N/360)]\end{aligned}$$

where P = price per \$100 of face value

k = appropriate interest rate

N = number of days to maturity

At an interest rate of 8 percent for 3-month bills (91 days to maturity), the Treasury bill price would be \$97.9778 per \$100 face value. Rounded to three decimals, the cost to purchase \$1 million in bills is \$979,780 ($\$97.978 \times 10,000 = \$979,780$), and, upon maturity, the interest earned totals \$20,220.

Treasury bill purchases are recorded in a book-entry system. Physical securities are never delivered. Instead, a record of transactions is maintained electronically by the Treasury and the Federal Reserve System. This arrangement significantly reduces transaction costs by eliminating the need to handle, ship, or store physical documents.

Once the Treasury auction is complete, settlement (that is, payment and delivery) is accomplished through a tiered custodial system.

Tiered custodial system:

System that segments ownership records of T-bills. The Treasury records ownership by the relevant Federal Reserve Bank. The particular Federal Reserve bank records ownership for a depository institution. Only the depository institution maintains records of ultimate ownership.

Treasury Department records reflect liabilities to the specific Federal Reserve banks from which it receives winning bids (competitive and noncompetitive). In turn, Federal Reserve banks record the ownership of securities (Reserve Bank liabilities) for each financial institution (commercial bank or other depository institution) that submits a winning bid. Each financial institution also segregates its records of Treasury bill holdings (assets) into those held (1) for its own account, (2) for depository institutions with no Federal Reserve account, (3) for brokers and dealers, and (4) for ultimate investors. The Treasury makes payments of interest and principal through this tiered custodial system as well.

The Secondary Market

The United States The secondary market in Treasury bills is a vast and exceedingly efficient telecommunications network, whose major participants are primary government securities dealers, approximately forty financial institutions so designated by the Federal Reserve. These banks, brokerage firms, and bond houses buy and sell Treasury bills for their own and their customers' accounts. Customers include depository institutions, insurance companies, pension funds, non financial firms, and state and local governments.

Government dealers help to maintain an orderly market mechanism through trades of Treasury bills for their own accounts. They earn profits based on the difference between the price at which they are willing to purchase Treasury bills, the bid price, and the price at which they will sell them, the asked price. The efficiency of the market is evidenced by narrow bid-asked spreads, typically ranging from 2 to 4 basis points

Bid-asked spread:

Dealer profit in a T-bill transaction: the difference between the purchase and sales prices that a dealer will accept.

Basis point:

One-hundredth of 1 per-cent.

Thus, the customary spread is approximately \$50 to \$100 per \$1 million of 3-month bills.

As the core of the U.S. money market, the U.S. Treasury bill market attracts both domestic and international investors. The Treasury has sold 3-month maturities since 1929 and 6-month and 1-year maturities since the late 1950s.

The United Kingdom

In Europe, T -bills have an even longer history than in the United States, with the United Kingdom (location of the world's largest money market) first issuing Treasury bills in 1877. All U.K. bills have original maturities of 91 days and are bought and sold through discount houses, the financial institutions that act as intermediaries between British clearing (commercial) banks and the Bank of England, the central bank.

Since the "big bang" of 1986, regulatory changes empowered domestic and foreign banks to operate as primary dealers in the medium- and long-term government securities market, the gilt-edged market.

Gilt-edged market:

This is the market for medium-and long-term government securities in the United Kingdom.

With this new status, banks may now also bid on, but not act as primary dealers for, Treasury bills in the primary market. The right to bid on Treasury bills is probably less significant than the new bank powers in the gilt-edged market because the government has issued a substantially larger volume of medium- to long-term obligations (not short-term bills) in the last few years. As a result, Treasury bills do not play a significant role in U.K. money markets as they do in the United States.

The U.S. government sells Treasury securities through a bid, or tender, system.

Bid, or tender, system:

A predetermined quantity of securities is offered for sale and sold, or "tendered," to the highest bidders.

An alternative method of selling government securities has been through the tap system.

Tap system:

The government sells only those securities that the public requests.

Singapore made government securities available on a tap basis beginning in 1923, but the Singapore money market did not expand dramatically until three discount houses began operation in 1972 (an earlier discount house operated from 1964 to 1968), and Treasury bill sales were converted to the tender system in 1973. These factors and government initiatives to develop secondary markets in other money market instruments helped double the size of the money market in the 5 years that followed.

While many countries' money markets have developed around Treasury bills, others have evolved using other dominant liquid assets. Hong Kong, as a British colony (until 1997 when the People's Republic of China resumes power), has neither a central bank nor an indigenous government securities market. Thus, call money, the equivalent of U.S. federal funds, forms the core of the money markets of Hong Kong. Japan also has had a long tradition of a market in call money.

Federal Funds

Federal funds are not formal securities. They are immediately available funds that are loaned or borrowed among financial institutions.

Immediately available funds:

These are funds on deposit in a commercial bank or other depository institution that may be withdrawn with no delay.

Federal funds:

These are immediately available short-term funds transferred (loaned or borrowed) between financial institutions, usually for a period of 1 day.

U.S. banks and (since 1980) other depository institutions that are federally insured (or eligible to apply for federal insurance) are required to maintain reserves, that is, liquid assets to back deposit liabilities at levels specified by the Federal Reserve. These reserves may consist of vault cash or deposits at a Federal Reserve Bank. As deposits at Federal Reserve banks earn no interest, banks have an incentive to redeploy any excess reserves.

The federal funds market developed as a way to do this.

The Market

The federal funds market began in the 1920s when banks with excess reserves loaned the excess to banks that needed reserves at a "Fed funds" rate close to the rate that financial institutions pay to borrow directly from the Federal Reserve. The institution that borrows federal funds records a liability, federal funds purchased. The lending institution records an asset, federal funds sold. Federal Reserve rulings in 1928 and 1930 exempted federal funds purchased, including those created by book-entry or wire transfer, from reserve requirements. Given that banks could borrow from the Federal Reserve at a rate lower than the federal funds rate, the market was initially not very active. In the 1950s and 1960s, however, interest rates rose, short-term credit became difficult to obtain, and the demand for federal funds increased significantly. The market expanded so much that by 1970 roughly 60 percent of Federal Reserve member banks were active participants.

Federal funds transactions take two forms. If both institutions have Federal Reserve bank accounts, they may instruct the Federal Reserve to transfer funds from the account of the lender to the account of the borrower over Fed-wire, the wire-transfer system of the Federal Reserve. Either party may initiate a transaction. Alternatively, an institution (respondent) may maintain an account with an institution acting as a federal funds broker (correspondent). In this case, the respondent bank informs the correspondent of its desire to sell federal funds, at which point the correspondent reclassifies the respondent's balance from demand deposits to federal funds purchased. The correspondent frequently resells the funds to a third party in the market.

Duration The duration of a federal funds transaction is usually 1 day-overnight. When both banks have Federal Reserve accounts, on the following day the Federal Reserve bank debits the account of the borrower (reduces the balance of the borrower's reserve bank account) and credits the account of the lender (increases the balance of the lender's account) for the principal amount of the transaction plus interest earned. If the transaction was brokered, the correspondent debits federal funds purchased in the amount of the transaction and interest expense for the interest to be paid, crediting the respondent's account.

Banks may also negotiate term federal funds loans, usually for a period of 90 days or less. An institution may choose this arrangement if it expects liquidity needs to persist longer than overnight, or if it anticipates a rise in interest rates in the near future. Continuing contract federal funds are, in effect, a continuous rollover of overnight federal funds at the rate that applies each day. This can evolve into a longer-term arrangement with a variable interest rate.

Terms

Most federal funds borrowings are unsecured. In fact, most are supported only by oral agreements made by telephone. This procedure is possible because the parties have long-standing business relationships or because the broker has no doubt about the institution's creditworthiness.

When federal funds are explicitly secured, the borrower places securities in the possession (custody account) of the lender. At the time the loan is repaid, custody of the securities is returned to the borrower. Title to the securities never changes, however.

Japan The U.S. federal funds market has a counterpart in several other countries. The call money market in Japan has operated since the turn of the century.

Call money:

These are loaned funds that are repayable upon the request of either party.

All transactions go through one of nine Tanshi companies licensed by the Japanese Min-

istry of Finance. The term of a call money loan can range from a half-day to 7 days. Half-day money is borrowed at 9:00 A.M. and repaid at 1:00 P.M. or borrowed at 1:00 P.M. and repaid at 3:00 P.M. Unconditional money is repaid the following day. Fixed maturity money is repaid in 2 to 7 days.

Unlike U.S. federal funds, until 1985 any call loan other than half-day money had to be collateralized by government securities or high-quality corporate debt instruments. To accommodate foreign bank branches in Tokyo that possessed far fewer high-quality Japanese debt securities than Japanese banks, the government eliminated this requirement. Since the early 1970s other money market instruments have emerged, causing the call money market to become less significant in terms of total market volume.

Hong Kong

In Hong Kong, the inter-bank market participants are licensed Hong Kong banks and authorized brokers.

Inter-bank market:

This is money market (short-term exchange of liquid assets) for banks with no intermediary.

Overnight call and other short-term deposits are the common vehicles, and collateral is rarely required. The larger Hong Kong banks had long conducted short-term transactions of this nature, but it was not until the late 1950s that the market became active. A comparable inter-bank market was the only way to adjust liquidity in Singapore until discount houses were established.

The United Kingdom Discount houses in the United Kingdom have traditionally served to provide short-term credit in the U.K. banking system by entering into call money arrangements with individual banks. Banks with surplus funds lent them to discount houses, and banks in need of liquidity called in their discount house loans. More recently, however, a parallel set of money markets has developed. One of it is the inter-bank market. Late in the 1960s clearing banks began to establish subsidiaries (non-clearing banks) to operate in the inter-bank market. Transactions generated by these and other institutions have since become dominant in the sterling money markets.

Sterling money market:

Short-term market for funds denominated in British pounds.

Thus, while the call money markets of Hong Kong, Singapore, Japan, and the United Kingdom have common features, the markets have developed in somewhat different ways. The call money market of Hong Kong has functioned in much the same way as the U.S. federal funds market, without any institutional intermediary. Singapore money markets did not become active until discount houses began operations and government securities were offered on a tender basis. Japan has maintained vigorous call money markets with the Tanshi houses as intermediaries since the turn of the century. Beginning in 1986, British call money markets with discount house intermediaries have had less impact because of deregulation and the growth of parallel, inter bank markets.

Re-purchase Agreements

Re-purchase agreements (repos) in the US are agreements to sell securities and, later, to reverse the sale.

Repurchase agreement (repo):

This is an agreement between buyer and seller in the sale of securities to reverse the transaction in the future at a specified date and price.

These transactions commonly involve Treasury securities, but they may also involve government agency securities.

Government agency securities:

Securities issued by an agency of the U.S. federal government, with implicit backing of the federal government.

Repurchase agreements are essentially collateralized loans. A financial institution with large holdings of Treasury securities sells some portion of them for a predetermined period of time to obtain liquidity and promises to repurchase the securities at the end of that period. Of course, on the other side of the transaction is an institution with excess liquidity. The amount of the transaction is relatively large, and the interest rate is below the federal funds rate. The lower rate is justified, because the transaction is collateralized by government securities.

Repurchase agreements are typically as short term in nature as federal funds (or call money). Overnight, term, or continuing basis repurchase agreements are all negotiated. Unlike collateralized federal funds transactions, in which title to the securities does not change, in a repurchase agreement title does transfer to the purchaser.

In the United States, government securities dealers frequently engage in repurchase agreements for their own account to manage liquidity and to capitalize on anticipated changes in interest rates. If a dealer sells securities to a bank in one of these arrangements, the bank is said to have entered into a reverse repo. In fact, whichever party initially sells the securities enters a repo agreement, and the initial purchaser enters a reverse repo—one is simply the mirror image of the other. These transactions are commonly designated from the perspective of the securities dealer: If the dealer is the initial seller, the transaction is a repo; if the dealer is the initial purchaser, it is a reverse repo.

Repurchase agreements are useful to state and local governments because the time pattern of revenue receipts is frequently not the same as that for expenditures. Repurchase agreements have offered a safe, short-term outlet at close-to-market rates for temporary excess cash. In 1985, however, the market was shaken by the bankruptcies of two government securities dealers: ESM Government Securities and Bevill, Bresler, and Schulman. Improprieties in operating and auditing procedures led to losses of over \$500 million for the customers of these firms. As a direct result, the state-insured thrift institution insurance system in Ohio collapsed and numerous municipalities lost operating revenues. These experiences were attributable to dealer violation of the repurchase agreements. Simply stated, dealers used securities more than once as collateral for loans to conceal operating losses.

Repurchase agreements are generally safe as long as participants observe certain guidelines:

- Execute clear and complete "master" repurchase agreements covering all terms of transactions.
- Research the financial strength of the other party involved.
- Obtain control of the securities to be used as collateral.
- Evaluate the underlying securities to ascertain adequacy of the collateral.

Japan

A Japanese counterpart to the repurchase agreement is the Japanese gensaki. While term repurchase agreements rarely exceed 30 days in the United States, the most common maturities in Japan are 30 to 60 days. Further, in the United States, non-financial corporations hold less than 25 percent of repurchase agreements. Non-financial corporations in Japan contribute over 60 percent to gensaki lending, exemplifying the close relationship between Japanese financial institutions and their corporate clients.

Negotiable Certificates of Deposit

Banks have issued certificates of deposit for many years, but it was not until the 1960s, when they were first issued in negotiable form, that certificates of deposit with original maturities of 6 months or less assumed a significant role in money markets.

Negotiable certificate of deposit (CD):

A financial instrument issued by a bank documenting a deposit, with principal and interest repayable to the bearer at a specified future date.

Note that a negotiable certificate of deposit is a bearer instrument and a term (not demand) deposit. In the 1950s, nonnegotiable, large-denomination CDs were unattractive because significant interest penalties were levied upon early withdrawal.¹⁶ At that time, too, bank demand deposits paid no interest. As corporate treasurers became more sophisticated cash managers and sought alternatives to demand deposits as outlets for liquidity, the result was a severe reduction in demand deposit balances held by corporations.

The Birth of Negotiable CDs Here and Abroad The negotiable CD was the banks' response to this deposit drain. In 1961, what is now Citibank issued the first negotiable CDs in amounts greater than \$100,000. Although subject to interest rate ceilings as specified by a Federal Reserve limitation called Regulation Q, the negotiable CD offered an alternative to non-interest-bearing demand deposits. Its enthusiastic reception helped banks regain a good measure of the funding that had been lost.

Banks were able to increase the rate paid on negotiable CDs to attract more deposits as the need arose. This innovation brought widespread adoption of bank liability management, which enables banks to attract funds by offering higher interest rates and thereby changing their deposit base. The interest rate ceiling was not a binding constraint until 1966, when Treasury bill interest rates rose to the point that they exceeded the maximum rate that could be paid on negotiable CDs. This meant that investors would not purchase more of the CDs as they matured, placing the banks in a "credit crunch." The banks reacted by offering competitively priced CDs offshore (that is, overseas) where Regulation Q was not applicable. So began the Eurodollar market.

In 1970, Regulation Q interest rate ceilings were lifted for CDs over \$100,000. By 1972 certificates of deposit represented approximately 40 percent of all bank deposits. Negotiable CDs are now second only to Treasury bills in terms of their importance in U.S. money markets. The negotiable CD is a major contribution by depository institutions to money markets in the United States and abroad.

When U.S. banks went offshore in 1966, they selected London as the location for offering dollar-denominated negotiable CDs. The instrument was readily accepted there so much so that in 1968 the first sterling-denominated negotiable CDs were introduced. Negotiable CDs in domestic currency were first sold in Singapore in 1975 and in Hong Kong in 1977.

The first yen-denominated negotiable CDs were sold in 1979, when they could be sold only in minimum denominations of ¥500 million. This relatively high minimum was established to prevent undue competition with the gensaki (repurchase agreement) market. With the liberalization of the Japanese markets, however, the minimum was subsequently reduced to ¥300 million in 1984 and to ¥100 million in 1985. The relatively slower pace of financial innovation is typical of Japan, where the government has traditionally exercised tight control over the country's financial system.

CD Pricing The clear appeal of these instruments vis-a-vis other time deposits is their negotiability. Once issued, negotiable CDs may be sold through brokers, generally in round lots of \$1 million. While the CD is originally issued at face value, its price in the

secondary market depends on prevailing rates and the remaining time to maturity. Pricing is most easily analyzed in the context of the time value of money. Consider first three basic relationships:

$$FV_n = PV(1 + k)^n \quad (2a)$$

$$PV = FV_n / (1 + k)^n \quad (2b)$$

$$k = (FV_n/PV)^{1/n} - 1 \quad (2c)$$

where FV_n = future value of an investment

PV = present value of an investment

k = rate of return

n = number of periods the investment is held

Equation 2a means that the value of an investment at some future time is a function of the initial investment, the rate of return being earned, and the length of time the investment is held. Equation 2b is a variation of Equation 2a and represents the current value of an investment with one specified future payoff. Equation 2c computes the rate of return for an investment when the price is given and the future payoff is specified.

To illustrate the pricing of a negotiable CD, assume that on day 0 a CD is issued at 8 percent with a maturity of 182 days (6 months). The original investor II presumably will hold this CD for 182/365 of a year, so that the payoff of principal and interest on day 182 will be \$103,912.09, according to Equation 2a:

$$FV_{182} = 100,000(1 + .08)182/365$$

But suppose II decides to sell the CD to another investor 12 on day 92, when 90 days remain to maturity and CDs of this risk classification are yielding 7.5 percent. Applying Equation 2b, the price of the CD on day 92, P_{92} , is \$102,075.50:

$$P_{92} = 103,912.09 / [(1 + .075)90/365]$$

This is exactly the price that will yield investor 12 a rate of return of 7.5 percent:

$$k = (103,912.09 / 102,075.50)365/90 - 1$$

Equation 2b can be adapted to generalize the price of a negotiable CD:

$$P_t = [P_0(1 + k_o)N/365] / (1 + k, t)(N-t)/365$$

where P_t = price at time t

P_0 = face value of CD

k_o = interest rate at time of issuance

N = original days to maturity

k = interest rate at time of sale in the secondary market

Commercial Paper

History of Issuance Another financial instrument that has significantly enhanced the alternatives for short-term liquidity adjustments is commercial paper. Commercial paper dates back to the beginning of trade in colonial America, even before banks were organized. The first form of commercial paper was bills of exchange.

Bill of exchange:

This is an order written by the seller of goods instructing the purchaser to pay the seller

(or the bearer of the bill) a specified amount on a specified future date.

Bills of exchange essentially provide short-term loans to purchasers for a period of time between the sale of goods and the date of payment. They were used to smooth seasonal cash flow fluctuations. Bills of exchange could be discounted prior to the specified future date when the seller accepted the face amount of the bill less interest.

Bill discounting:

This is receiving payment on a bill of exchange prior to the bill's maturity by surrendering the bill for face value less applicable interest for the time remaining to maturity.

The modern version of this instrument is called commercial paper, which is issued in large denominations, primarily by the most creditworthy firms.

Commercial paper:

This is unsecured promissory notes, issued by corporations, with an original maturity of 270 days or less.

Commercial paper is a convenient way to raise short-term funds, because registration with the Securities and Exchange Commission (SEC) is not necessary, as it is in the case of issuing other securities for sale to the public. In order to be exempt from SEC registration, the issue must have an original maturity of 270 days or less and be intended for current transactions. The most common maturities of commercial paper are between 20 and 45 days. Like bills of exchange and Treasury bills, most commercial paper is issued on a discounted basis.

Generally, dealers distributed commercial paper to ultimate investors until 1920, when General Motors Acceptance Corporation (GMAC) began direct marketing of paper with maturities specifically tailored to ultimate investors. Within 10 years, other finance companies had followed suit.

Non financial corporations began to rely on commercial paper during the credit crunch of 1966, when banks had difficulty attracting funds because regulated CD rates were not competitive with market interest rates. Many corporations that had previously relied on short-term bank loans issued commercial paper with lines of credit from their banks as backing.

A subsequent tight money environment in 1969 prompted bank holding companies to issue commercial paper in more than usual amounts, using the proceeds to buy loans from their subsidiary banks.⁹ As a means to finance new bank loans, this method worked reasonably well until 1970, when the Federal Reserve imposed reserve requirements on commercial paper used in this manner. The effect at that time was to curtail issuance by bank holding companies. Currently, however, bank holding companies make extensive use of commercial paper to finance other activities, such as leasing, consumer, and mortgage finance.

Growth and Marketability

The amount of commercial paper outstanding increased dramatically in the early 1980s, when short-term bank loans became prohibitively expensive and commercial paper represented a much less costly source of funds. In 1980, for example, the difference between the prime bank loan rate and the commercial paper rate exceeded 6.5 percent. Although the spread has since narrowed, commercial paper remains an important segment of U.S. money markets. Non-financial corporations, finance companies, and bank holding companies accounted for almost 85 percent of total issues outstanding in 1991.

Because commercial paper is unsecured, the credit rating of the issuing company is a critical factor in the marketability of the issues. Three credit-rating firms rate the issues Standard & Poor's Corporation (S&P), Moody's Investors Service, and Fitch Investor Service. Standard & Poor's designates investment-grade (high-quality) commercial paper as A-I (highest investment grade), A-2 (high investment grade), and A-3 (good investment grade). Moody's comparable ratings are P-1, P-2, and P-3, while Fitch rates better quality paper F-1, F-2, or F-3. Over 70 percent of the commercial paper rated by these firms receives the highest rating, and 98 percent receives the highest two ratings, which gives some indication of the importance of creditworthiness for successful marketing. Banks play a vital role in these high average ratings. In most instances, issuing firms have backup lines of credit that cover 100 percent of the issue. When the credit of the issuing firm does not justify one of the top ratings, the firm may obtain a letter of credit from a bank with a top credit rating.

Letter of credit:

A letter issued by a bank or other firm indicating that a firm has arranged to obtain financing up to a specified amount.

A letter of credit backing the commercial paper in effect substitutes the credit rating of the bank for the credit rating of the issuer. This is called a support arrangement, and the commercial paper is called "commercial paper supported by letter of credit" or a "documented discount note." Supporting firms besides banks might be insurance companies and parent companies (in the case of subsidiaries).

In many cases, while commercial paper has become a substitute for bank loans and eliminated a major source of bank revenues, such support arrangements have helped to lessen the negative impact because they result in fee income to banks.

Secondary Markets

The United States

Compared to the market for Treasury bills and negotiable CDs, the secondary market for commercial paper is not as extensive. Dealers and direct issuers will redeem an issue prior to maturity if the investor is in dire need of funds, but early redemption is not encouraged. Of course, given that original maturities are so short, early redemption is generally not necessary.

Other Countries

Commercial paper markets outside the United States are in various stages of development. In the United Kingdom, bill-brokers originally facilitated discounting of bills of exchange by working through banks and wealthy individuals. Discount houses perform this function now by accepting call money from clearing banks, buying bills at discount, and rediscounting them at the Bank of England. Perhaps because of this long tradition of bill discounting, the sterling commercial paper market was not authorized until 1986. As the 1986 legislation effectively exempts firms issuing commercial paper from preparing a prospectus (as is true in the United States), it removes a significant impediment to development of the market.

In Hong Kong, where the call money market has traditionally played a critical domestic role, commercial paper has been introduced only recently. The first major issues did not appear until 1979.

Introduction of discount houses in Singapore in 1972 facilitated discounting of bills of exchange. Bills of exchange that have been approved by the Monetary Authority of Singapore (the equivalent of a central bank) may also be held as liquid assets by commercial banks. The commercial paper market started formally in 1984.

Japanese bills of exchange with maturities of from 1 to 4 months have long been discounted by banks, but until 1971 the activity was considered part of the call money mar-

ket. Individual promissory notes have relatively small denominations, so they are packaged in larger aggregates and attached to a bank's accommodation bill with a face value equal to the sum of the accompanying promissory notes. The banks then trade these accommodation bills among themselves, with Tanshi companies acting as brokers.

A domestic commercial paper market has been slow to evolve in Japan, despite the fact that Japanese companies issue commercial paper in the United States and in Euromarkets. In 1982 Japanese banking laws were revised to permit the establishment of a domestic market, but the Ministry of Finance formulated no regulations until 1987. These regulations classified commercial paper in the same category as commercial bills of exchange and designated banks and Tanshi companies as participants.

Banker's Acceptances

Banker's acceptances are a subset of bills of exchange that are guaranteed by "accepting" banks.

Banker's acceptance:

This is a time draft (postdated instrument) payable to a seller of goods, with payment guaranteed by a bank.

In these instruments, the credit of the bank substitutes for the credit of the purchaser, and the seller is ensured payment. Further, unlike an open trade credit arrangement (in which the seller provides credit for a period of time), the seller need not wait for payment. A banker's acceptance is immediately negotiable; the seller can either receive discounted payment at the accepting bank or hold the draft until the date of maturity. Banker's acceptances are particularly important in international trade. Maturities are 1, 3, or 6 months. Average maturity is 3 months.

Creating a Banker's Acceptance

Creation of a banker's acceptance typically begins when an importer arranges a letter of credit through a bank, which then notifies an exporter (or the exporter's bank) that, once specific conditions have been satisfied, the exporter is entitled to draw (write) a draft on the importer's bank in the amount of the transaction. The conditions may include attaching documents to the draft verifying the shipment of goods.

Once the conditions have been satisfied, the exporter presents the documented draft to the importer's bank (perhaps through the exporter's bank). The importer's bank "accepts" the draft, and at that point the draft becomes a money market instrument. Payment to the exporter on the date of maturity is guaranteed, or, if the exporter decides to discount the draft immediately, payment is guaranteed to the holder of the acceptance.

Should the exporter decide to discount the acceptance, the importer bank now has two alternatives. It can hold the acceptance in its portfolio until maturity, at which time the importer repays the bank. In the interim, a loan is recorded, as "customer's liability on acceptance outstanding." The accounting entry is:

Debit	Credit
Customer's liability on acceptance OIS Cash	X X

The second alternative is to sell the acceptance, in which case a liability, called "accep-

tance liability outstanding" is created. In this case, the entry is:

	Debit	Credit
Cash	X	
Acceptance liability OIS		X

There are other variations of acceptance creation. The draft may be drawn on the exporter's bank, especially if the importer's bank is relatively small. Alternatively, the importer's bank may arrange for a larger bank to accept the draft and provide the third bank a guarantee against loss. Some acceptances do not involve the shipment of goods at all. Drafts drawn for working capital, for example, are referred to as finance bills.

In all cases, the accepting bank charges a commission that is a function of the time to maturity and the creditworthiness of the borrower. If the acceptance is held in the portfolio of the accepting bank, the bank also earns interest equivalent to the discount. Generally, the borrower absorbs these costs.

The Market

In the secondary market, investors find bankers' acceptances attractive because they are liquid and, although unsecured, have a historically low default rate. Investors include money market mutual funds, bank trust departments, state and local governments, insurance companies, pension funds, and commercial banks. Approximately thirty dealers and twelve brokers operate in the highly liquid U.S. market for banker's acceptances.

From the perspective of accepting banks, acceptance financing is comparable to CD financing. The bank has an obligation to pay the holder of the acceptance, just as it has an obligation to pay the holder of a CD. Likewise, funds obtained in the sale of the acceptance are used to finance the customer's loan, just as funds obtained in the CD market finance other loans. Because of these similarities, the discount rate on acceptances is consistently within 10 basis points of the interest rate on CDs. For example, if the CD rate is 8.00 percent, the banker's acceptance discount rate will fall between 7.90 and 8.10 percent.

Banker's acceptance liabilities are not subject to reserve requirements as long as they qualify as one of three kinds of eligible acceptance:

- Domestic trade
- U.S. imports and exports
- Third country

Acceptances that finance domestic trade have historically been a small portion of the total market. Before the 1960s, acceptances to finance U.S. imports and exports were the most common, although currently they comprise less than half of all acceptance liabilities. The most common eligible category is now third-country acceptances, those that finance trade between countries outside the United States.

The growth of third-country acceptances was particularly strong during the 1970s, when non-U.S. borrowers found the U.S. acceptance market an attractive source of short-term financing. Most of these acceptances are refinance bills (working capital drafts). In these cases, the initial transactions between the two countries outside the United States are essentially the same as those described above. The refinance bill is created when the borrower's foreign bank holds the original draft drawn on it in its portfolio and draws another draft on a U.S. bank to replenish its funds. When the U.S. bank accepts this refinance bill, it then becomes a part of the U.S. acceptance market.

In recent years the U.S. acceptance market has not expanded as much as markets for other money market instruments, primarily because U.S. firms and their foreign counterparts have developed alternative sources of financing; commercial paper is an example. In the United States, banker's acceptances outstanding declined at an average annual rate of 2.1 percent between 1981 and 1991, while commercial paper increased at an annual rate of 13.3 percent. Elsewhere, the refinance bills of Japanese and other foreign banks have been replaced by borrowings in the Eurodollar markets.

The United Kingdom and Japan

Merchant banks are at the center of the U.K. banker's acceptance market (as distinguished from the discount house market).¹¹ While clearing banks maintain large branch networks of millions of individual depositors, merchant banks have made a niche for themselves by providing various financial services to businesses, including acceptance. But the acceptance business has experienced peaks and valleys as the government exerts and relaxes controls on other forms of lending.

The Japanese banker's acceptance market began in 1985, motivated by a desire to increase the demand for yen-denominated funds (very much in the interest of the United States because such an increase would help correct the then-overvalued dollar) and to give the Japanese government another instrument of monetary control.

The growth of the market has been slower than anticipated, however, perhaps because of taxes imposed on banker's acceptances and the availability of other forms of short-term financing that are more competitively priced.

3.3 RECENT TRENDS

The 1970s were a period of financial innovation, driven partially by the high and volatile interest rates during the latter half of the decade. As a result, the expansion of private-sector money market instruments outpaced the growth in government debt.

During the 1970s, the amount of money market instruments outstanding consistently grew at double-digit rates. Total Treasury issues (including T-bills) grew from \$226.6 billion in 1969 to \$578.1 billion in 1979. This is a compound annual growth rate of 10 percent per year $[(\$578.1 \text{ billion}/\$226.6 \text{ billion})^{1/10} - 1 = 0.098]$. Over the same period, private-sector (non-government) money market instruments grew at even higher rates. As shown in Exhibit 3-4, federal funds and repurchase agreements increased at the rate of 27.5 percent per year from 1969 through 1979. The relatively new negotiable CD enjoyed a comparably high growth rate of 23.9 percent. Banker's acceptances ranked next in terms of growth at 20 percent. The growth in commercial paper was lowest at 13 percent.

During the 1980s, the growth rate of private-sector money market instruments moderated, while government debt grew to over \$2 trillion dollars by 1989, or at a 13 percent annual rate. Within the private sector, commercial paper showed the greatest percentage increase, 15.9 percent per year, higher than its 13 percent rate during the 1970s. Growth in federal funds and repurchase agreements fell to 14.1 percent, roughly half the rate in the previous decade. Even so, federal funds and repos increased at a rate faster than the national debt.

It is notable that negotiable CDs and banker's acceptances outstanding increased at a much slower pace during the 1980s. The annual growth of negotiable CDs fell from 23.9 percent in the 1970s to 9.3 percent in the 1980s. For banker's acceptances, the growth rate of 20 percent fell to 6.1 percent during the 1980s.

From 1989 through 1991, growth in most private money market instruments was negative even as the U.S. government debt rose from \$2.1 trillion to \$2.6 trillion, an annual growth rate of 11.3 percent. Federal funds and repurchase agreements declined at an annual rate of 2 percent during the 2-year period. Negotiable CDs and banker's acceptances shrank by 5.2 and 8.0 percent, respectively.

On the other hand, commercial paper outstanding increased at an annual rate of 7.5 percent during the 2 years ended 1991. The amount of commercial paper issued by bank holding companies shrank. But the additional amounts issued by finance companies and non-financial corporations were large enough to more than offset the decline in bank holding company issuances.

Exhibit 3-5 shows the aggregate dollar amounts of these private-sector instruments in 1969, 1979, 1989, and 1991. Total instruments outstanding increased by a factor of 20 from 1969 (\$74.6 billion) to 1989 (\$1.49 trillion). Federal funds and repurchase agreements became a larger share of the total, while banker's acceptances dropped. From 1969 to 1979, negotiable CDs grew to comprise almost half of private-sector money market instruments, while commercial paper dropped to less than 25 percent. Twelve years later, the commercial paper share had surpassed that of negotiable CDs.

These figures indicate that money markets have become less dependent on domestic commercial banks and the instruments that they issue. Given the financial sophistication of corporate managers and individuals, this trend is not likely to reverse.

The contraction in markets other than commercial paper from 1989 to 1991 is directly related to conditions in the banking and savings and loan industries. Competitive pressures have reduced banks' market share of financing in the economy and led to higher bank failure rates. The number of savings and loan associations has declined by one half in just the last few years. In addition, international concern for bank safety has caused regulators to push for higher ratios of bank capital to assets, that is, a larger buffer to absorb losses and to avoid failure. This means essentially lower ratios of bank liabilities to assets, with federal funds, negotiable CDs, and banker's acceptances among these liabilities.

Federal Funds and Repos

Exhibit 3-6 shows the share of total federal funds and repurchase agreement liabilities by issuer for 1969, 1979, 1989, and 1991. This market started as an exclusively inter-bank market. Later, savings institutions (savings and loan associations and mutual savings banks) and securities brokers and dealers became more involved. As foreign banks entered the United States, they, too, have made their presence felt in the money markets.

In 1969, domestic commercial banks issued 100 percent of outstanding liabilities. Ten years later, their share of the market had declined somewhat to 95.6 percent. Savings institutions had begun to use this market to manage liquidity needs and had a 10.3 percent share. As of the end of 1979, brokers and dealers participated by providing net loans (assets of brokers and dealers rather than liabilities) of 5.9 percent of total liabilities outstanding.

By 1989, savings institutions accounted for 33.8 percent of the market and foreign banks 5.5 percent. While the dollar amount of broker-dealer loans increased from \$5.8 billion in 1979 to \$7.9 billion in 1989, the market grew even faster so that the broker-dealer share actually declined (to a negative 2.1 percent). This effect is even more pronounced in the case of domestic commercial banks, whose net liabilities grew from \$94.3 billion to \$230.9 billion during the 10-year period but whose market share dropped to 62.8 from 95.6 percent.

Just 2 years later, commercial banks' liabilities had dropped to \$215.4 billion, only 61 percent of the market. The market share of savings institutions dropped dramatically to 11.25 percent, going from \$124.2 billion in 1989 to \$39.7 billion in 1991. Foreign banks share of the market continued to increase to 7.5 percent by 1991. Broker-dealers were net

borrowers with 20.2 percent of the total market.

In the 20 years ended 1989 the market for federal fund and repurchase agreement has expanded in absolute dollar terms. It has expanded as well in terms of the number of significant participants, with domestic commercial banks becoming less important, while broker-dealers and foreign banks have become more important.

Negotiable CDs

A similar trend has occurred in the negotiable CD market. As Exhibit 3-7 shows, domestic commercial banks issued 100 percent of the instruments outstanding in 1969. Despite the fact that their negotiable CD liabilities increased from \$27.8 billion to \$186 billion during the next 10 years, their percentage of the market declined to 78.7 percent by 1979. Savings institutions (13.4 percent) and foreign banks (7.9 percent) accounted for the remaining market.

In 1989 the \$342 billion of domestic commercial bank CDs represented only 59.5 percent of the total. Savings institutions alone accounted for 30.7 percent of all negotiable CDs outstanding and the foreign bank-sector share advanced to 9.7 percent.

By 1991, a 2-year, \$75 billion contraction in the negotiable CDs issued by savings and loan associations brought their share of the market down to 20.2 percent. Even though domestic commercial bank CDs fell by \$12 billion, this decline was smaller than in the savings and loan industry, and the bank market increased to 63.9 percent of negotiable CDs outstanding. During the same period, the CDs issued by foreign banks grew by \$26.5 billion and gave this sector a 15.9 percent market share, not much smaller than that of all domestic savings institutions. While the market has generally grown, the competition among participants for deposit funds has also increased.

COMMERCIAL PAPER

In the commercial paper market, finance companies have historically been the most significant issuers, accounting for over 70 percent of outstanding paper in 1969. The figure dropped to 54.7 percent in 1979 but was up again to almost 60 percent by 1989 and remained at this level in 1991.

Commercial bank holding companies issued less than 20 percent of the total outstanding commercial paper for the years and they have generally been less active in the market than non-financial corporations. In 1969 commercial banks had issuances totaling \$4.3 billion (13.2 percent of the market) outstanding. By 1991, the total was \$24.2 billion (4.3 percent of the market). During the same period, the commercial paper liabilities of non-financial corporations grew from \$5.4 billion (16.5 percent of the market) to \$119.9 billion (21.3 percent of the market). Non-financial corporations have found the commercial paper market an attractive alternative to short-term bank financing, which poses a serious challenge to bank lending activities.

International issues are also notable; foreign commercial paper played no role in the market in 1969 but came to command 15.5 percent of the total outstanding by 1991. While the dollar amount of bank paper increased by a factor of almost 5 during the 22 years ended 1991, foreign issues went from \$4.6 billion (4.1 percent of the market) in 1979 to \$87 billion (15.5 percent) in 1991, or an eighteen-fold dollar increase in just 12 years.

Exercise 1. What is the difference between money and capital markets?

- 2a. What is a repurchase agreement?
- 2b. What precautionary measures should be taken when entering re-purchase

agreements?.

4.0 CONCLUSION

The short-term, or money, markets in the United States are centered first on Treasury bills, with negotiable CDs, federal funds and repurchase agreements, commercial paper, and banker's acceptances also important. Commercial banks, savings institutions, finance companies, government securities dealers, and foreign firms are the private-sector entities that are the most significant participants. The U.S. Treasury and the Federal Reserve are the biggest governmental participants.

In the United States participants generally conduct transactions directly with each other, with the exception of primary transactions in the T-bill market. In Japan, private Tanshi houses oversee all transactions except gensaki (repurchase agreements). In the United Kingdom, discount houses have traditionally served a similar purpose. Only recently have parallel money markets begun to develop that do not require the intervention of discount houses.

5.0 SUMMARY

The money markets of the United States, the United Kingdom, Japan, Hong Kong, and Singapore are among the world's largest. While T-bills have been the most important money market instrument in the United States, call money (the equivalent of federal funds) dominates in other countries, most notably Japan and Hong Kong. Negotiable CDs were introduced in the United States in 1961. In 1968, the United Kingdom had also introduced a sterling-denominated negotiable CD. During the mid-1970s Singapore and Hong Kong did so. A yen-denominated instrument was not created until 1979 and at first only in large denominations so as not to compete with the gensaki market.

The treatment of negotiable CDs in Japan is a good example of that country's approach to financial market regulation. Japanese corporations issued commercial paper in the United States during the early 1980s because the 1982 Japanese law permitting the issuance of commercial paper was not implemented until 1987. Similarly, there was no Japanese secondary market for banker's acceptances until 1985.

On the other hand, the governments of Singapore and Hong Kong have encouraged innovation in money markets in the interest of attracting financial services activities. The United Kingdom implemented similar deregulation in 1986.

In every country, money markets are dominated by large institutions engaging in large-denomination transactions. Generally, these markets are moving toward deregulation, with a wider variety of money market instruments becoming available to a greater assortment of institutions.

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7.0 TUTOR MARKED ASSIGNMENT

1. Discuss the role of the Federal Reserve as a money market participant

2. Obtain a recent edition of the Wall Street Journal
 - a) What is the prime interest rate?
 - b) Compare the prime interest rate with the commercial paper rate. What is the implication of these differences?

UNIT 4

CAPITAL MARKET INSTRUMENTS

1.0 INTRODUCTION

The process of long-term, productive investment occurs in capital markets, where long-term financial instruments are traded. It is the long-term nature of the instrument that differentiates capital markets from money markets.

Capital markets:

These are markets in which financial instruments with maturities greater than 1 year are bought and sold.

Corporations secure financing through capital markets by selling long-term claims on their firms, whether in the form of bonds (liabilities) or stock (equity). Governments go to capital markets for operating funds, and households use them for residential mortgage financing. This describes the capital market instruments that are issued and traded within national boundaries.

Capital market instruments are classified in five categories:

Government notes and bonds

Municipal bonds

Corporate bonds

Corporate stock

Mortgages

2.0 OBJECTIVES

When you complete this unit you should be able to:

- Define capital market
- Analyses capital market Instruments
- Outline developments in Secondary Mortgage Market.
- Describe the process of securitization

3.0 BONDS

Corporations and government entities issue bonds to raise funds for operations or for capital projects. The buyer of the bond has a claim on the issuer, who owes the buyer a specified amount in the future as well as (usually) interest payments in the interim.

Bonds:

This is a contractual liabilities that obligate the issuer to pay a specified amount (the par, face, or maturity value) at a given date in the future (the maturity date), generally with periodic interest payments in the interim at a fixed rate (the coupon rate).

Bearer bonds are payable to whomever holds the securities; registered bonds are payable only to the owner specified in the issuer's records. Even though bonds have a definite term or life, investors often do not hold these instruments until they mature. Thus, the valuation of bonds prior to maturity is an important concept to understand.

Bond Valuation

The value of a bond is the present value of its future cash flows. Hence, the value or price is based on:

- Interest payments
- Maturity value
- The investor's minimum required rate of return

The cash flows of a bond are an annuity of interest payments during the life of the bond plus a single future payoff of the maturity value. These future cash flows are determined at the time that the bond is issued. The required rate of return is an investor's opportunity cost, that is, the rate of return on the next best investment opportunity. This rate is driven by financial market conditions and, therefore, may change. A bond pricing formula values both the interest payments and the maturity value.

where P_0 = the current price of a bond

I = the amount of interest received each period: (maturity value \times coupon rate)/(number of payments per year)

n = the number of periods before the bond matures

k = the investor's required rate of return per period
 M = bond maturity or face value

Consider a bond with a face value of N1000, a coupon rate of 8 percent paid semiannually, and 5 years to maturity. Suppose that an investor wants to earn 10 percent at a minimum. This bond pays N80 per year in interest ($N1000 \times 0.08$), but the interest is paid semiannually, or two payments a year, at N40 each. The required rate of return per 6-month period is 5 percent ($10\% / 2$). The number of 6-month periods before the bond matures is 10 (5 years \times 2 periods per year). Applying Equation I, the maximum price that the investor would pay for one of these bonds is N922.78.

Bond Yields

An investor who wants to earn 10 percent should pay less than the N1000 par value. This is because the bond pays only 8 percent of the N1000 face value each year. If the investor pays only N922.78, there will be a capital gain in addition to the interim interest payments.

Capital gain:

The difference between the price that is originally paid for a bond and the cash proceeds realized at the time of maturity (the face value) or at the time of sale.

The capital gains yield in this case will be sufficient to bring the total return to 10 percent.

Capital gains yield:

This is a capital gain as a percentage of the value of a bond at the beginning of the time period.

The rate of return to a bond investor is determined both by interest payments and the change in value of the bond.

where kb = rate of return to a bond investor

CY = current yield (interest payment as a percentage of bond value)

CQY = capital gains yield

On the 8 percent, 5-year, N1000 bond purchased for N922.78, the average annual capital gain is 1.6 percent.

$$CGY = (\text{average return per period}) \times (\text{number of periods per year})$$

$$= [(FV/Pv)/n - 1] \times 2$$

$$= [(1000/922.78)/1110 - 1] \times 2$$

$$= 0.016$$

For the first 6 months the current yield is 4.3 percent ($40/922.78$), or approximately 8.6 percent for the year, for a total return of roughly 10.2 percent. As the maturity date approaches, the value of the bond approaches its face value (increases, in this case), which causes the current yield to fall. On average, however, the total annual rate of return over the 5 years is 10 percent.

If this bond had a coupon rate of 12 percent, instead of 8 percent, its price according to Equation 1 would be greater than its par value, or N1077.22.

$$= 60(PVIF A.os, 10) + 1000(PVIFo5, 10)$$

$$= 1077.22$$

The average annual change in price is a negative 1.5 percent³ (capital loss), while the current yield in the first year is approximately 11.1 percent [$(60/1077.22) \times 2$]. This brings the total first year return to approximately 9.6 percent. Since the value of the bond

approaches its par value (decreases, in this case) as the maturity date approaches, the current yield increases so that, again, the average annual rate of return is 10 percent.

If a bond is sold at a stated market price, the unknown in Equation 1 is k , the rate of return, rather than P_0 , the price. The rate k is then the yield to maturity, which is an expected rate of return, instead of the required rate of return.

Yield to maturity (YTM):

The average annual rate of return to a bond investor who buys a bond today and holds it until it matures. The YTM is that rate of return that causes the market price to be exactly equal to the present value of the future cash flows (interest payments and maturity value).

The YTM measures both the current yield and the capital gains yield together. Because the pricing formula is complex, YTM must be found through a trial-and-error process, although a number of hand-held calculators are programmed to perform the necessary iterations. Manually, YTM is approximated using this formula:

$$YTM = [I + (M - Po)/n] / [(M + 2Po)]^{\frac{1}{n}}$$

where I = annual interest payment

n = number of years to maturity

M = bond maturity or face value

Note that the two terms in the numerator of Equation 3 are the annual interest payment plus the average annual capital gain (or loss). The denominator is an approximate average investment in the bond. Applying Equation 3 to the 8 percent coupon bond in the example above, the YTM approximation is 10.06 percent, very close to the actual 10 percent YTM.

Some bonds have a call provision which may prevent investors from realizing the yield to maturity.

Call provision:

This is a feature of a bond that entitles the issuer to retire the bond before maturity.

Because a call is exercisable at the discretion of the issuer and deprives the investor of anticipated income, a call premium (the excess of the call price over par value) is often payable to the investor upon call. This is particularly true if the issuer calls the bond because current interest rates are significantly below the bond's coupon rate. If the issuer calls the bond in order to comply with sinking fund requirements (gradual bond retirement), the call premium is generally much lower. In any event, call premiums decline as the maturity date of the bond approaches. Often, bonds may not be called for several years after issuance; this period of time is referred to as call protection.

While most bonds traded in the ~ conform to the model described above, there are some variations. Some bonds do not pay periodic interest but are discounted in much the same way as commercial paper. These bonds are called deep-discount, or zero-coupon, bonds. They have become more popular in recent years because of certain tax advantages that they offer particular borrowers, but they are still a relatively small part of the market.

Other bonds carry a coupon rate that changes with market interest rates. These variable-rate bonds serve to protect investors from adverse bond price changes, but they also prevent investors from locking in high rates of interest for extended periods of time. Variable-rate bonds are less common in U.S. markets than in Eurobond markets.

Types of Bonds

Government and private enterprises are active bond market participants. Exhibit 4-2

shows the rates of growth in the four categories of bonds for periods from 1969 to 1991. During the 10 years ended 1979, government agencies and corporations had the largest increases in bonds outstanding.

The strong growth in corporate bonds during the 1980s and early 1990s is not expected to continue. The amount of interest that a firm can pay on outstanding debt is limited by its operational cash flows. When the economy is soft and revenues fall, the fixed interest payments on debt can be difficult to meet. On the other hand, the federal government must issue debt to cover fiscal budget deficits (excess of expenditures over revenues).

Treasury Notes and Bonds Unit 3 described how the Federal Reserve auctions Treasury bills. The Fed also auctions Treasury notes and bonds in the primary market. The government securities dealers that make markets for Treasury bills also make markets for Treasury notes and bonds. Original maturities range from 1 to 10 years for notes and from 10 to 30 years for bonds. As is true with Treasury bills, note and bond prices are quoted as a percentage of N100 of face value, with the fractional values expressed in thirty-seconds of a percent. A price of 99%2 can also be written as 99.5. Since %2 is .03125 and 5/32 is .15625, the price for a N1000 bond that is quoted at 99.5 is N991.56 ($P_0 = 10 \times 99.1562 = 991.56$).

The Treasury also issues 10-year notes and 20- and 30-year bonds to depository institutions in book-entry form under a program called Separate Trading of Registered Interest and Principal Securities (STRIPS). Securities that are sold in book-entry form do not have physical form but are accounted for electronically. Principal and interest payments are sold separately, effectively creating two different securities-a zero-coupon bond and an annuity. This innovation represents the government's response to the separate trading of Treasury security principal and interest that had developed in the private sector. In the late 1980s, over N300 billion of STRIPS were outstanding, N70 billion of which were held in stripped form.

Municipal Bonds Municipal bonds include all debt instruments issued by local, county, and state governments. Issuers use proceeds from the sale of municipal bonds to finance public utilities, school construction, roads, transportation systems, and industrial development. An appealing feature is that municipal bond interest payments to the holder are exempt from federal income taxation.

General obligation bonds are backed by the full faith and credit of the issuer. Taxpayer approval is usually required for issuance because the taxing authority of the government body is pledged for the repayment. Revenue bonds are backed only by cash flows from a specific project financed by the bond issue. If the income is not sufficient to service and retire the debt, tax revenues may not be allocated for this purpose. Industrial revenue bonds are issued by non-financial business concerns to help build the economic base of a political subdivision, that is, state or municipality. The political subdivision bears no liability for repayment.

To compare income from a tax-exempt municipal bond with that of a taxable bond, and the after tax rate of interest of a taxable bond must be identified.

$$kAT = kBt(1 - t)$$

where kAT = after-tax rate of interest of a taxable bond

kBt = before-tax rate of interest of a taxable bond

t = marginal tax rate of the bond investor

This after-tax rate is the appropriate rate to compare with the municipal bond yield.⁷ All other things being equal, if the after-tax yield on a taxable bond is less than the yield of the municipal bond, the municipal bond is preferable.

Another way to analyze the interest from a tax-free bond is to determine the pretax rate for a taxable security that would cause an investor to be indifferent between the taxable bond and the municipal bond. This can be done by substituting the municipal bond yield for the after-tax rate in Equation 4 and solving for k_{BT}'

$$kM/(1 - t) = k_{BT}$$

where kM = municipal bond yield.

Corporate Bonds Corporate bonds include all bonds that are not either government bonds (Treasury or federal agency) or municipal bonds. Corporations use the money raised by selling bonds for long-term purposes. In the United States, non-financial corporations issued 60 percent of all corporate bonds that were outstanding in 1991. Finance companies and commercial banks accounted for 11 percent and 6.5 percent, respectively. Insurance companies (primarily life insurance companies) are the single largest investors in corporate bonds, holding 40 percent in 1991. Pension funds had the next largest holdings with 22.5 percent of the total outstanding. Foreign entities and households held 12 and 10 percent, respectively.

The wide variety of corporate bonds includes:

- Mortgage bonds
- Equipment trust certificates
- Debentures
- Subordinated debentures

Some bonds allow conversion into common stock, and some include warrants that can be exercised to buy common stock.

Firms issue mortgage bonds to finance specific projects. Once built or placed in operation, the project becomes collateral for the bond issue, making the issue secured debt. Utility companies are frequent issuers of mortgage bonds. Should the issuer default on the obligation, bondholders may legally take title to the project (collateral) in order to satisfy the debt.

Tangible property also collateralizes equipment trust certificates. In this case the property is specific pieces of large equipment, usually the rolling stock of railroads (railcars) and airplanes. The collateral behind equipment trust certificates may be more readily marketable than that backing mortgage bonds in the event of a bond default.

Debentures are long-term liabilities that are supported not by collateral but only by the general creditworthiness of the issuer. For this reason, they are riskier from an investor's perspective. In case of bankruptcy, while the collateral behind mortgage bonds and equipment trust certificates can be sold to satisfy the obligations of the secured debt, holders of debentures are general creditors of the firm; they receive distributions only after the secured creditors have been paid.

Subordinated debentures are also unsecured, but they are junior in rights to debentures. In the event of liquidation, subordinated debenture holders receive a cash distribution only after more senior debt (both secured and unsecured) has been repaid. If debentures are subordinated to bank loans, for example, bank loans would have to be completely satisfied in liquidation before the subordinated debenture holders receive any of the proceeds from asset sales.

Corporate bonds may sometimes be exchanged for other securities. Convertible bonds may be exchanged for a specific number of shares of common stock of the issuing firm. An investor will not elect to surrender the bond and convert, however, unless the market

value of the stock to which the investor is entitled exceeds the market value of the bond. In the case of widely traded issues, the price of the bond fluctuates to keep its market value roughly equivalent to the value of the stock into which it may be converted.

Bonds are sometimes issued with stock warrants attached. Warrants are options to purchase common stock at a specified price up to a specified date. Should the bondholder decide to exercise the option and purchase stock, it is not necessary to surrender the underlying bond. Again, bondholders will exercise their warrants only if the market value of the stock exceeds the specified (exercise) price of the warrant.

Bonds are an important source of capital for the federal government, states and municipalities, and private corporations. However, private-sector equity financing in the form of common stock has historically been a more important source of financing.

3.1

CORPORATE STOCK

The market value of common stock outstanding increased as fast as bonds during the 1980s and 1990s.

Corporate stock

Financial claims on a corporation held by the owners of the firm.

Stock is recorded in the equity section of the firm's balance sheet. Corporate stock takes two forms: preferred and common.

Preferred stock

Preferred stock is a hybrid instrument that represents an equity interest but pays a fixed dividend (just as a bond pays a fixed interest payment).

Dividends:

Periodic cash flows paid to owners of corporate stock

Often preferred stock is cumulative; that is, all preferred dividends (unpaid in the past and currently due) must be paid before common shareholders may receive any dividend payments. Like the value of a bond, the value of preferred stock depends on the future cash flows to which the investor is entitled. Because the dividend is fixed, a preferred stockholder is entitled to a perpetual stream of level cash flows.

where P_o = price of a share of preferred stock today

D = fixed dividend per share

k = required rate of return

Equation 6 is a geometric series that converges to the valuation model for preferred stock: (See Exhibit 4-4.)

$$P_o = D/k$$

With the observed market price of preferred stock and the dividend per share, which is known, an investor's expected rate of return can be determined by solving for k in Equation 7.

Expected rate of return (k'):

This is the rate that causes an asset's present value of future cash flows to equal its market price. The expected rate of return is determined by substituting all known (or estimated) values into the asset's valuation formula and solving for k .

The preferred stock valuation model is based on assumption of level dividends per share D , discounted at k , the required rate of return.

$$P_0 = D/(1+k) + 0/(1+k)^2 + 0/(1+k)^3 + 0/(1+k)^4 \\ = D/(1+k) \{ 1 + [1/(1+k)] + [1/(1+k)^2] + [1/(1+k)^3] \}$$

The bracketed quantity converges to

$$(1 - q^{100})/(1 - q) \quad \text{where } q = 1/(1+k)$$

Substituting for q , the bracketed quantity becomes

$$\{ 1 - [1/(1+k)^n] \{ 1 - [1/(1+k)] \} \} = 1/[(1+k-1)/(1+k)] \\ = 1/[k/(1+k)] \\ = (1+k)/k$$

Substituting for the bracketed quantity above and simplifying,

$$P_0 = [0/(1+k)] [(1+k)k] \\ = D/k$$

$$k' = D/P_0$$

Notice that the expected return for an investor in preferred stock is its dividend yield only (comparable to the current yield of a bond).

Common Stock/Equity

Common stock is an equity interest with dividend payments that are not fixed and that vary, usually increasing over time. In the event of liquidation, common shareholders have the lowest priority in terms of any cash distribution. Because of this, owners of common stock have what is called a residual claim on the firm.

Assuming that dividends increase at a constant rate, the value of a share of common stock is the value of a constantly growing stream of cash flows:

$$P_0 = D_0(1+g)/(1+k) + D_0(1+g)^2/(1+k)^2 + D_0(1+g)^3/(1+k)^3 + \dots \\ \text{where } P_0 = \text{the price of a share of common stock today}$$

D_0 = the current dividend per share

g = the constant growth rate of dividends

k = the required rate of return, assuming $k < g$

Again, this relationship converges to

$$P_0 = D_0/(k - g)$$

where D_1 = dividend per share expected next period, or $D_0(1+g)$.

The common stock valuation model is based on dividends per share D , that grow at the constant rate of growth g , and are discounted at k , the required rate of return.

$$P_0 = D_0(1+g)/[1 + (1+k) + (1+k)^2/(1+k)^2 + (1+k)^3/(1+k)^3 + \dots] \\ = D_0(1+g)/[1 + (1+k) \{ 1 + [(1+g)/(1+k)] + [(1+g)^2/(1+k)^2] + [(1+g)^3/(1+k)^3] + \dots \}]$$

The bracketed quantity converges to

$$(1 - q^{\infty})/(1 - q), \quad \text{where } q = (1+g)/(1+k)$$

Substituting for q , the bracketed quantity becomes

$$\begin{aligned}\{1 - [(1 + g)/(1 + k)]^n\}/\{1 - [(1 + g)/(1 + k)]\} &= 1/\{(1 + k) - (1 + g)\}/(1 + k) \\ &= 1/[(k - g)/(1 + k)] \\ &= (1 + k)/(k - g)\end{aligned}$$

Substituting for the bracketed quantity above and simplifying,

$$\begin{aligned}P_0 &= [D_0(1 + g)/(1 + k)] [(1 + k)/(k - g)] \\ &= D_0(1 + g)/(k - g)\end{aligned}$$

This model was developed by Myron Gordon and is commonly referred to as the Gordon Constant Growth Model.

Solving Equation 10 for k , the result is the expected return for a common shareholder when the price of the stock is known and a given growth rate has been estimated.

$$k' = D_t / P_0 + g$$

Common stock return consists of the sum of dividend yield (D/P_0) and growth in the market price of the stock (capital gains yield). These components of return are comparable to the return components for bonds of current yield and capital gains.

3.2 MORTGAGES

Mortgages are long-term loans that are secured by real property.

Mortgages:

Long-term liabilities collateralized by real property. Commonly, monthly payments are made that fully repay both principal and interest over the term of the loan.

Mortgages are issued to purchase real estate of four basic types:

- Homes
- Multifamily dwellings
- Commercial property
- Farms

Commercial mortgages are used to finance real estate for business purposes, such as office buildings and shopping malls. These mortgages have consistently grown faster than multifamily-dwelling mortgages and even faster than home mortgages.

The growth in both multifamily and commercial mortgages has declined in recent years because of a soft real estate market in which many projects have high vacancy rates in multifamily and commercial mortgages will not resume until the oversupply of existing projects has been absorbed.

Farm mortgages are the smallest part of the market.

3.3 Mortgage Payments

Unlike corporate mortgage bond issuers who frequently pay only interest until the maturity date, households with mortgages most often pay equal monthly payments (an annuity) composed of both interest and partial principal repayment.

$$P = A(PVIFA_k.n)$$

where P = principal amount of the loan

A = monthly payment, amount of the annuity

$$\begin{aligned}
 k &= \text{periodic interest rate} \\
 n &= \text{number of periods in the term of the loan} \\
 PVIFAk.n &= \text{present value interest factor of an annuity, or } (1/k) - \{1/[k(1 + k)D]\}
 \end{aligned}$$

The monthly payment is determined by the amount, the term, and the interest rate of the loan.

$$A = P/PVIFAk.n$$

For example, a 30-year mortgage loan for N100,000 with a 10 percent interest rate requires monthly payments of N877.57.

$$\begin{aligned}
 A &= 100,000 / \{1/(.10/12) - 1/[(.10/12)(1 + .10/12)^{360}]\} \\
 &= 100,000 / 1113.9508193 \\
 &= 877.57
 \end{aligned}$$

The first month's payment includes N833.33 of interest on the unpaid principal of N100,000, and only N44.24 to reduce the balance of the loan, the unpaid principal [interest = $100,000(.10/12)$]. This reduces the unpaid principal to N99,955.76, so the interest in the second payment is N832.96, and the payment on principal is N44.61. Each month the portion of the payment allocated to interest is smaller because the unpaid principal is smaller. This process continues until the last payment brings the unpaid principal to zero.

Recent innovations in the mortgage market include graduated payment mortgages (in which the early payments are calculated at rates of interest below market rates) and adjustable-rate mortgages (which require payments to change when market interest rates change). A graduated mortgage makes it easier for a household to afford the payments in the early years of the mortgage. As the payments increase, household income also increases. An adjustable-rate mortgage (ARM) is more affordable when interest rates are low, but payments increase when interest rates increase. An ARM helps ensure the lender of increasing interest income when interest rates rise, thereby shifting the exposure to interest rate risk from the lender to the borrower.

Households are the major borrowers in the mortgage market.

Individual mortgages are not well suited for trading in capital markets, largely because the amounts of specific loans are not uniform; they are tied to the market value of underlying property. Nor is information about the creditworthiness of individual borrowers readily available. Federally sponsored agencies, however, have developed secondary markets for mortgages through creation of mortgage pools.

- Exercise:**
1. What is the difference between a bond's yield to maturity and its current Yield?
 2. List and define the major financial instruments of the Nigeria Capital Market

4.0 CONCLUSION

The value of capital market instruments is based on cash flows, required rate of interest, and timing of cash flows. Bonds and mortgages have a fixed term or time to maturity. Stock is a perpetual stream of payments. In each case, however, pricing formulas facilitate the valuation of these instruments. The formulas are also useful for computing an investor's expected return.

5.0 SUMMARY

Capital market instruments are long-term claims on governments, corporations, and

households, and they are classified as bonds, stock, or mortgages. Corporations issue bonds and stock for long-term projects that will contribute to economic growth.

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7.0 TUTOR MARKED ASSIGNMENT

Differentiate between a debenture and a subordinated debenture.

UNIT 5

CAPITAL MARKETS, DERIVATIVE SECURITIES AND INTERNATIONAL DIVERSIFICATION

1.0 INTRODUCTION

When the stocks and bonds described in unit 4 are first issued, they are distributed to investors through primary markets. Investment bankers assist corporations in structuring the issues and take responsibility for selling the securities. Once issued, the securities are bought and sold in secondary markets, which are either organized exchanges or telecommunications networks. In terms of size, Japan and other Asian countries now boast the largest capital markets among developed and emerging markets.

The United States has been most active in introducing innovations in derivative securities-financial futures, options, and swaps. It is now possible to purchase derivative securities based on stocks, bonds, and stock indexes. Furthermore, swaps make it possible to restructure the cash flows of financial assets and liabilities.

These markets make it possible for investors to diversify their asset holdings beyond domestic investments and to improve risk/return tradeoffs. Continued expansion of international markets promises to make international diversification even easier.

2.0 OBJECTIVES

When you complete this unit you should be able to:

- Differentiate the functions of primary and secondary capital markets
- Describes the investment banking process
- Highlights changes in the relative size of stock markets in developing countries and emerging markets
- Introduces derivative securities
- Compares secondary markets in the United States.

3.0 PRIMARY CAPITAL MARKETS

These financial securities are offered for the first time in primary markets.

Investment Banking

Firms that facilitate the issue of stocks and bonds are called *investment banks*.

Investment banks:

Securities firms that are retained to advise issuing entities on stock and bond offerings and that take an active role in distribution of the securities to ultimate investors.

Investment bankers give advice as to the type of security that should be issued, the size and pricing of the offering, and even its timing. The client firm pays a fee for this service; the investment banker assumes some of the risk in selling the issue. This distribution activity is called underwriting.

Underwriting:

This is the initial distributing of securities by an entity other than the issuer, with the risk of price fluctuations borne to some extent by the distributor.

Usually investment banks take responsibility for selling the entire issue-the agreement between banker and issuer is a firm commitment in which the issuing firm is guaranteed a specific price and is relieved of the responsibility of marketing the securities. The two parties work together to establish the right price for the securities and then negotiate the underwriter's discount, the investment banker's compensation for risk taking and dis-

tribution. The issuing firm receives the issue price less the discount. If it turns out that the securities cannot be sold to the public for at least the discounted price, the investment banker absorbs a loss. When the issuing firm is not well known, the two parties may execute a best efforts agreement that allows sharing of the risk; the investment banker sells the securities at the best market price it can obtain.

Distribution of securities is commonly spread across several brokerage firms. The firm that negotiates with the issuing company is called the originating house. It and the other firms constitute the syndicate. Each member of the syndicate is responsible for the sale of a given share of the securities.

Before the securities can be offered to the public, the federal Securities and Exchange Commission (SEC) must approve the issue. The issuer and the investment bank prepare a preliminary prospectus providing financial and other data about the firm, the securities being offered for sale, and the intended use of the funds to be raised. The SEC is required to approve the adequacy of disclosure of the prospectus, not the merits of the particular issue. To alert prospective buyers that SEC approval is not final, the cover of the prospectus includes a statement to this effect in red lettering. The practice has led to the preliminary prospectus being nicknamed "red herring."

After any required modifications and subsequent SEC approval, the final prospectus is prepared (now without the red lettering) and distributed to prospective buyers. State and municipal bonds need not be registered with the SEC and are exempt from the prospectus requirement, but no corporate stock or bonds may be sold without an approved prospectus. The requirement for a prospectus is a common practice in most countries with developed securities markets.

Merchant Banking

This is an institution with a major role in primary securities markets outside the United States.

Merchant bank:

A bank that serves the needs of commercial enterprises by giving advice on financing alternatives and corporate mergers and by underwriting new issues, as well as accepting bills of exchange, providing foreign currency exchange facilities, and operating in the money markets.

Merchant banks operated in Italy as early as the fourteenth century. As the name implies, the first merchant bankers were European merchants who found that lending money and providing foreign exchange services made profitable and natural additions to their normal trading activities. Over time, England and northern Europe became centers for international trade, and London evolved as the hub of merchant banking, as it remains today. The London merchant banks are much smaller than clearing (commercial) banks, but both are licensed by the government. Unlike clearing bank operations, merchant bank operations are not financed by large numbers of small deposits, nor do merchant banks generally provide demand deposits or transactions accounts. They have little need therefore for extensive branch networks.

Merchant banks are primarily wholesale bankers; they lend funds in corporate and institutional markets. In recent years, they have focused more on primary market investment banking activities, where new issues are typically underwritten by a merchant bank or a stockbroker. Distinguishing characteristics of a merchant bank are that its staff is typically composed of a high proportion of professionals and that decisions are made quickly without recourse to bureaucratic chains of command, unlike the clearing banks with large numbers of employees to staff numerous branches and a hierarchy to manage them.

Merchant banks operate in a number of countries and reflect strong influence of the British model. In South Africa and Singapore, they are called merchant banks. In Aus-

tralia they are referred to as money market corporations and in New Zealand as unofficial money market corporations. Merchant banks in Hong Kong are called deposit-taking companies. Diversified financial institutions are South Korea's equivalent, while the Japanese variation is securities houses. Like their names, the licensing of and legal specifications for merchant banks vary from one country to another.

Commercial Banks and Investment Banking in Selected Countries

United States commercial banks have been prohibited, for the most part, from engaging in underwriting corporate securities domestically since passage of the Glass-Steagall Act in 1933. Banks have challenged this prohibition on the grounds that their non-bank competitors now offer services historically considered banking services, which erodes bank market share and profitability. This same sort of system also prevails in Japan. The Japanese securities system was patterned after the U.S. system, so Japanese banks are also not permitted to act as corporate securities underwriters.

Until the late 1980s, Canadian bankers operated under similar restrictions. Chartered (commercial) banks are now permitted to own securities firms. Some have bought securities firms, and others have started new companies.

The historical exclusion of banks from corporate underwriting is not observed in all countries; the most notable exceptions are Germany, Switzerland, and France. In Germany, commercial banks are also referred to as "universal" banks. There are no restrictions on their security market activities, and there is no distinction between commercial and investment banks. German corporations rely more heavily than their U.S. counterparts on bank borrowing and the issuance of debt certificates that are not legally defined as securities. German non-financial firms meet less than .5 percent of their financing needs through equity issues, and government entities and commercial banks are the most important issuers of debt securities. In 1986, for example, private and public financial institutions were responsible for 64 percent of all bond issuances and the federal government for 24 percent, a total of 88 percent of 1986 issuances. In the United States, the corresponding percentages were 20 percent and 41 percent, respectively, for a total of 61 percent.

Swiss banks have a significant role in the primary securities market. Firm commitment agreements are typical, with the largest Swiss banks comprising the syndicate membership. Swiss firms with publicly traded stock are generally large and well known. Many companies are still privately held but issue debt in public markets.

In France, as in Germany, firms have historically used bank financing more than securities issuance. In recent years, though, the breadth of the French securities markets has increased markedly. For each new issue, the issuing firm's bank prepares and cosigns the prospectus after the terms have been set by the issuer, the originating house, and the Treasury Department.

Industry Finance in Selected Countries

Investment bankers (in the United States) and merchant or commercial banks (in other countries) help bring together investors and corporations in need of financing. The corporate mix of debt and equity varies considerably, depending upon a country's traditional reliance on particular sources of funds.

Exhibit 5-3 illustrates some of these differences. In the United States and the United Kingdom, for example, where capital markets have operated for relatively long periods of time, equity represents a substantial part of industrial financing. In Germany and France, where extensive bank borrowing has been the more traditional form of corporate funding, the equity percentages of total financing are not as high. In Japan, where until recently virtually all corporate funds were channeled through the banking system, equity levels are particularly low.

Nevertheless, it is interesting that the countries with the largest market capitalizations are Japan and the United States-two countries that have maintained a distinct separation between commercial banking and investment banking. The exclusion of commercial banks from corporate underwriting possibly has served to encourage a robust, if specialized, securities industry.

THE NIGERIAN PRIMARY CAPITAL MARKET

Nigeria has the largest population among the countries of sub-Saharan Africa and is a major producer of crude oil. Although Nigeria remains a poor country by Western standards, the oil revenues have helped spur the development of a stock market. However, unlike prices in primary markets in the United States, Nigerian securities prices are set by the government. The Securities and Exchange Commission (SEC) determines market prices of securities. The Capital Issues Commission (CIC), established in 1973, like its ad hoc predecessor, the Capital Issues Committee, attempts to set prices of publicly traded securities in order to protect the investors and to prevent price manipulation by market participants. The CIC's primary function is price-fixing in the primary market (an activity that some firms avoid by not offering their securities to the public), and it is not empowered to regulate the secondary market. The SEC, established in 1978, has the authority to require registration of *all* securities that ultimately may be held by investors other than those to whom they are originally sold and to supervise stock exchanges and securities firms.

Several factors are considered in setting the prices of equities. In general, the price is set so that the ratio of average annual earnings (over the preceding 5 years) to share price is 20 to 30 percent, depending upon the industry. Another measure that is determined by the government is the net asset value per share (assets *less* liabilities *divided* by number of outstanding shares). The lower of the prices implied by the earnings-price ratio and the net asset value per share, after adjustment for other relevant factors, becomes the price at which the stock may be sold.

3.1 SECONDARY CAPITAL MARKETS

Once securities have been issued in the primary market, investors may sell or purchase them in secondary markets. In the United States, the secondary market for government securities, which are traded through government securities dealers, is quite active and liquid. Municipal bonds are traded primarily over the counter (OTC) and generally less frequently than federal government bonds. The secondary market for mortgages has developed primarily because of government initiative.

Of the remaining securities, corporate bonds and stock are traded either on an organized stock exchange or over the counter.

Organized Stock Exchanges

An organized exchange is a physical place where stocks and bonds are traded.

Organized stock exchange:

This is a specific location where stocks (and some bonds) are traded by exchange members who specialize in particular securities. These specialists match buyers and sellers and maintain an orderly market by trading for their own account whenever there is an imbalance of buyers and sellers.

In order for a stock to be "listed" on an organized exchange, it must meet certain requirements.

The Over-the-Counter Market

The OTC market includes all securities transactions that are not conducted on an organized exchange. Dealers (as opposed to specialists) maintain market order. The National Association of Securities Dealers Automated Quotation system (NASDAQ) is a telecommunications network that connects dealers and provides instantaneous price information on over 4700 stocks. Because of the speed and efficiency of this market, NASDAQ has grown rapidly and now ranks third in size behind the Tokyo and New York stock exchanges.

Both organized exchanges and OTC markets are regulated by the SEC to prevent stock price manipulation, deception, and fraudulent practices. The National Association of Securities Dealers is a self-regulatory body that licenses brokers and dealers and sets standards for ethical behavior.

International Comparisons

The U.S. capital market has historically been the world's largest. As Exhibit 5-6 shows, as recently as 1980 the United States accounted for almost 55 percent of the value of securities listed on the stock markets (stock market capitalization) of all developed countries. Japan was then a distant second (14 percent), and the United Kingdom was third (8 percent). Canada, Germany, and France followed with less than a 5 percent share each. During the following 9 years, the stock market capitalization of developed countries rose from \$2.7 trillion in 1980 to \$11.1 trillion by 1989. The U.S. capitalization more than doubled from \$1.45 trillion to \$3.51 trillion, while the Japanese market outstripped even this impressive growth. In 1980, Japanese capitalization was \$380 billion. By 1989, it was up to \$4.39 trillion, more than a tenfold increase. This gave Japan almost a 40 percent share, exceeding the U.S. percentage of 32 percent of developed-country stock markets. The United Kingdom remained third (8 percent). France and Germany had moved slightly ahead of Canada.

Part of the phenomenal growth in the Japanese market is attributable to the appreciated value of the yen, but even in yen terms the market has grown substantially. Large Japanese trade surpluses during the 1980s contributed to this economic expansion.

The economic expansion of the Newly Industrialized Countries (NICs) of Asia has had a similar effect on their economies. Exhibit 5-7 shows the changes in stock market capitalization among emerging economies, particularly the growing dominance of South Korea and Taiwan in this group. In 1980, when the total capitalization of emerging stock markets was \$86 billion, South Korea and Taiwan held less than a 12 percent combined share. The Mexican stock market was the largest, with 15 percent of the total. By 1989, emerging market capitalization stood at \$611 billion. As in the case of Japan, large trade surpluses spurred growth for Korea and Taiwan. Together their stock markets represented almost 62 percent of the 1989 total.

Taken together, these trends indicate that the balance of economic power has begun to shift. Whether in developed or emerging markets, the stock markets of the western hemisphere are being outpaced by their Asian counterparts. However, in terms of financial innovation, the United States still has few rivals. The growth in the market for derivative securities is one example of this innovation.

EXHIBIT 5-5 VALUE OF LISTED SECURITIES ON NATIONAL AND REGIONAL EXCHANGES, 1988

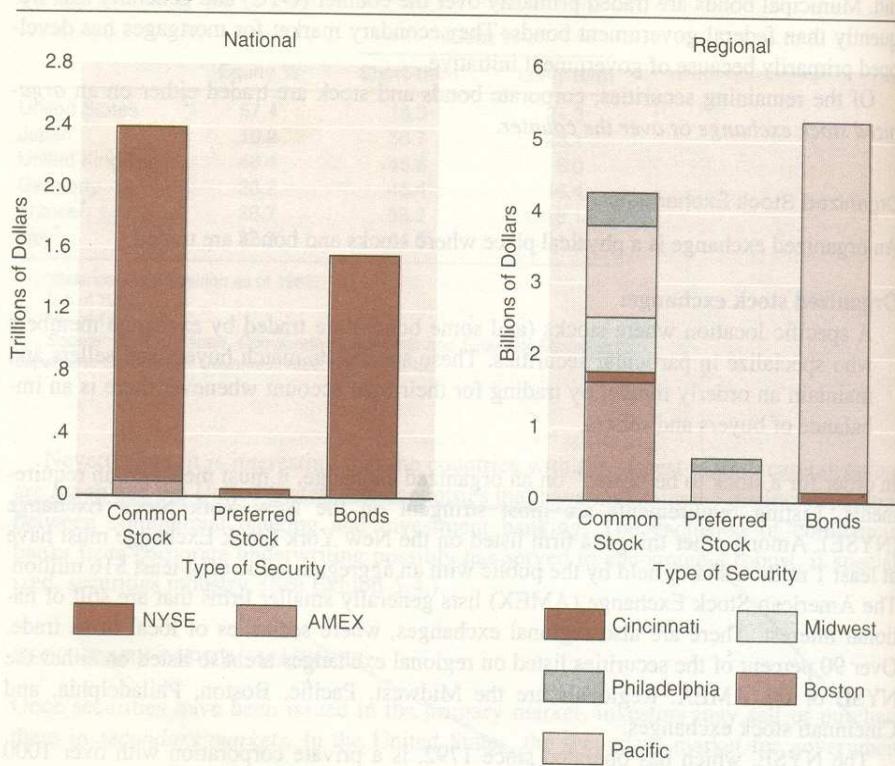


EXHIBIT 5-6 STOCK MARKET CAPITALIZATION DEVELOPED COUNTRIES, 1980 AND 1989

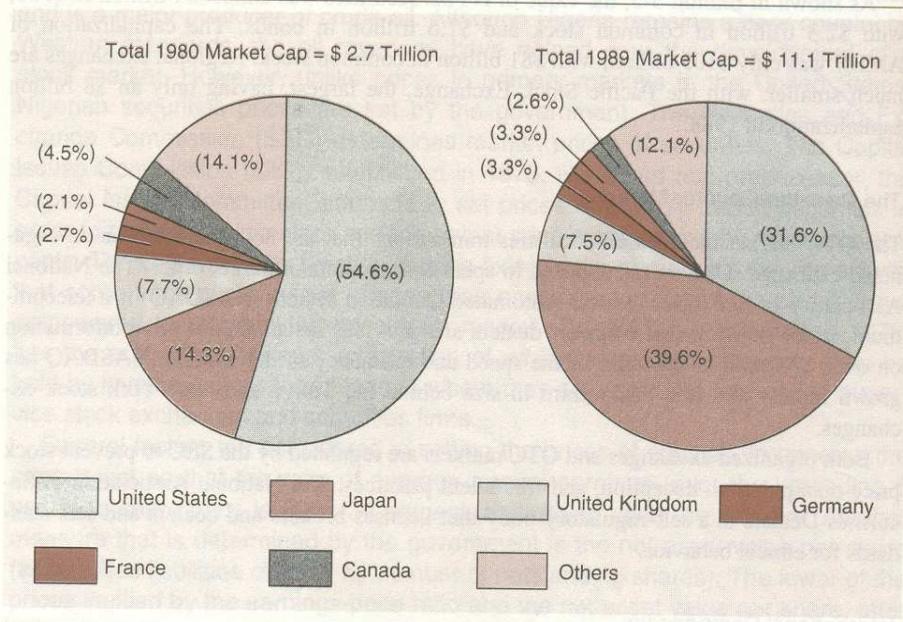
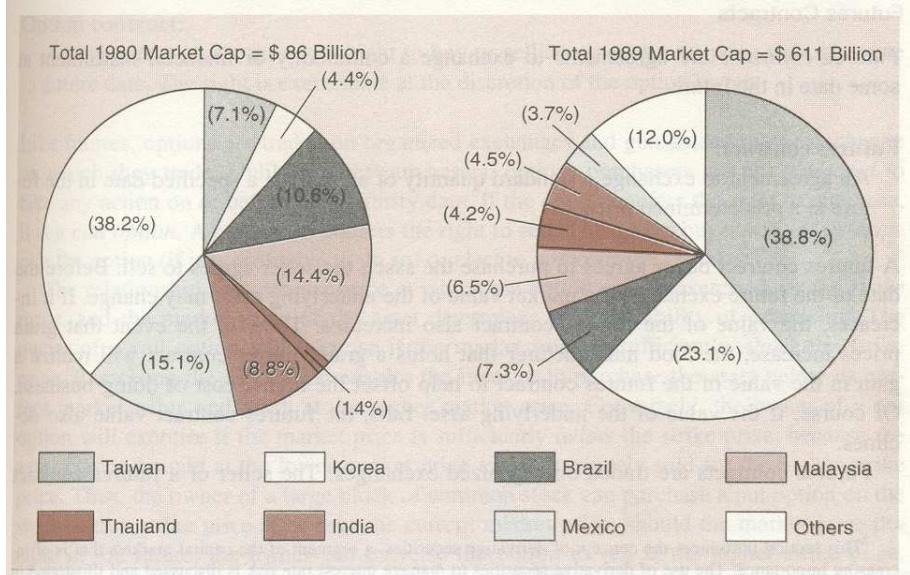


EXHIBIT 5-7 STOCK MARKET CAPITALIZATION EMERGING MARKETS 1980 AND 1989



Source: Calculations and graphic based on data from International Finance Corporation, *Emerging Stock Markets Factbook*, 1990.

3.2 DERIVATIVE SECURITIES

Derivative securities are financial instruments that are based on other assets. In this one sense, they are similar securitized assets. However, derivative securities, unlike securitized assets, are not obligations backed by the original issuer of the underlying security. Instead, derivative securities are contracts between two parties other than the original issuer of the underlying security. Derivative securities have evolved to help protect investors from certain risks:

- A manufacturer of cereal products is dependent on the grain market for inputs for its finished products. If the crops during a particular year are damaged by drought or other unfavorable conditions, the price of grain (and the manufacturer's cost of doing business) will increase.
- The owner of a large block of stock may fear that the stock's price will decline. Such a decline occurs, the investor will sustain large losses.
- A commercial bank may need to offer relatively long term, fixed-rate loans in order to be competitive with other financial institutions. If interest rates increase significantly, the bank will incur a significant opportunity cost in the form of lost interest income.

All of these are *financial risks* that derivative securities can help reduce. The food manufacturer can lock in the price of grain by buying a futures contract. The owner of the common stock can guard against losses by buying an *option* to sell the stock at a predetermined price. The commercial bank can enter into a *swap* contract to receive interest payments that vary with market conditions.²

Futures Contracts

Futures contracts are agreements to exchange a commodity or financial instrument at some date in the future.

Futures contract:

This is an agreement to exchange a standard quantity of an asset at a specified date in the future at a predetermined price.

A futures contract buyer agrees to purchase the asset; the seller agrees to sell. Before the date of the future exchange, the market value of the underlying asset may change. If it increases, the value of the futures contract also increases. Thus, in the event that grain prices increase, the food manufacturer that holds a grain futures contract will realize a gain in the value of the futures contract to help offset the higher cost of doing business. Of course, if the value of the underlying asset falls, the futures contract value also declines.

Futures contracts are traded on organized exchanges. The seller of a futures contract can settle the obligation (open position) by delivering the underlying asset or by reentering the market and buying an offsetting contract through the exchange. Buyers may settle by taking delivery or by selling offsetting contracts. In fact, most open positions (95 percent) are settled by offsetting contracts.

Parties in a futures contract are generally anonymous, that is, not known to one another. Risk of default is minimized in this case because the exchange guarantees the other side of the transaction. To cover this guarantee provision, the exchange requires a margin, or cash deposit, of no more than 5 percent, by each party.

The exchange determines the adequacy of the margin each day by assessing the current value of the futures contract. Gains and losses in the value of the contract are then posted to each open position. Such daily revaluation of an open contract is called marking to market. If the margin (cash deposit) as a percentage of the value of the contract should fall below the minimum maintenance level, the exchange requires that the party place additional funds on deposit. The request for an additional deposit is a margin call.

The first futures contracts were based on commodities such as agricultural crops. Government securities were the first futures contracts offered for financial

instruments, then sold on the leading commodity futures exchange. Unlike Treasury futures, there is no deliverable asset in the case of an index futures contract. Instead, the value of the contract is some multiple of the value of the index

Options Contracts

Another area of U.S. innovation in financial markets is the option contract.

Option contract:

This is an agreement that confers the right to buy or sell an asset at a set price through some future date. The right is exercisable at the discretion of the option buyer.

Like futures, options are traded on organized exchanges and guaranteed by the exchange on which they trade. Unlike futures purchasers, options purchasers are not obligated to take any action on or before the maturity date. If the option confers the right to purchase it is a call option. A put option confers the right to sell. The option buyer will either exercise the option (if it is profitable to do so) or elect to not exercise.

The relationship between the price at which the option can be exercised (the *strike price*), and the market price of the asset determine the profitability of exercising. The owner of a call option will exercise if the market price is sufficiently *above* the strike price. Exercising the call option enables the investor to purchase the asset below its current market value and resell at the higher market price. Conversely, the owner of a put option will exercise if the market price is sufficiently *below* the strike price, because the asset can be bought at the lower market price and immediately sold for the higher strike price. Thus, the owner of a large block of common stock can purchase a put option on the stock with a strike price at or near the current market price; should the market price decline in the future, the owner can exercise the option to sell at the higher strike price. When it is profitable to exercise an option, the option is in the money. When it is out of the money, exercising is unprofitable.

An option buyer obtains the right to buy or sell by paying a fee, or premium, to an *option writer*, or seller. This premium depends on the current market price, the strike price, and volatility of the price of the asset. Volatility is an important factor because the market value of a relatively volatile asset is more likely to reach a given strike price than a less volatile asset, all other things being equal.

An option can be written so that the buyer can exercise either *any time up to* the expiration date or *only on* the expiration date. The first is an American option, the second a European option.

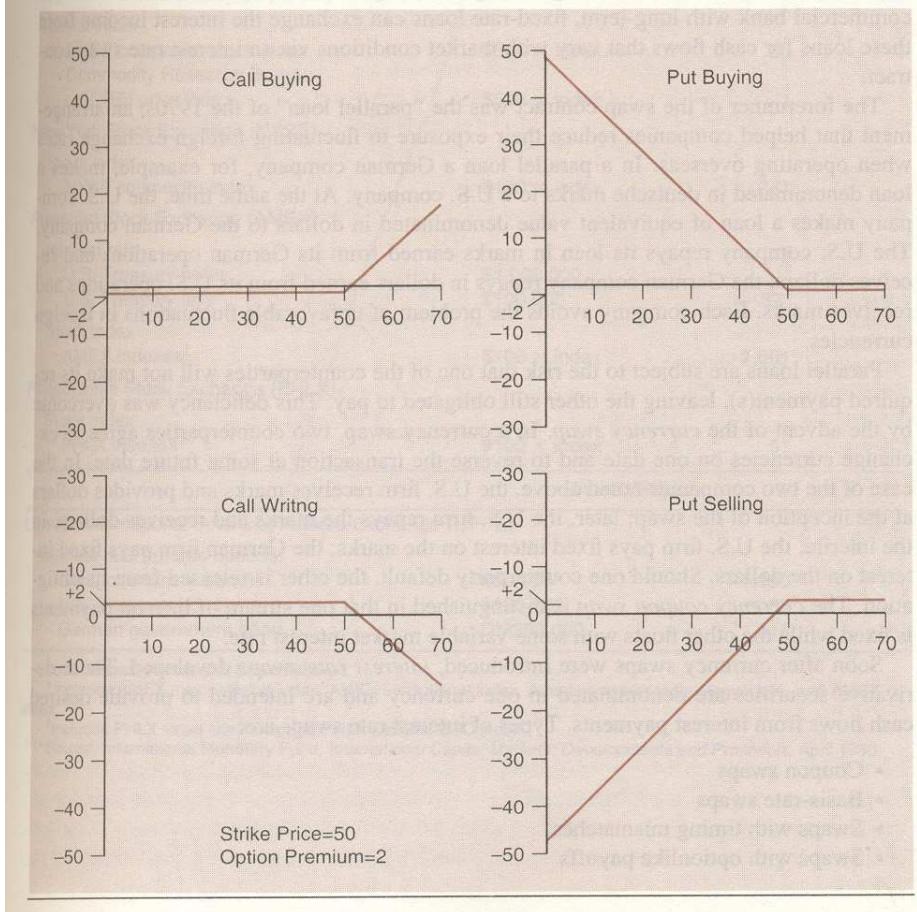
The four different roles market participants may play in the options market are to:

- Buy a call and obtain the right to buy the asset.
- Write (sell) a call and make a commitment to sell the asset, if the option is exercised.
- Write (sell) a put and make a commitment to buy the asset, if the option is exercised
- Buy a put and obtain the right to sell the asset.

The buyer of an option will lose no more than the premium paid at the time of purchase. But the writer can lose much more. For example, consider Exhibit 5-9. Suppose that a common stock option has a strike price of \$50 and that the option premium is \$2.

The maximum loss for the call option buyer is \$2 per share, plus brokerage fees. If brokerage fees are ignored, the option holder will not profit by exercising the option unless the market price exceeds the strike price plus the option premium. On the other hand, the option writer can gain no more than the \$2 per share premium. If the market

EXHIBIT 5-9 OPTIONS TRADING, POTENTIAL GAINS AND LOSSES



value of the stock *exceeds* the strike price (plus option premium), the option writer is

exposed to *loss*. If the value of the stock continues to increase beyond the strike price, the option writer is exposed to potentially large (theoretically unbounded) losses if the stock must be purchased on the open market in order to satisfy the obligation (cover the position).

Similarly, the writer of a put option will sustain losses if the market price *declines* precipitously. As the market price falls, the put option writer faces purchase of the stock at the higher-than-market strike price (when the option buyer exercises), as the price at which it can be resold drops. This exposure makes option writing a speculative activity, and the exchanges require margins for option writers.

Swap Contracts

One of the fastest growing derivative securities is the swap contract.

Swap contract:

This is an agreement between two parties (counterparties) to exchange assets or a series of cash flows for a specified period of time at predetermined intervals.

The swap contract is used to manage foreign exchange risk or interest rate risk. Thus, the commercial bank with long-term, fixed-rate loans can exchange the interest income from these loans for cash flows that vary with market conditions via an interest rate swap contract. The forerunner of the swap contract was the "parallel loan" of the 1970s, an arrangement that helped companies to reduce their exposure to fluctuating foreign exchange rates when operating overseas. In a parallel loan a German company, for example, makes a loan denominated in deutsche marks to a U.S. company. At the same time, the company makes a loan of equivalent value denominated in dollars to the German company.

The U.S. Company repays its loan in marks earned from its German operations and receives dollars; the German company repays in dollars earned from its U.S. operations and receives marks. Each company avoids the problem of unfavorable fluctuations in foreign currencies. Parallel loans are subject to the risk that one of the counterparties will not make its required payment(s), leaving the other still obligated to pay. This deficiency was overcome by the advent of the currency swap. In a currency swap, two counterparties agree to exchange currencies on one date and to reverse the transaction at some future date. In the case of the two companies noted above, the U.S. firm receives marks and provides dollars at the inception of the swap; later, the U.S. firm repays the marks and receives dollars. In the interim, the U.S. firm pays fixed interest on the marks; the German firm pays fixed interest on the dollars. Should one counterparty default, the other is released from its obligation. The currency coupon swap is distinguished in that one stream of interest payments is fixed while the other floats with some variable market interest rate.

Soon after currency swaps were introduced, interest rate swaps developed. These derivative securities are denominated in one currency and are intended to provide desired cash flows from interest payments. Types of interest rate swaps are:

- Coupon swaps
- Basis-rate swaps
- Swaps with timing mismatches
- Swaps with option-like pay-offs

Coupon swaps exchange a fixed-rate stream of interest payments for a variable-rate stream. No principal amounts change hands; instead a notional principal is agreed upon for a given length of time. One party agrees to pay a fixed rate of interest on the notional principal at specified intervals, perhaps monthly or quarterly. The counterparty agrees to pay a rate that floats with a published interest rate, or *basis*, perhaps the Treasury bill rate, the commercial paper rate, or the London Inter-bank Offered Rate (LIBOR). For example, the floating rate may be specified as "6-month LIBOR plus 1," meaning 1 percentage point above LIBOR for 6-month loans. Generally, the parties

exchange only the difference between the two interest amounts.

The coupon swap is useful for companies with different objectives with respect to interest rates. For example, an industrial firm may have raised capital through a \$50 million variable-rate loan but would rather have a predictable interest payment obligation for financial planning purposes. A financial institution, on the other hand, may prefer to have variable-rate liabilities (perhaps because its loans are primarily variable rate), but can raise funds competitively only through fixed-rate certificates of deposit (CDs) and other borrowings. Essentially, in a coupon swap between the two counterparties, the industrial firm agrees to pay to the financial institution a fixed rate of interest on the \$50 million notional principal on a monthly basis; the financial institution uses these fixed payments to meet its CD obligations. In turn, the financial institution agrees to pay the variable rate to the industrial firm, again on a monthly basis; these payments satisfy the industrial firm's loan obligations. In practice, only the difference in the two interest payments is exchanged. For example, if the variable rate exceeds the fixed for a given month, the financial institution pays only the excess to the industrial firm; the industrial firm makes no payment.

In a basis-rate swap, both interest rates float, but the bases are different. For example, 6-month LIBOR may be swapped for 1-month LIBOR, or LIBOR may be swapped for the commercial paper rate. Swaps with timing mismatches involve counterparty payments according to different schedules. Perhaps one counter party pays interest monthly while the other pays quarterly. A "zero" swap requires one party to pay at specified intervals throughout the term of the swap as described earlier. The other pays only at the end of the term, a "zero-coupon" arrangement.

Swaps with option like payoffs are similar to coupon swaps within specified ranges of market interest rate changes. Beyond these ranges, the terms of the swap change. For example, one party may agree to receive fixed-rate interest and pay floating-rate interest as long as the floating rate is within 2 percentage points of the current rate of 10 percent. If the market rate exceeds 12 percent, the party's obligation is then to pay the fixed rate of 12 percent. Likewise if the market rate falls below 8 percent, the party's obligation converts to a fixed rate of 8 percent. Alternatively, one party may agree to pay fixed-rate interest of 10 percent as long as the market rate remains within the plus-or-minus range of 2 percentage points. Should the market rate go beyond this range (above 12 or below 8 percent), the party pays a floating rate.

As these examples illustrate, swaps can be constructed in any number of ways. There are even options on swaps, or swaptions. The holder of a swaption has the right, but not the obligation, to enter into a swap contract on or before the exercise date. If the holder has the right to receive fixed interest payments, the instrument is a put swaption. On the other hand, if the holder has the right to pay fixed interest, it is a call swaption. As with other options, there is an up-front premium to pay in order to obtain the swaption.

The swap market began in order to solve problems of financial risk. In the earliest market activity, an intermediary brought the two counterparties together. Since the intermediary assumed no risk in the transaction, investment banks performed the matchmaking function quite well. As the market evolved, swap contracts became more standardized, and it was more important for the intermediary to be able to assume some of the risk, in much the same way, though not to the same extent, that organized exchanges assume risk in futures and options markets. For this reason, commercial banks are now significant intermediaries in the market for swaps—an efficient, high-volume business with relatively low margins (profits) for the banks.

A party can reverse, or "unwind," a swap position before the end of the term of the swap by canceling the agreement and delivering a final difference payment to the counterparty. Alternatively, the party can write a "mirror" contract to exactly offset the original swap in the secondary swap market. For example, the industrial firm mentioned earlier with a \$50 million variable loan originally entered a swap in which it paid fixed interest payments and received floating interest. To close this position, the firm could enter another swap contract in which it paid floating interest payments and received fixed interest. The secondary market is now so active that swap contracts for several hundred million dollars can be traded virtually 24 hours a day.

In general, derivative securities have evolved to satisfy particular needs. Specifically, futures, options, and swap contracts help investors reduce the risk associated with participation in financial markets

3.3 DIVERSIFICATION

Financial risk may also be reduced through proper diversification of asset portfolios to help improve the risk/return trade-off.

Asset portfolio

A combination of assets assembled to achieve certain investment objectives.

These assets can include cash, short-term debt instruments, bonds, and stock. Diversification of assets limits risk by spreading investments over a number of companies, industries, and/or countries.

Diversification:

This is the process of combining assets with the objective of reducing portfolio variability.

Portfolio variability is the extent to which the actual returns are different from expected returns.

Expected Return of a Portfolio

The rate of return of a portfolio depends on the return of each asset in the portfolio. The periodic rate of return of an asset is a combination of the current income and any change in the value of the asset. Current income is measured by either current yield in the case of debt securities or dividend yield in the case of preferred or common stock. Change in value is any capital gain or loss for the period.

Expected portfolio rate of return is the weighted average of the expected returns of the underlying assets.

$$kp = \frac{1}{n} \sum_{i=1}^n w_i k_i$$

where kp = expected rate of return of the portfolio

w_i = proportion of the total dollar value of the portfolio that is represented by asset i , that is, the weight of asset i

k_i = expected rate of return of asset i

n = total number of assets in the portfolio

The expected return of each asset is a subjective determination that relies on probability distributions of future returns under certain circumstances. The subjective probabilities of these returns are then used to arrive at the expected return of the asset.

$$E(kp) = \sum_{s=1}^M p_s k_{is}$$

where p_s = probability of state of nature s

k_{is} = rate of return of asset i in state of nature s M = total number of states of nature

Another way to compute expected return is to use the historical average rate of return of an individual asset as a proxy for the future return. This approach is valid only if the average of past returns is believed to be an unbiased estimator of future returns.

Portfolio Variance

The variance of a portfolio is a function of the variability and covariability of the underlying assets.

$$\sigma_p^2 = \sum_{i=1}^n w_i \sum_{j=1}^n w_j \rho_{ij} \sigma_i^2$$

where σ_p^2 = variance of return of the portfolio

w_i = standard deviation of return of asset i

ρ_{ij} = correlation coefficient of the returns of assets i and j.

Notice that the variability of each underlying asset σ_i^2 is only one of the determinants of portfolio variance. The weight of each underlying asset w_i also contributes to total portfolio variance.

Portfolio variance is not merely the weighted average of the individual variances. The correlation coefficients among the assets determine the degree to which diversification reduces overall portfolio risk.

Correlation coefficient:

This is a measure of the degree to which the returns of two assets move together? The value of a correlation coefficient can range from 1 to -1.

That is a correlation coefficient of 1 means that the returns of two assets move in identical ways. If $r_{ij} = 1$, combining assets i and j does nothing to reduce total variability of the portfolio vis-a-vis the individual assets. These assets i and j are perfectly positively correlated.

This means that, a correlation coefficient of -1 means that returns of the two assets move in opposite directions. When one asset performs poorly, the other compensates by performing well. When the two are perfectly negatively correlated, or $r_{ij} = -1$, a portfolio with zero variance can be constructed.

To see this relationship, consider Equation 3 in the case of a two-asset portfolio.

The portfolio variance reduces to three terms. The first two are variance terms, the third is a co-variance term. For a two-asset portfolio, the standard deviation is the square root of equation 4.

Notice that if $r_{12} = 1$, the portfolio standard deviation is simply the weighted average of the standard deviations of the underlying assets.

In other words, there is no reduction in overall portfolio variability if perfectly positively correlated assets are combined.

On the other hand, if $r_{12} = -1$, portfolio variance is the difference of the weighted average standard deviations of individual assets.

In this case, a portfolio can be constructed to produce portfolio standard deviation of zero, that is, no variance and no risk. This is accomplished by setting w_2 equal to 0, substituting $1 - w_1$ for w_2 , and solving for w_1 .

Virtually all investment securities reflect, to some extent, the impact of economy wide influences. There are not likely to be any perfectly negatively correlated assets. Instead, within a given country, most asset returns will be mildly positively correlated.

This means that the theoretical maximum benefits of diversification, that is, zero portfolio variance, are not achievable. Yet as long as assets are not perfectly positively correlated, some measure of diversification benefit is possible. Outside national borders, it may even be possible to identify assets or groups of assets with mildly negative correlations.

Correlations of Selected Stock Markets

Exhibit 5-11 shows the correlation coefficients of ten stock markets for the 5 years ended 1989, comparing the three largest stock markets in the developed countries (Japan, the

Exercise:- 1. With respect to options, define:

- a) Strike price
- b) Option premium

4.0 CONCLUSION

Capital markets bring surplus savings units together with deficit savings units. Securities are sold for the first time in primary markets Ja..~tat6S, this process involves investment bankers that assume the risk of selling and distributing the stocks and bonds issued by corporations and government bodies. While commercial banks in other countries perform this function.

5.0 SUMMARY

Derivative securities are generally not issued by corporations and government bodies. They are, instead, agreements to exchange existing financial securities at some time in the future. Futures and options contracts are traded on organized exchanges, with the largest market in the United States. This market has now expanded vigorously to include contracts on stock indexes which have no underlying security. Derivative securities markets are also developing in other industrialized countries.

In fact, growth in Asian stock markets has been so strong in the last few years that the capitalization of the Japanese market now exceeds that of the United States. Growth in Pacific Rim economies promises to continue to challenge the dominance in world capital markets that the United States has enjoyed for half a century.

International financial markets will likely continue to grow because they offer diversification possibilities that are not readily available in domestic markets. Some of the larger emerging stock markets have particular potential because they have weak or negative correlations with the U.S. market. As national markets continue to liberalize policies governing foreign involvement, these benefits should be easier to realize. ..

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7.0 TUTOR MARKED ASSIGNMENT

1. How does the role of banks in securities markets differ in other countries when compared with the United States?

UNIT 6

STOCK MARKETS

1.0 INTRODUCTION

This unit is concerned with the role and value of stock markets in the modern economy. It also looks more specifically at the workings of the London Stock Exchange. Imagine the difficulties Sue and Alan Kingsman would have getting their venture off the ground in a world without some form of market where long-term risk capital can be raised from investors, and where those investors are able to sell on their holdings to other risk takers whenever they wish. There would certainly be a much smaller pool of money made available to firms with brilliant ideas and society would be poorer.

2.0 OBJECTIVES

When you complete this unit, you should be able to:

- Describe the scale of stock market activity around the world and explain the reasons for the widespread adoption of stock exchanges as one of the for a market – based economy
- Explain the function of stock exchanges and the importance of an efficiently operated stock exchange.
- Understand many of the financial terms express in the broadsheet newspapers (particularly the Financial Times)

3.0 Stock exchanges around the world

Stock exchanges are markets where government and industry can raise long-term capital and investors can buy and sell securities. Stock exchanges¹ grew in response to the demand for funds to finance investment and (especially in the early days) ventures in overseas trade. The risky sea-voyage trading businesses of the sixteenth, seventeenth and eighteenth centuries often required the raising of capital from large numbers of investors. Until the Napoleonic Wars the Dutch capital markets were pre-eminent, raising funds for investment abroad, loans for governments and businesses, and developing a thriving secondary market in which investors could sell their financial securities to other investors. This transferability of ownership of financial assets was an important breakthrough for the development of sophisticated financial systems. It offered the investor liquidity, which encouraged the flow of funds to firms, while leaving the capital in the business venture untouched.

The Napoleonic Wars led to a rapid rise in the volume of British government debt sold to the public. Trading in this debt tended to take place in coffee houses in London and other cities. Much of the early industrialisation was financed by individuals or partnerships, but as the capital requirements became larger it was clear that joint-stock enterprises were needed, in which the money of numerous investors was brought together to give joint ownership with the promise of a share of profits. Canal corporations, docks companies, manufacturing enterprises, railways and insurance companies were added to the list of shares and bonds traded on the London Stock Exchange in the first half of the nineteenth century.

The second major breakthrough was the introduction of limited liability for shareholders in 1855.² This meant that the owners of shares were not responsible for the debts of the firm - once they had handed over the money to purchase the shares they could not be called on to contribute any further, regardless of the demands of creditors to a failed firm. This encouraged an even greater flow of funds into equity (ownership) capital and aided the spectacular rise of Victorian Britain as an economic powerhouse. Similar measures

were taken in other European and North American countries to boost the flow of funds for investment. Outside the Western economies the value of a stock exchange was quickly recognised - for example, Bombay and Johannesburg opened stock markets in the nineteenth century.

Today the important contribution of stock exchanges to economic well-being has been recognised from Moldova to Botswana. There are now over 100 countries with officially recognised exchanges and many of these countries have more than one exchange. Shares will be the main concern of this unit, but it is important to note that stock markets often do much more than trade shares. Many also trade government debt securities and a wide array of financial instruments issued by firms, for example corporate bonds, convertibles, preference shares, warrants and Eurobonds. (These will be examined in later unit.)

The years since the early 1990s have been a dynamic period for global financial markets. The shift in political and economic philosophies and policies towards free markets and capitalism produced a growing demand for capital. Following the successful example of the West and the 'Tiger' economies of Asia, numerous emerging markets promoted stock exchanges as a major pillar of economic progress. The liberalisation and the accelerating wave of privatisation pushed stock markets to the forefront of developing countries' tools of economic progress. The collapse of communism and the adoption of pro-market policies led to the rise of share exchanges in dozens of former anti-capitalist bastions. Even countries which still espouse communism, such as China and Vietnam, now have thriving and increasingly influential stock exchanges designed to facilitate the mobilisation of capital and its employment in productive endeavour, with - 'horror-of-horrors' to some hard-line communists - a return going to the capital providers. In the emerging countries alone there are now over 26,000 companies quoted on stock exchanges worth over £1,500,000,000. The total value of all companies quoted on all the stock exchanges in the world amounts to more than £20,000 billion.

Clearly stock markets are an important element in the intricate lattice-work of a modern and sophisticated society. Not only are they a vital meeting place for investors and a source of investment capital for businesses, they permit a more appropriate allocation of resources within society - that is, a more optimum mix of goods and services produced to satisfy people.

There has been a remarkable increase in the number of officially recognised stock exchanges around the globe in the last five to ten years. Even Africa has 21 exchanges, one-half of which were opened in the past 12 years.

China is a wholehearted convert to the virtues of stock markets. Over 20 million³ Chinese hold shares in over 1,200 companies quoted either on the stock exchange in Shanghai or on the one in Shenzhen. The former president of China, Jiang Zemin, no less, spoke with the fervour of the recent convert, describing them as a vital component of a modern economy.

Traditionally many European countries, such as France and Germany, were less focused on equity capital markets than the Anglo-Saxon economies (the UK, the USA, Australia, etc.), but this is starting to change. Privatisation and a greater concern for generating shareholder value is leading to an increasing appreciation of equity markets

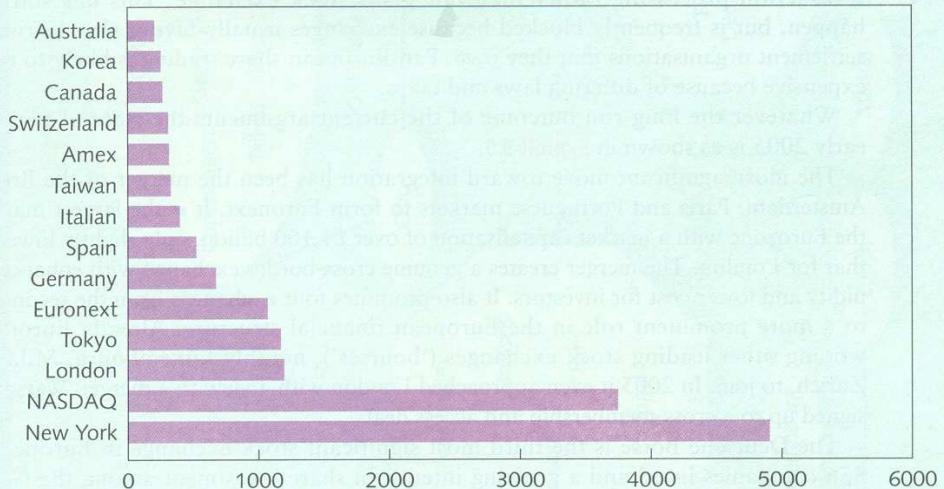
Thailand too is keen to develop an 'equity culture'. It can be seen from the world map (see Exhibit 9.1) that the dominant financial centres form a 'golden triangle' in three different time zones: USA, London and Tokyo. America is the largest source of equity capital, providing over one-third of the world's total, but the finance raised is split between three exchanges. The New York Stock Exchange (NYSE) is the largest in terms of market capitalisation. However, the NASDAQ (National Association of Securities Dealers Automated Quotations) market has more companies listed, but its market capitalisation is much less. The laggard is the American Stock Exchange. In terms of domestic company

share trading the NYSE is the world leader. However, in terms of trading in non-domestic (foreign) shares, London is pre-eminent. This is shown in **Exhibit 9.4**.

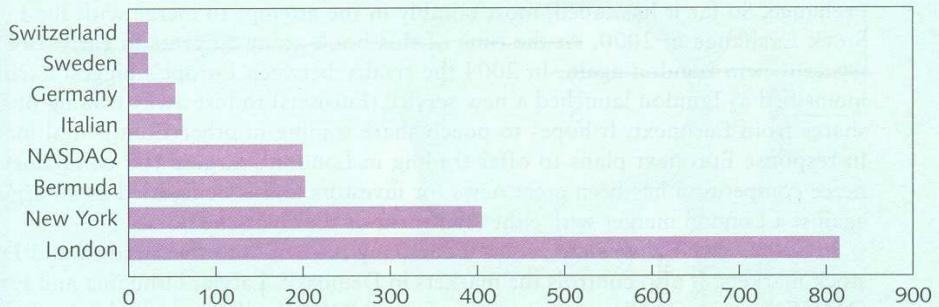
There is great rivalry between London and the American exchanges in attracting companies from other countries to list shares on their exchanges. In addition to 380 or so international companies with a listing in London, 160 more listed and regulated on their home exchanges are traded via the London international share dealing service, Stock Exchange Automated Quotation International (SEAQI). The essential features of this are an electronic marketplace where share prices are quoted in the home currency and the transactions are settled (that is, the legal rights to shares are transferred from one investor to another) through the local settlement system, not through London. Trading in these shares can take place 24 hours a day.

Exhibit 9.4 Domestic and foreign equity turnover on major exchanges, 2003

Turnover of domestic shares (£bn) on major exchanges, 2003

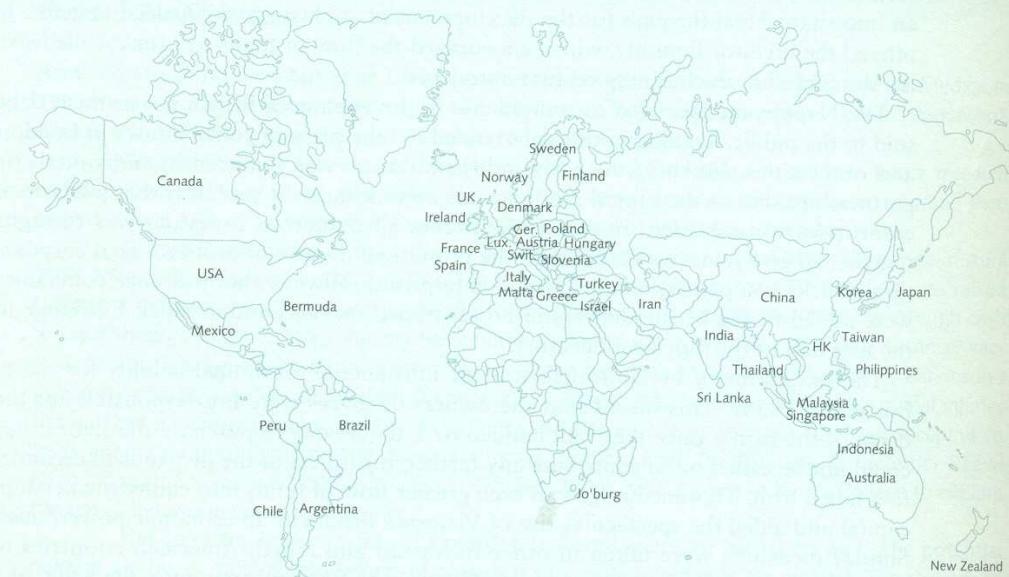


Turnover of foreign shares (£bn) on major exchanges, 2003



Source: World Federation of Exchanges, www.fibv.com.

Exhibit 9.1 Stock exchanges around the world



Column 1: Total capitalisation of domestic equities, £bn (approx.).

Column 2: Number of domestic firms listed.

Column 3: Number of international firms listed.

Argentina	19	106	4	India:							
Australia	325	1405	66	Mumbai	155	5644	0	Philippines	13	234	2
Austria	31	104	21	NSE India	141	911	0	Poland	21	202	1
Bermuda	2	22	33	Indonesia	31	333	0	Singapore	83	475	76
Brazil	126	389	2	Iran	15	345	0	Slovenia	4	134	0
Canada	493	3561	38	Ireland	47	55	11	South Africa			
Chile	50	240	1	Israel	38	573	4	(Johannesburg)	93	390	21
China:				Italy	341	271	8	Spain	403	3191	32
Shanghai	200	780	0	Japan:				Sri Lanka	2	244	0
Shenzhen	85	505	0	Osaka	1084	1140	0	Sweden	163	266	16
Denmark	66	187	7	Tokyo	1641	2174	32	Switzerland	404	289	130
Euronext	1153	1046	346	Korea	166	684	0	Taiwan	210	669	5
Finland	94	142	3	Luxembourg	21	44	198	Thailand	66	418	0
Germany	600	684	182	Malaysia	89	898	4	Turkey	38	285	0
Greece	57	331	1	Malta	1	13	0	UK	1367	2311	381
Hong Kong	397	1027	10	Mexico	70	158	79	USA:			
Hungary	11	48	1	New Zealand	18	153	43	American (Amex)	51	502	55
					53	156	22	NASDAQ	1580	2951	343
					8	195	32	New York	6293	1842	466

Data include listed and small company markets (e.g. AIM). Global total capitalisation: £20,000 bn.

Sources: World Federation of Exchanges: www.fibv.com.

3.1 European stock exchanges

In Europe the trend is for stock exchanges to merge together or to form alliances. This is being encouraged by the major financial institutions which desire a seamless, less costly way of trading shares across borders. The ultimate ambition for some visionaries is a single highly liquid equity market allowing investors to trade and companies to raise capital, wherever it suits them. Ideally there would be no distortions in share price, costs of trading or regulation as investors cross from one country to another. Whether it is necessary to merge Europe's disparate stock exchanges to achieve frictionless pan European trading is a matter that is currently hotly debated. Some argue that the absence of a single securities market damages the EU's competitive position vis-à-vis the huge, streamlined and highly liquid US capital market. Furthermore, they say, it prevents European companies and investors enjoying the full benefits of the euro.

On the other hand the cost of actually trading shares in Europe- is extremely low. The major costs (90 per cent) arise in the processing of the transaction after the deal is done ('the back office'). These clearing and settlement activities are often carried out by organisations separate from the exchanges. The critics of the drive to merge argue that what is needed is pan-European transaction processing rather than one giant stock exchange. This has started to happen, but is frequently blocked because exchanges usually favour the clearing and settlement organisations that they own. Pan-European share trading is likely to remain expensive because of differing laws and taxes. The state of players in early 2005 is as shown in Exhibit 9.5.

The most significant move toward integration has been the merger of the Brussels, Amsterdam, Paris and Portuguese markets to form Euronext. It is the largest market in the Eurozone with a market capitalisation of over £1,100 billion, only slightly lower than that for London. The merger creates a genuine cross-border exchange with enhanced liquidity and lower cost for investors. It also promotes four exchanges from the second rank to a more prominent role in the European financial structure. Already Euronext is wooing other leading stock exchanges ('bourses'), notably Luxembourg, Milan and Zurich, to join. In 2005 it even approached London with a view to a merger. Warsaw has signed up to a cross-membership and access deal.

The Deutsche Borse is the third most significant stock exchange in Europe. With 866 companies listed and a growing interest in share investment among the German people the Deutsche Borse is in a strong position - and it is also ambitious. It has attempted to form mergers and alliances to create a dominant pan-European exchange. So far it has failed, most notably in the attempt to merge with the London Stock Exchange in 2000. In 2004 the rivalry between Europe's biggest exchanges intensified as London launched a new service (Euro-sets) to lure away trading of Dutch shares from Euronext. It hopes to poach share trading in other Continental markets. In response Euronext plans to offer trading in London's largest 100 companies. The fierce competition has been great news for investors and is being used as an argument against a London merger with either Euronext or the Deutsche Borse.

In 2003 OMHEX was created as a company to own both the Swedish and Finnish stock markets. It also controls the markets in Denmark, Latvia, Lithuania and Estonia. OMHEX (now OMX) is a member of the NOREX alliance which also includes Iceland and Norway.

In NOREX the individual exchanges remain independent, and continue listing companies and supervising trading. However, the general rules and regulations are being harmonised to make cross-border trading simpler and cheaper. The larger market gives the smaller countries access to larger pools of capital and improves liquidity.

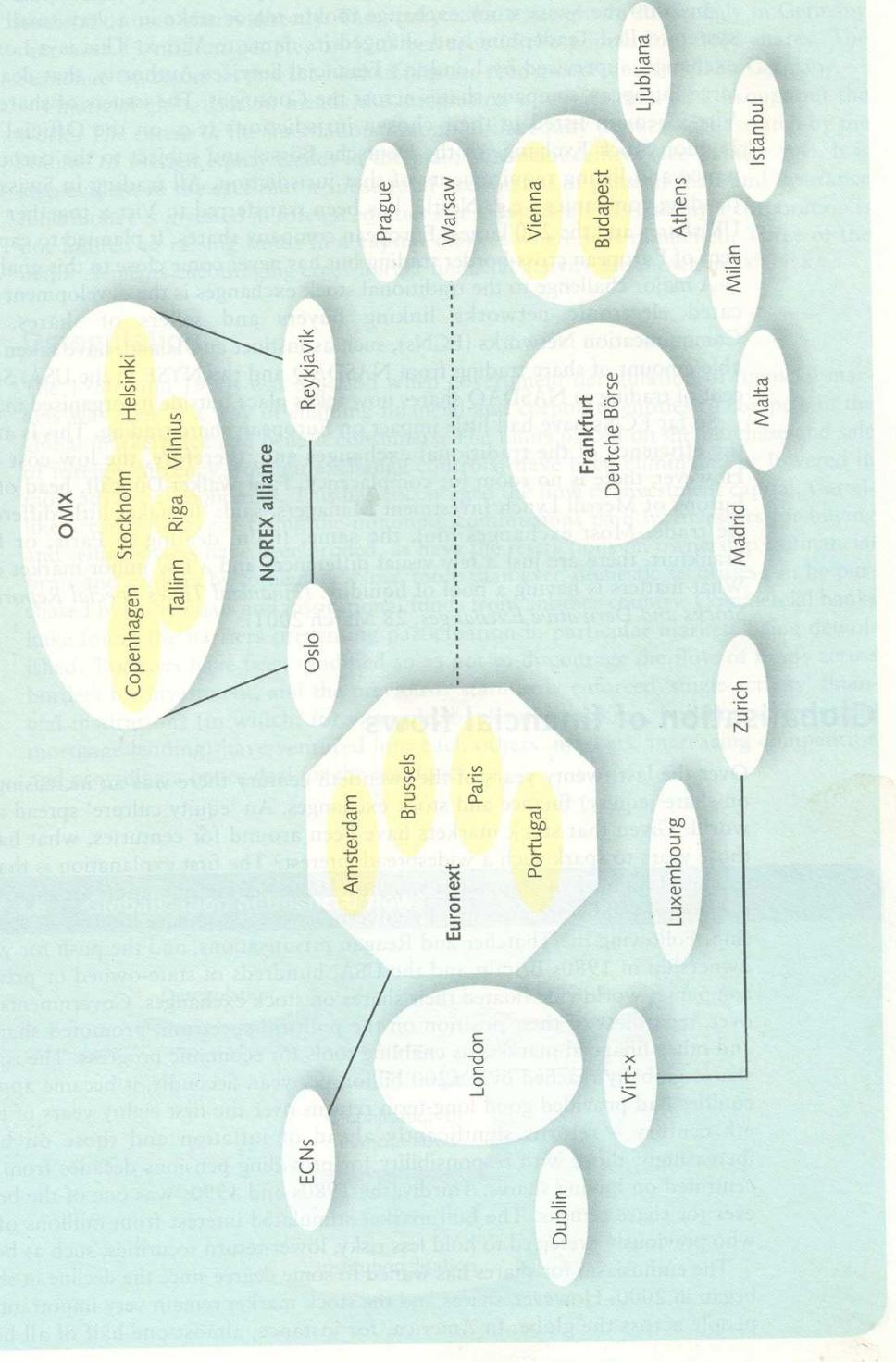
In 2000 the Swiss stock exchange took a major stake in a very small UK trading system called Tradepoint and changed its name to Virt-x. This is a London-based exchange,

supervised by London's Financial Services Authority that deals in all the large European company shares across the Continent. The issuers of shares traded on Virt-x remain listed in their chosen jurisdictions (e.g. on the Official List of the London Stock Exchange or the Deutsche Borse) and subject to the corporate governance and listing requirements of that jurisdiction. All trading in Swiss blue chips (leading companies), e.g. Nestle, has been transferred to Virt-x together with 2,000 UK shares and the 230 largest European company shares. It planned to capture 20 per cent of European cross-border trading but has never come close to this goal.

A major challenge to the traditional stock exchanges is the development of sophisticated electronic networks linking buyers and sellers of shares. Electronic Communication Networks (ECNs), such as Instinet and Island, have taken a considerable amount of share trading from NASDAQ and the NYSE in the USA. Some 30 per cent of trading in NASDAQ shares now takes place outside its organised market.

So far ECNs have had little impact on European share trading. This is attributed to the efficiency of the traditional exchanges and, therefore, the low cost of trading. However, there is no room for complacency: Paul Walker-Duncalf, head of dealing in Europe of Merrill Lynch Investment Managers, said: 'It makes little difference where I we trade. Most exchanges look the same. If I'm dealing in Paris, or London or I Frankfurt, there are just a few visual differences and a few minor market differences. What matters is having a pool of liquidity' (Financial Times Special Report on World A Stocks and Derivative Exchanges, 28 March 2001).

Exhibit 9.5 Stock exchanges in Europe



3.2 Globalisation of financial flows

Over the last twenty years of the twentieth century there was an increasing emphasis on share (equity) finance and stock exchanges. An 'equity culture' spread around the world. Given that stock markets have been around for centuries, what happened in those years to spark such a widespread interest? The first explanation is that a greatly increased number of companies sought a stock market quotation for their shares and there were deliberate attempts by governments to stimulate share ownership. Following the Thatcher and Reagan privatizations, and the push for wider share ownership in 1980s Britain and the USA, hundreds of state-owned or privately held companies worldwide floated their shares on stock exchanges. Governments the world over, regardless of their position on the political spectrum, promoted share markets and other financial markets as enabling tools for economic progress. The issue of new shares globally reached over \$200 billion per year. Secondly, it became apparent that equities had provided good long-term returns over the first eighty years of the twentieth century – returns significantly ahead of inflation and those on bonds. So, increasingly, those with responsibility for providing pensions decades from now concentrated on buying shares. Thirdly, the 1980s and 1990s was one of the best periods ever for share returns. The bull market stimulated interest from millions of investors who previously preferred to hold less risky, lower-return securities, such as bonds.

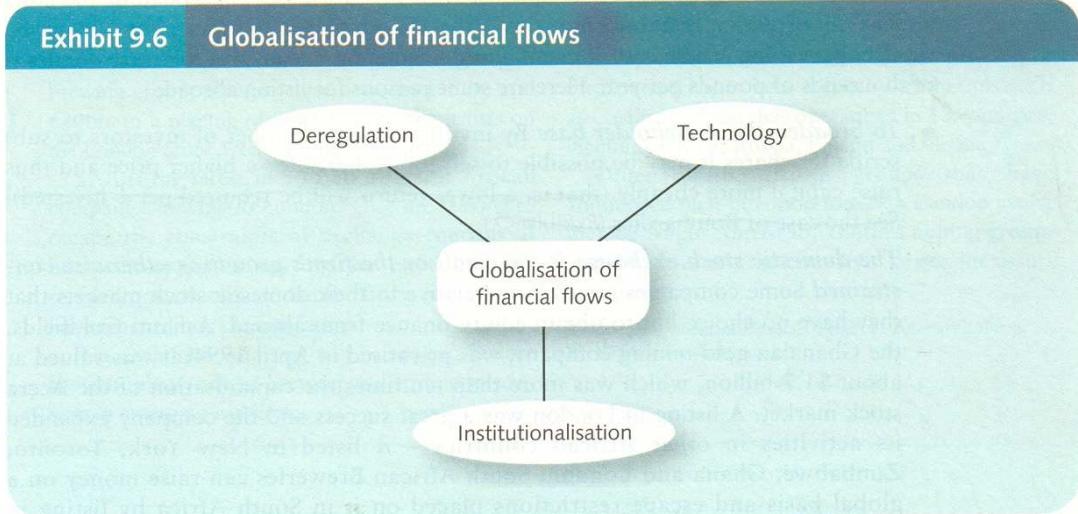
The enthusiasm for shares has waned to some degree since the decline in share prices began in 2000. However, shares and the stock market remain very important for many people across the globe. In America, for instance, almost one-half of all households now own shares (either directly or indirectly through mutual funds and self-select pension funds). In Australia, the level of ownership is higher still. One-quarter of British households own shares directly. The equity culture has grown so strongly in Germany that over 12 million people, or 19.3 per cent of the population, hold shares. The Scandinavian countries and the Netherlands are even more 'equitised' than Germany.

Financial globalisation means the integration of capital markets throughout the world. The extent of the internationalisation of the equity markets is illustrated by the volume of foreign equity trades in the major financial centres (see Exhibit 9.4). It is also evident in the fact that a substantial proportion of pension fund and insurance fund money is invested in foreign equities. Also, today a corporation is not limited to raising funds in a capital market where it is domiciled. Three of the major elements encouraging cross-border financial activity are shown in Exhibit 9.6.

3.2.1 Deregulation

The 1980s and 1990s was a period when government deregulation of financial markets was seen as a way of enabling financial and corporate entities to compete in the global marketplace and benefit consumers. The limits placed on the purchase and sale of foreign currency (foreign exchange controls) have been eliminated or lowered in most advanced economies. This has encouraged the flow of investment capital. Cartel-like arrangements for fixing the minimum commissions paid by investors for buying and selling shares have been eroded, as have the restrictions on ownership of financial firms and brokers by foreigners. Now, more than ever, domestic securities can be purchased by individuals and institutional funds from another country. Commercial banks have found the barriers preventing participation in particular markets being demolished. Tax laws have been modified so as not to discourage the flow of funds across borders for investment, and the previously statutorily enforced 'single-activity' financial institutions (in which, for example, banks did banking, building societies did mortgage lending) have ventured into

Exhibit 9.6 Globalisation of financial flows



3.2.2 Technology

The rapid transmission of vast quantities of financial information around the globe has transformed the efficiency of financial markets. Securities can be monitored, analysed touch of a button from almost anywhere in the world. The combination of powerful computers and extensive telecommunication networks allows accelerated integration, bringing with it complex trading strategies and enormous daily capital flows.

3.2.3 Institutionalisation

Forty years ago most shares were owned by individuals. Today, the markets are dominated by financial institutions (pension funds, insurance companies, hedge funds, the 'mutual funds' such as unit and investment trusts and private equity funds). Whereas the individual, as a shareholder, tended to be more parochial and to concentrate on national company shares, the institutions have sufficient knowledge and strength to seek out the rewards from overseas investments. They also appreciate the diversification benefits which accrue due to the low level of correlation between some financial markets.

3.3 Why do companies list their shares on more than one exchange?

There are hundreds of companies which pay for the privilege of having their shares listed for trading on stock exchanges in other countries instead of, or as well as, on their local exchange. There are also substantial numbers of foreign shares listed on most of the northern European exchanges, as well as on those of Canada, Australia, Japan, Mexico, Switzerland and Singapore. This dual or triple listing can be a costly business and the regulatory environment can be stringent so there must be some powerful motivating factors driving managers to globalise their investor base. For Vodafone the costs and hassle of listing in three countries - the UK, the USA and Germany - must be thought provoking, as the cost of maintaining a listing on one market runs into hundreds of thousands of pounds per year. Here are some reasons for listing abroad:

To broaden the shareholder base:- By inviting a larger number of investors to subscribe for shares it may be possible to sell those shares for a higher price and thus raise capital more cheaply.

The domestic stock exchange is too small or the firm's growth is otherwise constrained:- Some companies are so large relative to their domestic stock markets that they have no choice but to obtain equity finance from abroad. Ashanti Goldfields, the Ghanaian gold-mining company, was privatised in April 1994. It was valued at about \$1.7 billion, which was more than ten times the capitalisation of the Accra stock market. A listing in London was a great success and the company expanded its activities in other African countries - it listed in New York, Toronto, Zimbabwe, Ghana and London. South African Breweries can raise money on a global basis and escape restrictions placed on it in South Africa by listing in London

To reward employees:- Many employees of foreign-owned firms are rewarded with shares in the parent company. If these shares are locally listed these share-ownership plans can be better managed and are more appealing to employees.

Investors in that particular market may understand the firm better:- To raise awareness of the company For example, African Lakes listed on the Nairobi Stock Exchange as well as in London.

Discipline:- This is illustrated through the example of Chinese The value of stock market discipline has reached the heart of a previously totalitarian centrally controlled economy Not only have Chinese companies seen the benefit of tapping Western share capital, they have also been made aware of the managerial rigour demanded by stock markets and their investors. Many Russian companies have also listed in London to gain respectability through the enforcement by Western investors of good corporate governance and transparency of information (they have also listed in London to gain some protection against arbitrary actions by the Russian government).

To understand better the economic, social and industrial changes occurring in major product markets

3.4 The importance of a well-run stock exchange

A well-run stock exchange has a number of characteristics. It is one where a 'fair game' takes place; that is, where it is not possible for some investors and fund raisers to benefit at the expense of other participants - all players are on 'a level playing field'. It is a market which is well regulated to avoid abuses, negligence and fraud in order to reassure investors who put their savings at risk. It is also one on which it is reasonably cheap to carry out transactions. In addition, a large number of buyers and sellers are likely to be needed for the efficient price setting of shares and to provide sufficient liquidity, allowing the investor to sell at any time without altering the market price. There are six main benefits of a well-run stock exchange.

1. Firms can find funds and grow

Because investors in financial securities with a stock market quotation are assured that they are, generally, able to sell their shares quickly, cheaply and with a reasonable degree of certainty about the price, they are willing to supply funds to firms at a lower cost than they would if selling was slow, or expensive, or the sale price was subject to much uncertainty. Thus stock markets encourage investment by mobilising savings. As well as stimulating the investment of domestic savings, stock markets can be useful for attracting foreign savings and for aiding the privatisation process.

2. Allocation of capital

One of the key economic problems for a nation is finding a mechanism for deciding what mixture of goods and services to produce. An extreme solution has been tried and shown to be lacking in sophistication - that of a totalitarian directed economy where bureaucratic diktat determines the exact quantity of each line of commodity produced. The alternative method favoured in most nations (for the majority of goods and services) is to let the market decide what will be produced and which firms will produce it.

An efficiently functioning stock market is able to assist this process through the flow of investment capital. If the stock market was poorly regulated and operated then the mispricing of shares and other financial securities could lead to society's scarce capital resources being put into sectors which are inappropriate given the objective of maximising economic well-being. If, for instance, the market priced the shares of a badly managed company in a declining industrial sector at a high level then that firm would find it relatively easy to sell shares and raise funds for further investment in its business or to take over other firms. This would deprive companies with better prospects and with a greater potential contribution to make to society of essential finance.

To take an extreme example: imagine the year is 1910 and on the stock market are some firms which manufacture horse-pulled carriages. There are also one or two young companies which have taken up the risky challenge of producing motor cars. Analysts will examine the prospects of the two types of enterprise before deciding which firms will get a warm reception when they ask for more capital in, say, a rights issue. The unfavoured firms will find their share prices falling as investors sell their shares, and will be unable to attract more savers' money. One way for the older firm to stay in business would be to shift resources within the firm to the production of those commodities for which consumer demand is on a rising trend.

A dramatic shift in resources occurred in the late 1990s as financial markets supplied hundreds of billions of dollars to high-technology industries.

3. For shareholders

Shareholders benefit from the availability of a speedy, cheap secondary market if they want to sell. Not only do shareholders like to know that they can sell shares when they want to, they may simply want to know the value of their holdings even if they have no intention of selling at present. By contrast, an unquoted firm's shareholders often find it very difficult to assess the value of their holding.

Founders of firms may be particularly keen to obtain a quotation for their firms. This will enable them to diversify their assets by selling a proportion of their holdings. Also, venture capital firms which fund unquoted firms during their rapid growth phase often press the management to aim for a quotation to permit the venture capitalist to have the option of realising the gains made on the original investment, or simply to boost the value of their holding by making it more liquid.

4 Status and publicity

The public profile of a firm can be enhanced by being quoted on an exchange. Banks and other financial institutions generally have more confidence in a quoted firm and therefore are more likely to provide funds at a lower cost. Their confidence is raised because the company's activities are now subject to detailed scrutiny. The publicity surrounding the process of gaining a quotation may have a positive impact on the image of the firm in the eyes of customers, suppliers and employees and so may lead to a beneficial effect on their day-to-day business.

5 Mergers

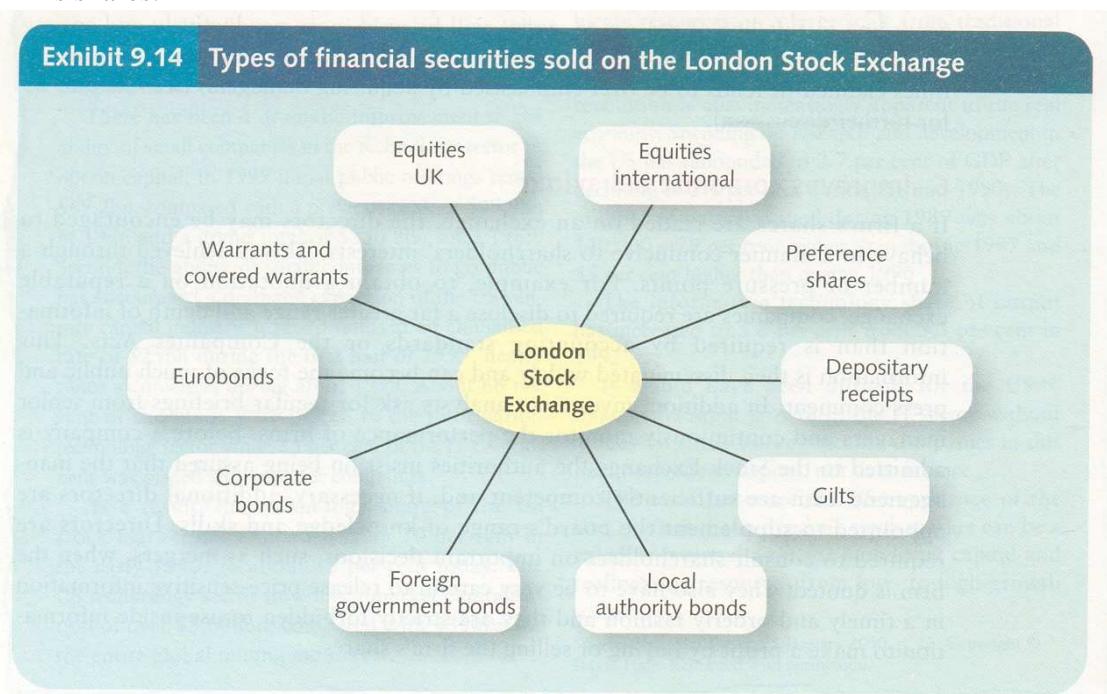
Mergers can be facilitated better by a quotation. This is especially true if the payments offered to the target firm's shareholders for their holdings are shares in the acquiring firm. A quoted share has a value defined by the market, whereas shares in unquoted firms are difficult to assess.

The stock exchange also assists what is called 'the market in managerial control'. That is a mechanism in which teams of managers are seen as competing for control of corporate assets. Or, to put it more simply, mergers through the stock market permit the displacement of inefficient management with a more successful team. Thus, according to this line of reasoning, assets will be used more productively and society will be better off. This 'market in managerial control' is not as effective as is sometimes claimed (it tends to be over emphasised by acquiring managers).

6 Improves corporate behaviour

If a firm's shares are traded on an exchange, the directors may be encouraged to behave in a manner conducive to shareholders' interests. This is achieved through a number of pressure points. For example, to obtain a quotation on a reputable exchange, companies are required to disclose a far greater range and depth of information than is required by accounting standards or the Companies Acts. This information is then disseminated widely and can become the focus of much public and press comment. In addition, investment analysts ask for regular briefings from senior managers and continuously monitor the performance of firms. Before a company is admitted to the Stock Exchange the authorities insist on being assured that the management teams are sufficiently competent and, if necessary, additional directors are appointed to supplement the board's range of knowledge and skills. Directors are required to consult shareholders on important decisions, such as mergers, when the firm is quoted. They also have to be very careful to release price-sensitive information in a timely and orderly fashion and they are strictly forbidden to use inside information to make a profit by buying or selling the firm's shares.

Exhibit 9.14 Types of financial securities sold on the London Stock Exchange



3.5 Tasks for stock exchanges

Traditionally, exchanges perform the following tasks in order to play their valuable role in a modern society:

- Supervision of trading to ensure fairness and efficiency
- The authorisation of market participants such as brokers and market makers
- Creation of an environment in which prices are formed efficiently and without distortion (price discovery). This requires not only regulation of a high order and low transaction cost but also a liquid market in which there are many buyers and sellers, permitting investors to enter or exit quickly without moving the price.
- Organisation of the settlement of transactions (after the deal has been struck the buyer must pay for the shares and the shares must be transferred to the new owners)
- The regulation of the admission of companies to the exchange and the regulation of companies on the exchange
- The dissemination of information, e.g. trading data, prices and company announcements. Investors are more willing to trade if prompt and complete information about trades and prices is available.

In recent years there has been a questioning of the need for stock exchanges to carry out all these activities. In the case of the LSE the settlement of transactions was long ago handed over to CREST. In 2001 the responsibility for authorising the listing of companies was transferred to the UK Listing Authority arm of the Financial Services Authority (the principal UK regulator). In 2002 the LSE's Regulatory News Service (which distributes important company announcements) was told that it will have to compete with other distribution platforms outside the LSE's control. Listed companies are now able to choose between competing providers of news dissemination platforms. Despite all this upheaval the LSE still retains an important role in the distribution of trading and pricing information. In response to some of these changes, and the threat to its position as the leading European stock exchange, from the competitive actions of other exchanges, the LSE went through a modernisation process: in 2000 it ceased to be an organisation owned by its members (a few hundred market makers, brokers and financial institutions) to being a company with shares. In 2001 it floated this company on its own Official List so anyone can now own a portion of the LSE. This move also makes mergers with other stock exchanges easier - not least, because the vested interests of the old members will not weigh so heavily in any future deal; shareholder value will be placed ahead of, say, makers' loss of business.

3.6 Trading Systems

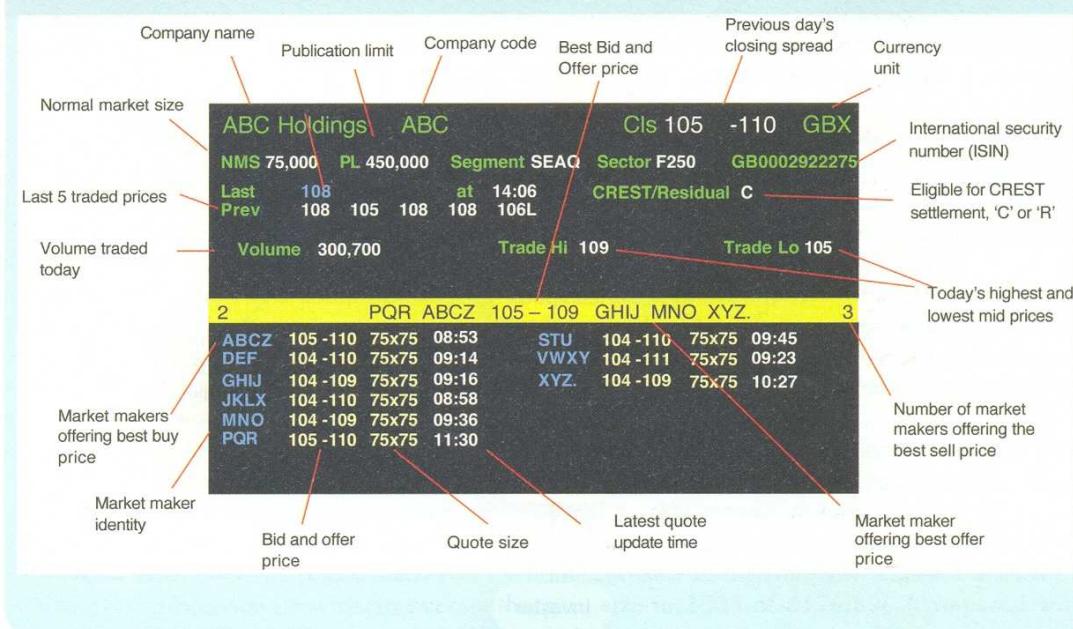
Quote-driven systems

Following the stock market reforms known as 'Big Bang' in 1986, the LSE adopted a quote-driven system. At the centre of this system are about 40 market makers who post on the computerised system called SEAQ (Stock Exchange Automated Quotation) the prices at which they are willing to trade shares. These competing market makers feed in two prices. The 'bid' price is the price at which they are willing to buy. The 'offer' price is the price at which they will sell. Thus, for Tesco, one market maker might quote the bid-offer prices of 335p-338p, while another quotes 336p-339p. The spread between the two prices represents a hoped-for return to the market maker. The SEAQ computer gathers together

the bid-offer quotes from all the market makers that make a market in that particular share. These competing quotations are then available to brokers and other financial institutions linked up to the SEAQ system. For frequently traded shares, such as those of Tesco, there may be 15-20 market makers willing to 'make a book' in those shares. For an infrequently traded share there may be only two or three market makers willing to quote prices.

Exhibit 9.22 shows what a broker would see if linked up to the LSE's SEAQ system. There are more than 100,000 terminals of these linked up around the world. What happens when you, as an investor, telephone your broker to buy shares is this: when you mentioned the company name the broker immediately punched into his computer the company code. So within milliseconds of your mentioning your interest in the company the broker has on his/her screen all the prices that different market makers are willing to pay as well as all the prices they are willing to sell the shares for. A typical SEAQ screen is shown for the company ABC. This screen shows that nine market makers are offering prices in ABC. The fact that there are a relatively large number of competing organisations willing to quote prices indicates that ABC is a large company with a liquid secondary market in its shares. The 'bid' price is the price at which the market maker is willing to buy. So, in the case of the market maker PQR the bid price is 105p (bottom left of Exhibit 9.22). The 'offer' price is the price at which the market makers are willing to sell - PQR offers these shares at 110p. It can be confusing and time consuming for the broker to look at all the prices to find the best current rates. Fortunately he does not have to do this as SEAQ displays a 'yellow strip' above the market makers' prices, which provides the identity of the market makers offering the best bid and offer prices (these are called touch prices). It is the price in the yellow strip that the broker will immediately report to you over the telephone. In the case of ABC you will be told 105-109. So, if you were happy with 109p you would then instruct your broker to buy, say, 1,000 shares.

Exhibit 9.22 Typical SEAQ screen



Source: Reproduced courtesy of London Stock Exchange plc.

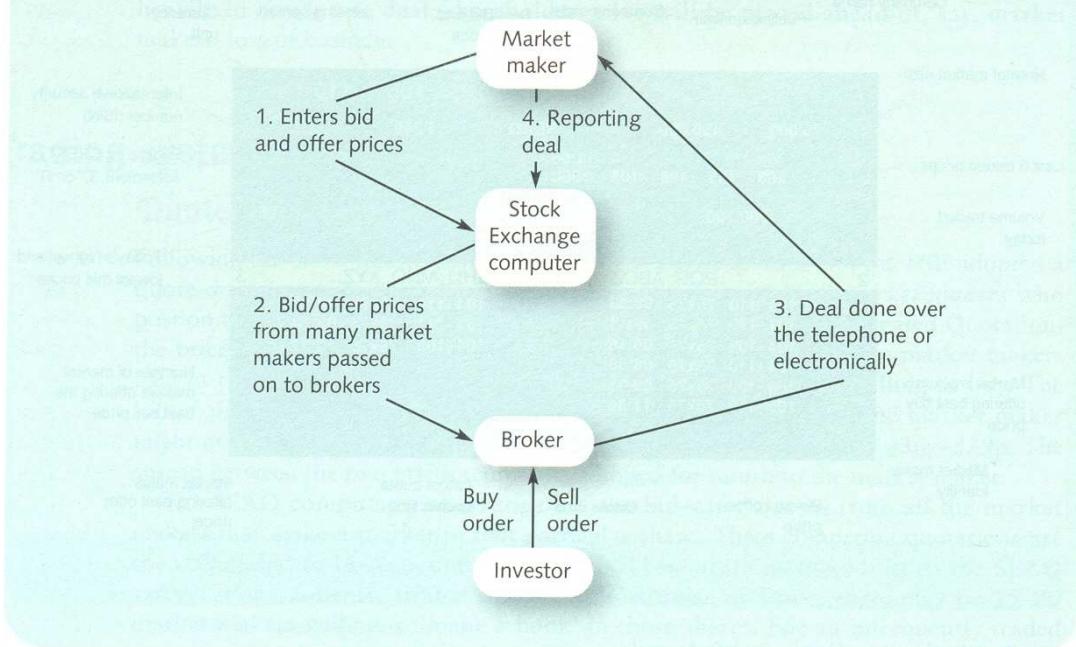
The market makers are obliged to deal (up to a certain number of shares) at the price quoted, but they have the freedom to adjust prices after deals are completed. The investor or broker (on behalf of an investor) is able to see the best price available on their computer terminals linked up to SEAQ and is able to make a purchase or sale.

Transactions are generally completed by the broker speaking to the market maker on the telephone. All trades are reported to the central electronic computer exchange and are disseminated to market participants (usually within three minutes) so that they are aware of the price at which recent trades were completed (see **Exhibit 9.23**).

The large investing institutions (pension funds, etc.) have SEAQ screens in their offices. This allows them to see the best prices being offered by market makers and to trade without necessarily going through a broker, thus cutting out commission.

The underlying logic of the quote-driven system is that through the competitive actions of numerous market makers, investors are able to buy or sell at any time at the best price. A problem arises for some very small or infrequently traded firms. Market makers are reluctant to commit capital to holding shares in such firms, and so for some there may be only one market maker's quote, for others there may be none. The LSE has developed SEATS plus, the Stock Exchange Alternative Trading Service, on which a single market maker's quote can be displayed. If business is so infrequent that no market maker will make a continuous quote the computer screen will act as a 'bulletin board' on which member firms can display their buy and sell orders. If more than one market maker registers in a share on SEATS plus the security is transferred to SEAQ (except for AIM shares which remain on SEATS plus).

Exhibit 9.23 The SEAQ quote-driven system



When a trade has been completed and reported to the Exchange it is necessary to clear the trade. That is, the Exchange ensures that all reports of the trade are reconciled to make sure all parties are in agreement as to the number of shares traded and the price. The Exchange also checks that the buyer and seller have the cash and securities to do the deal. Also the company registrar is notified of the change in ownership. Later the transfer of ownership from seller to buyer has to take place: this is called settlement.

In 2001 the exchange moved to 'three-day rolling settlement' (Trading day +3, or T +3), which means that investors normally pay for shares three working days after the transaction date. Prior to 1996 the transfer of shares involved a tedious paper-chase between investors, brokers, company registrars, market makers and the Exchange. The new system, called CREST provides an electronic means of settlement and registration. Under the CREST system shares are usually held in the name of a nominee company rather than in the name of the beneficial owner (i.e. the individual or organisation that actually bought them). Brokers and investment managers run these nominee accounts.

So your broker would hold your shares electronically in their nominee account and would arrange settlement through their membership of the CREST system. There might be dozens of investors with shares held by a particular nominee company. The nominee company appears as the registered owner of the shares as far as the company (say Marconi or BT) is concerned. Despite this, the beneficial owners will receive all dividends and the proceeds from the sale of the shares via the nominee company. One reason for this extra layer of complexity in the ownership and dealing of shares is that the nominee holdings are recorded in electronic form rather than in the form of a piece of paper (the inelegant word used for the move to electronic records is 'dematerialisation'). Thus, if a purchase or sale takes place a quick and cheap adjustment to the electronic record is all that is needed. Investors have no need to bother with share certificates. It is hoped that eventually one-day settlement can be achieved.

Many investors oppose the advance of CREST nominee accounts because under such a

system they do not automatically receive annual reports and other documentation, such as an invitation to the annual general meeting. They also potentially lose the right to vote (after all the company does not know who the beneficial owners are). Those investors who take their ownership of a part of a company seriously can insist on remaining outside of CREST. In this way they receive share certificates and are treated as the real owners of the business. This is more expensive when share dealing, but that is not a great concern for investors that trade infrequently.

There is a compromise position: personal membership of CREST. The investor is then both the legal owner and the beneficial owner of the shares, and also benefits from rapid (and cheap) electronic share settlement. The owner will be sent all company communications and retain voting rights. However, this is more expensive than the normal CREST accounts.

The London Stock Exchange has a third quotation system sharing its Sequence platform along with SEAQ and SEATS plus. SEAQ International provides a linkage for quotations from competing international market makers in London. The 44 market makers, generally departments of major international securities houses, quote continuous two-way prices, usually in the home currency of the company. This is a market for professionals with an average bargain size in 2003 of £176,806 (compared with £40,661 for UK equities).

Order-driven systems

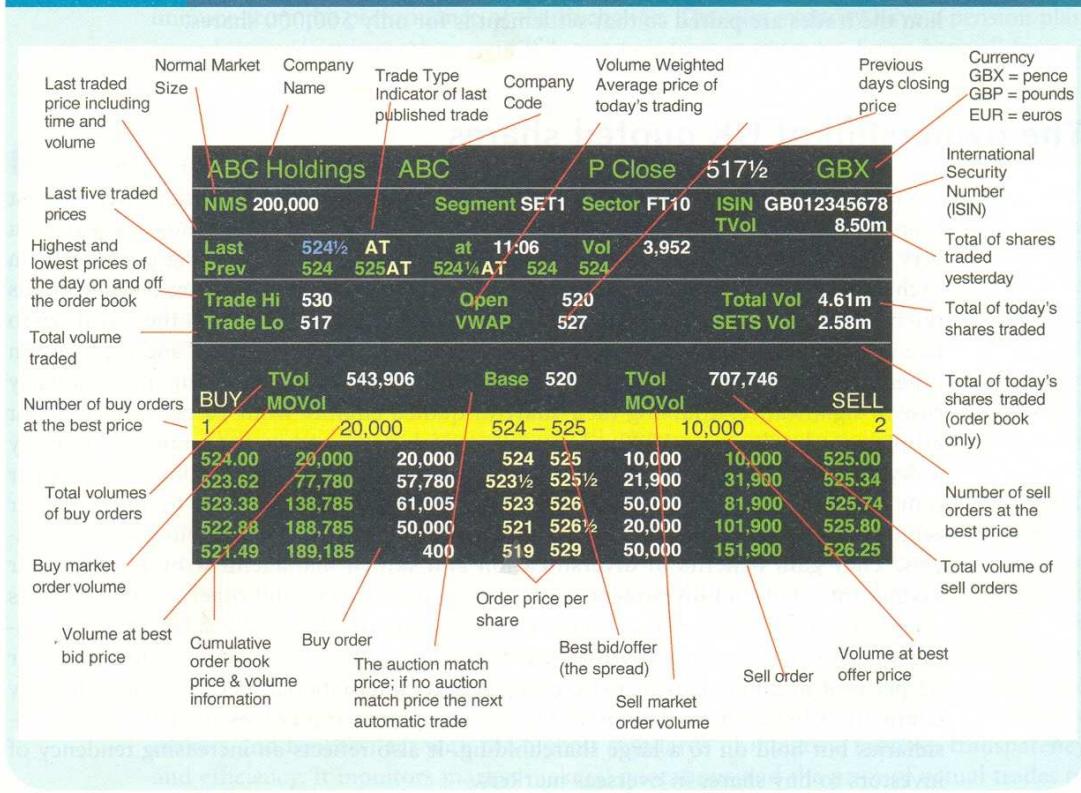
There has been some criticism of trading systems based on market makers quoting bid and offer prices - the so-called 'quote-driven systems'. Investors comment that the middleman's (the market maker's) cut comes from them. Wouldn't it save them money if buyers could trade with sellers at a single price so that there is not the loss of the bid-offer spread? Many stock exchanges in the world do operate this type of 'order-driven' system. These markets allow buy and sell orders to be entered on a central computer, and investors are automatically matched (they are sometimes called matched-bargain systems or order book trading). In 1997 the LSE introduced an order-driven service known as SETS (Stock Exchange Electronic Trading System).

SETS is an electronic computerised system in which dealers (via brokers) enter the prices at which they are willing to buy or sell. They can then wait for the market to move to the price they set as their limit. Alternatively they can instruct brokers to transact immediately at the best price currently available on the order book system. The LSE SETS computer does not simply act as a price-information system - as the SEAQ does - it executes the trades.

SETS derives market prices like this: Buyers and sellers enter a price limit at which they are willing to deal as well as the quantity of shares they want to trade. These prices are displayed anonymously to the entire market. An example of prices and quantities is shown in the lower half of Exhibit 9.24 - a reproduction of a SETS screen as seen by brokers. The buy orders are shown on the left and the sell orders on the right. So, we can observe for the company ABC's shares someone (or more than one person) has entered they are willing to buy 400 shares at a maximum price of 519p (bottom line on screen). Someone else (via a broker) has entered that they would like to sell 50,000 shares at a minimum price of 529p. Clearly the computer cannot match these two orders and neither of these two investors will be able to trade. They will have either to adjust their limit prices or to wait until the market moves in their favour.

As we travel up the screen we observe a closing of the gap between the prices buyers are willing to pay and the offering price of sellers. On the fifth line from the bottom we see that buyers want 20,000 shares at 524p whereas sellers are prepared to accept 525p for 10,000 shares. Now we are getting much closer to a match. Indeed if we look above

Exhibit 9.24 A SETS screen



Source: Reproduced courtesy of London Stock Exchange plc.

mum price of 525p in which case I would transact for 10,000 immediately but would leave the other 70,000 unfilled order in the market hoping for a general market price decline; alternatively, I could set my limit at 526p in which case I could transact with those investors prepared to sell at 525p, 525½ P and 526p. The unfilled orders of the sellers at 526p (81,900 - 80,000) are carried forward on SETS.

Supporters of the quote-driven system say that a major problem with the order-driven system is that there may be few or no shares offered at prices close to a market clearing rate and so little trade can take place. In other words the market can be very illiquid. There may be times when no sellers are posting sensible prices and other times when buyers are scarce. The quote-driven system is more liquid because market makers who make a book in a company's shares continually offer prices and are obliged to trade at the price shown on SEAQ. By way of counter-criticism, it is alleged there have been times when it has been difficult to contact market makers on the telephone to trade at the prices they show on SEAQ - they don't pick up the telephone! So this system is not always as liquid as the market makers like to claim. The situation today is that the market maker system is used for the relatively small and medium sized companies which are too illiquid for trading on the SETS system. The order-driven system is used only for the largest 200 most liquid shares, including the FTSE 100 companies. For the next 200 or so companies a hybrid system introduced in 2003 is used: SETSmm. This offers a continuous order book with automatic execution, but also has market makers providing continuous bid and offer prices. It is thought that by having the two systems combined there will be tighter bid-offer spreads, greater transparency of trades and improved liquidity.

For SETS shares the London Stock Exchange has delegated clearing to the LCH.Clearnet. The LCH.Clearnet has also become the counter-party in every SETS transaction. It is a Central Counter-party (CCP) clearing house. This means that it acts as the buyer to every seller and the seller to every buyer, thus guaranteeing that shares will be delivered against payment and vice versa. It also means that investors can trade anonymously. A further advantage is that investors can 'net' their trades. So if one part of the investing institution has bought 1 million shares while another has sold 1.5 million the trades are paired so that settlement is for only 500,000 shares.

Ownership of UK quoted shares

There was a transformation in the pattern of share ownership in Britain over the last four decades. The tax favoured status of pension funds made them a very attractive vehicle for savings, resulting in billions of pounds being put into them each year. Most of this money used to be invested in equities, making pension funds the most influential investing group on the stock market. However, in the last three to five years pension funds have been taking money out of quoted shares and placing it in other investments such as bonds and venture capital. Insurance companies similarly rose in significance, doubling their share of quoted equities from 10 per cent to about 20 per cent by the early 1990s. The group which decreased in importance is ordinary individuals holding shares directly. They used to dominate the market, with 54 per cent of quoted shares in 1963. By the late 1980s this had declined to about 20 per cent. Investors tended to switch from direct investment to collective investment vehicles. They gain benefits of diversification and skilled management by putting their savings into unit and investment trusts or into endowment and other savings schemes offered by the insurance companies. The most remarkable trend has been the increasing share of equities held by overseas investors: only 7 per cent in 1963, but over 32 per cent in 2003. This increase partly reflects international mergers where the new company is listed in the UK. Also foreign companies sometimes float their UK subsidiaries but hold on to a large shareholding. It also reflects an increasing tendency of investors to buy shares in overseas markets.

Exhibit 9.25 Share ownership in Britain, distribution by sector (quoted shares) (%)

Sector	1963	1975	1989	1997	2003
Individuals	54.0	37.5	20.6	16.5	14.9
Pension funds	6.4	16.8	30.6	22.1	16.1
Insurance companies	10.0	15.9	18.6	23.5	17.3
Rest of the world	7.0	5.6	12.8	24.0	32.3
Others (banks, public sector, unit trusts, investment trusts, charities)	22.6	24.2	17.4	13.9	19.5

Source: Office for National Statistics, *Share Ownership*, 2004. Reproduced by permission of the Controller of HMSO and the Office for National Statistics. www.statistics.gov.uk.

In 1980 only three million individuals held shares. After the privatisation programme, which included British Gas, British Telecom and TSB, the figure rose to nine million by 1988. By 1991 the flotations of Abbey National, the water companies and regional electricity companies had taken the numbers to 11 million. The stampede of building societies to market in 1997 produced a record 16 million individual share holders. Although the mode of investment has changed from direct to indirect, Britain remains a society with a deep interest in the stock market. Very few people are immune from the performance of the Exchange. The vast majority have a pension plan or endowment savings scheme, an ISA or a unit trust investment. Some have all four.

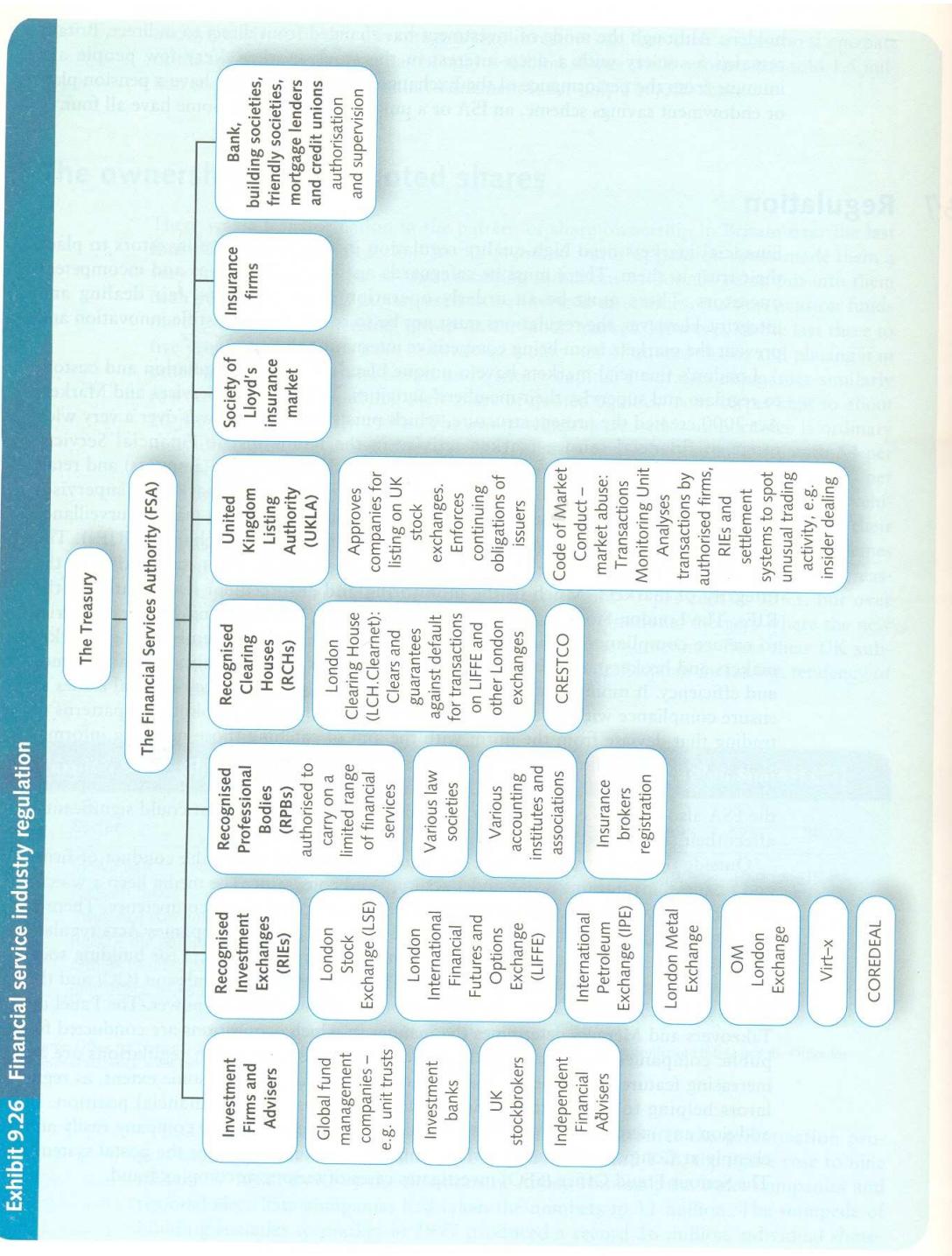
3.7 Regulation

Financial markets need high-quality regulation in order to induce investors to place their trust in them. There must be safeguards against unscrupulous and incompetent operators. There must be an orderly operation of the markets, fair dealing and integrity. However, the regulations must not be so restrictive as to stifle innovation and prevent the markets from being competitive internationally.

London's financial markets have a unique blend of law, self-regulation and custom to regulate and supervise their members' activities. The Financial Services and Markets Act 2000 created the present structure, which puts supervisory power over a very wide range of financial service market activity in the hands of the Financial Services Authority (FSA). The FSA supervises all the UK's wholesale (large amounts) and retail financial markets. With regard to the stock markets it supervises exchanges, clearing houses and settlement houses. It also conducts market surveillance and monitors transactions on seven Recognised Investment Exchanges (RIEs). The recognised exchanges work with the FSA to protect investors and maintain the integrity of markets. Much of the monitoring and enforcement is delegated to the RIEs. The London Stock Exchange, LSE, for example, vets new stockbrokers and tries to ensure compliance with LSE rules, aimed at making sure members (e.g. market makers and brokers) act with the highest standards of integrity, fairness, transparency and efficiency. It monitors market makers' quotations and the price of actual trades to ensure compliance with its dealing rules. It is constantly on the lookout for patterns of trading that deviate from the norm with the aim of catching those misusing information (e.g. insider dealing), creating a false or misleading impression to the disadvantage of other investors or some other market-distorting action. The LSE in partnership with the FSA also requires companies to disseminate all information that could significantly affect their share prices.

Outside the FSA structure there are numerous ways in which the conduct of firms and financial institutions is put under scrutiny and constraint. The media keep a watchful stance - always looking to reveal stories of fraud, greed and incompetence. There is legislation prohibiting insider dealing, fraud and negligence. The Companies Acts regulate the formation and conduct of companies and there are special Acts for building societies, insurance companies and unit trusts. The Competition Commission (CC) and the Office of Fair Trading (OFT) attempt to prevent abuse of market power. The Panel on Takeovers and Mergers determines the manner in which acquisitions are conducted for public companies. In addition European Union regulations are an increasing feature of corporate life. Accountants also function, to some extent, as regulators helping to ensure companies do not misrepresent their financial position. In addition any member of the public may access the accounts of any company easily and cheaply at Companies House (or via Companies House's website or the postal system). The Serious Fraud Office (SFO) investigates cases of serious or complex fraud.

Exhibit 9.26 Financial service industry regulation



3.8 Understanding the figures in the financial pages

Financial managers and investors need to be aware of what is happening on the financial markets, how their shares are affected and which measures are used as key yardsticks in evaluating a company. The financial pages of the broadsheet newspapers, particularly the Financial Times, provide some important statistics on company share price performance and valuation ratios. These enable comparisons to be made between companies within the same sector and across sectors. Exhibit 9.27 shows extracts from two issues of the Financial Times from the same week. The information provided in the Monday edition is different from that provided on the other days of the week.

Indices

Information on individual companies in isolation is less useful than information set in the context of the firm's peer group, or in comparison with quoted companies generally. For example, if ICI shares fall by 1 per cent on a particular day, an investor might be keen to learn whether the market as a whole rose or fell on that day, and by how much. The Financial Times (FT) joined forces with the Stock Exchange (SE) to create FTSE International in November 1995, which has taken over the calculation (in conjunction with the Faculty and Institute of Actuaries) of a number of equity indices. These indicate the state of the market consisting of 'baskets' of shares so that the value of that basket can be compared at different times. Senior managers are often highly sensitive to the relative performance of their company's share price. One reason for this is that their compensation package may be linked to the share price and in extreme circumstances managers are dismissed if they do not generate sufficiently high relative returns.

Exhibit 9.27 London Share Service extracts: Aerospace and Defence

WEDNESDAY AUGUST 18 2004										MONDAY AUGUST 16 2004														
	Notes	Price	Chng	52 week high	low	Vol '000s	P/E	Yld	AIM	Notes	Price	Chng	52 week high	low	Vol '000s	P/E	Yld	Wk% Chng	Div Price	Div Chng	McCap	Last Div	City line	
AEROSPACE & DEFENCE																								
Alvis	♦†	319	+1	319	165½	2.0	31½	—	3	Alvis	♦†	318½	0.2	6.5	—	—	—	8.68	3.3	1537				
BAE SYS	♦‡	211	+3½	222	159	4.4	13.4	23.38	35	BAE SYS	♦‡	200½	+4.9	9.2	1.7	6,143	21.4	1890	353.6	24.9	4377			
7½p C/Pf	130½	+4	161½	115	5.9	—	—	—	7½p C/Pf	128½	-3.9	7.75	—	342.9	2.6	5174						
Chemring†	411	466	344½	1.8	—	—	9	Chemring†	411	-4	7.4	—	118.7	12.5	2116						
Cobham	♦‡	1360	+7	1417	1120	2.1	14.7	146	—	Cobham	♦‡	1338	-1.3	28.16	—	3.3	1.492	2.6	2627					
Hampson	20	+4	23½	8	—	—	—	181	Hampson	19½	—	—	—	—	—	39.7	1.2	2817				
Meggitt	219x	+1½	*233½	189	3.4	13.4	1,637	—	Meggitt	215½x	1.8	7.5	—	—	—	—	—	—	—			
Rolls-Ryc.	234½	+4	251½	155½	3.5	19.1	24.103	—	Rolls-Ryc	228	-3.5	8.18	—	2.2	645.0	31.3	3331					
Smiths	705	+6	716½	607	3.7	15.8	1,407	—	Smiths	691	0.6	26.0	—	1.7	3,878	17.3	4050					
Thales	£181¹	+½	£21½	£15½	2.8	14.4	210	—	Thales	£18½	-2.4	75c	—	2.5	3,121	6.3	—					
UMECO	♦‡	385x	*385x	288½	3.2	16.4	34	—	UMECO	♦‡	385x	0.7	12.5	—	1.9	125.2	14.7	4929					
UltraElc	♦†	655	+6	655	470	2.0	16.1	89	—	UltraElc	646½	2.8	12.8	—	3.2	432.2	7.4	1363					
VT	268	+4	279½	220	(3.4)	22.5	(402)	—	VT	265	-7	9.0	—	1.3	455.7	(23.6)	(4874)					
The highest and lowest prices during the previous 52 weeks.																								
<i>Dividend yield:</i> The dividend divided by the current share price expressed as a percentage:																								
$\frac{\text{dividend per share}}{\text{current share price}} \times 100$																								
Volume of trade in those shares that day.										Market capitalisation is calculated by multiplying the number of shares issued by their market price.														
<i>Ex-dividend date:</i> The last date on which the share went ex-dividend (new buyers of the shares will not receive the recently announced dividend after this date).																								
<i>Price/earnings ratio (P/E):</i> Share price divided by the company's earnings (profits after tax) per share in the latest twelve-month period.																								
A much examined and talked about measure (see Chapter 20):																								
PER = $\frac{\text{share price}}{\text{earnings per share}}$																								
<i>Dividend cover:</i> Profit after tax divided by the dividend payment, or earnings per share divided by dividend per share:																								
Dividend cover = $\frac{\text{earnings per share}}{\text{dividend per share}}$																								

Taxation and corporate finance

Taxation impacts on financial decisions in at least three ways.

- 1 Capital allowances At one time it was possible for a firm to reduce its taxable profit by up to 100 per cent of the amount invested in certain fixed assets. So if a firm made a profit of £10m, and in the same year bought £10m worth of approved plant and equipment, the Inland Revenue would not charge any tax because the capital allowance of £10m could be subtracted from the profit to calculate taxable profit. The idea behind this generosity was to encourage investment and thus stimulate economic growth. Today, the type of expenditure subject to 100 per cent capital allowances is very restricted and the capital allowance is generally 25 per cent of the value of the investment in the first year and 25 per cent on a declining balance for subsequent years.
- 2 Selecting type of finance The interest paid on borrowed capital can be used to reduce the taxable profit and thus lower the tax bill. On the other hand, payments to shareholders, such as dividends, cannot be used to reduce taxable profit. This bias against share capital may have some impact on the capital structure decision.
- 3 Distribution of profit Companies pay corporation tax on profits nine months after the end of the accounting period (except very large companies which pay quarterly installments earlier than that). The profits are calculated after all costs have been deducted, including interest but excluding dividends. The proportion of taxable profit paid to the tax authorities is 30 per cent if taxable profit exceeds £1,500,000, and 19 per cent where it is less than £300,000 but above £50,000 (a sliding scale applies between £300,000 and £1.5 million). Very small companies with profits under £10,000 pay no tax, and a sliding scale applies between £10,000 and £50,000.

Standard-rate taxpayers (those with a marginal tax rate of 22 per cent on normal income) are liable to pay 10 per cent income tax on dividends. The rate of income tax on dividends for higher taxpayers is 32.5 per cent. The 10 per cent rate is deemed to be paid by the company when it pays corporation tax. Therefore, standard-rate taxpayers do not have to pay tax on dividends received. The higher-rate taxpayer can offset the 10 per cent tax paid against the total tax they are due to pay on dividends.

Exercise: Explain why firms obtain a share listing in countries other than their own.

4.0 CONCLUSION

Stock markets are major contributors to the well-being of a modern financially sophisticated society. They have great value to a wide variety of individuals and institutions. For savers they provide an environment in which savings can be invested in real productive assets to yield a return both to the saver and to society at large. The powerful pension and insurance funds rely on a well-regulated and broadly based stock exchange to enable the generation of income for their members. The mobilisation of savings for investment is a key benefit of a well-run exchange; so too is the improved allocation of scarce resources in society, and this results in a more satisfying mixture of goods and services being produced. The stock market has a part to play in directing investment to those parts of the economy which will generate the greatest level of utility for consumers. If people want cars rather than horse-drawn transport then savings will be directed to permit investment in factories and production lines for cars. If they demand word processors rather than typewriters then the computer firm will find it easier to raise fresh finance than will the typewriter firm. The higher-rate taxpayer can offset the 10 per cent tax paid against the total tax they are due to pay on dividends.

4.0 CONCLUSION

Stock markets are major contributors to the well-being of a modern financially sophisticated society. They have great value to a wide variety of individuals and institutions. For savers they provide an environment in which savings can be invested in real productive assets to yield a return both to the saver and to society at large. The powerful pension and insurance funds rely on a well-regulated and broadly based stock exchange to enable the generation of income for their members. The mobilisation of savings for investment is a key benefit of a well-run exchange; so too is the improved allocation of scarce resources in society, and this results in a more satisfying mixture of goods and services being produced. The stock market has a part to play in directing investment to those parts of the economy which will generate the greatest level of utility for consumers. If people want cars rather than horse-drawn transport then savings will be directed to permit investment in factories and production lines for cars. If they demand word processors rather than typewriters then the computer firm will find it easier to raise fresh finance than will the typewriter firm.

5.0 SUMMARY

Companies value stock markets for their capacity to absorb new issues of financial securities permitting firms to expand, innovate and produce wealth. Entrepreneurs can reap the rewards of their efforts by having access to a flourishing secondary share market and employees can be rewarded with shares which become more appealing because they can be quickly valued by examining reports in the financial press on market prices. Managers often acknowledge the disciplinary benefits of a stock market which insists on high levels of information disclosure, integrity, competence and the upholding of shareholder interests. Governments are aware of the range of social benefits listed above and so should value an exchange on these grounds alone. However, they also see more direct advantages in a fit and proper market. For example, they are able to raise finance to cover the difference between taxes and expenditure, and they are able to tap the market in privatisations and thereby not only fill government coffers but encourage wider share ownership and allow the market to pressurise managers to run previously state-owned businesses in a more efficient manner.

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7.0 TUTOR MARKED ASSIGNMENT

1. What are the characteristics of and who benefit from a well-run exchange.

UNIT 7

RAISING EQUITY CAPITAL

1.0 INTRODUCTION

There are many ways of raising money by selling shares. This unit looks at the most important. It considers the processes that a firm would have to go through to gain a quotation on the Official List (OL) and raise fresh equity finance. We will examine the tasks and responsibilities of the various advisers and other professionals who assist a company to present itself to investors in a suitable fashion.

A firm wishing to become quoted may, in preference to the OL, choose to raise finance on the Alternative Investment Market (AIM), where the regulations and the costs are lower.

In addition to, or as an alternative to, a 'new issue' on a stock market, which usually involves raising finance by selling shares to a new group of shareholders, a company may make a rights issue, in which existing shareholders are invited to pay for new shares in proportion to their present holdings. This unit explains the mechanics and technicalities of rights issues as well as some other methods, such as placing and open offers.

It is necessary to broaden our perspective beyond stock markets, to consider the equity finance-raising possibilities for firms which are not quoted on an exchange. There are over one million limited liability companies and only 0.2 per cent of them have shares traded on the recognised exchanges. For decades there has been a perceived financing gap for small and medium-sized firms which have to a large extent been filled by the rapidly growing venture capital/private equity industry. Venture capital firms have supplied share and debt capital to thousands of companies on fast-growth trajectories, such as the company established by Professor Young.

Many, if not most, companies are content to grow without the aid of either stock markets or venture capital. For example J.C. Bamford (JCB) which manufactures earth-moving machines, has built a large, export award winning company, without needing to bring in outside shareholders. This contentedness and absence of a burning desire to be quoted is reinforced by the stories which have emerged of companies which became disillusioned with being quoted. The pressures and strains of being quoted are considered by some (for example Andrew Lloyd Webber) to be an excessively high price to pay for access to equity finance. So to round off this unit we examine some of the arguments advanced against gaining a quotation and contrast these with the arguments a growing company might make for joining a market.

2.0 OBJECTIVES

When you complete this unit you should be able to explain or identify:

- Equity finance with debt and preference shares
- The admission requirements and process for joining the official list of stock exchange
- The nature and practicalities of rights issues, scrip issues, vendor placing, open offers and warrants
- Give an account of options open to an unquoted firm wishing to raise external equity finance.

3.0 What is equity capital?

Ordinary shares

Ordinary shares represent the equity share capital of the firm. The holders of these securities share in the rising prosperity of a company. These investors, as owners of the firm, have the right to exercise control over the company. They can vote at shareholder meetings to determine such crucial matters as the composition of the team of directors. They can also approve or disapprove of major strategic and policy issues such as the type of activities that the firm might engage in, or the decision to merge with another firm. These ordinary shareholders have a right to receive a share of dividends distributed as well as, if the worst came to the worst, a right to share in the proceeds of a liquidation sale of the firm's assets. To exercise effective control over the firm the shareholders will need information; and while management are reluctant to put large amounts of commercially sensitive information which might be useful to competitors into the public domain, they are required to make available to each shareholder a copy of the annual report.

There is no agreement between ordinary shareholders and the company that the investor will receive back the original capital invested. What ordinary shareholders receive depends on how well the company is managed. To regain invested funds an equity investor must either sell the shares to another investor (or in rare circumstances to the company - firms are now allowed to repurchase their own shares under strict conditions) or force the company into liquidation, in which case all assets are sold and the proceeds distributed. Both courses of action may leave the investor with less than originally invested. There is a high degree of discretion left to the directors in proposing an annual or semi-annual dividend, and individual shareholders are often effectively powerless to influence the income from a share - not only because of the risk attached to the trading profits which generate the resources for a dividend, but also because of the relative power of directors in a firm with a disparate or divided shareholder body.

Debt

Debt is very different from equity finance. Usually the lenders to the firm have no official control; they are unable to vote at general meetings and therefore cannot choose directors and determine major strategic issues. However there are circumstances in which lenders have significant influence. For instance, they may insist that the company does not exceed certain liquidity or solvency ratio levels, or they may take a charge over a particular building as security for a loan, thus restricting the directors' freedom of action over the use and disposal of that building. Debt finance also contrasts with equity finance in that it usually requires regular cash outlays in the form of interest and the repayment of the capital sum. The firm will be obliged to maintain the repayment schedule through good years and bad or face the possibility of action being taken by the lender to recover their money by forcing the firm to sell assets or liquidate.

Disadvantages of ordinary shares for investors

The main disadvantage for investors holding ordinary shares compared to other securities is that they are the last in the queue to have their claims met. When the income for the year is being distributed others, such as debenture holders and preference shareholders, get paid first. If there is a surplus after that, then ordinary shareholders may receive a dividend. Also when a company is wound up, employees, tax authorities, trade creditors and lenders all come before ordinary shareholders. Given these disadvantages there must be a very attractive feature to ordinary shares to induce individuals to purchase and keep them. The attraction is that if the company does well there are no

limits to the size of the claim equity shareholders have on profit. There have been numerous instances of investors placing modest sums into the shares of young firms who find themselves millionaires.

Advantages and disadvantages of share issues

From the company's point of view there are two significant advantages of raising finance by selling shares rather than borrowing more:

- 1 Usually there is no obligation to pay dividends: So when losses are made the company does not have the problem of finding money for a dividend. Equity acts as a kind of shock absorber.
- 2 The capital does not have to be repaid: Shares do not have a redemption date, that is, a date when the original sum invested is repaid to the shareholder. The large sums which had to be paid out in a short space of time as capital repayment to the lenders to some major retailers in the late 1980s and early 1990s, such as Next and Burton (now Arcadia), put a severe strain on cash flow, to the point where there were serious doubts about the ability of these firms to survive. They had expanded rapidly in the 1980s and were hit simultaneously by a deep recession and the requirement to pay back large capital sums to lenders. If they had chosen to finance expansion with equity they could have avoided the period of pain they went through.

There are, however, disadvantages of this form of finance.

- 1 High cost: The cost of issuing shares is usually higher than the cost of raising the same amount of money by obtaining additional loans. There are two types of cost. First, there are the direct costs of issue such as the costs of advice from a merchant bank and/or broker, and the legal, accounting and prospectus costs, etc. These costs can absorb up to 10 per cent of the amount of money raised. Secondly, and by far the most important, there is the cost represented by the return required to satisfy shareholders, which is greater than that on safer securities such as bonds issued by the firm
- 2 Loss of control Entrepreneurs sometimes have a difficult choice to make - they need additional equity finance for the business but dislike the notion of inviting external equity investors to buy shares. The choice is sometimes between slow/no growth or dilution of the entrepreneurs' control. External equity providers may impose conditions such as veto rights over important business decisions and the right to appoint a number of directors. In many instances, founders take the decision to forgo expansion in order to retain control.
- 3 Dividends cannot be used to reduce taxable profit Dividends are paid out of after-tax earnings, whereas interest payments on loans are tax deductible. This affects the relative costs to the company of financing by issuing interest-based securities and financing through ordinary shares.

Authorised, issued and par values

When a firm is created the original shareholders will decide the number of shares to be authorised (the authorised capital). This is the maximum amount of share capital that the company can issue (unless shareholders vote to change the limit). In many cases firms do not issue up to the amount specified. For example, Green plc has authorised capital of N5m, split between N1m of preference shares and N4m of ordinary shares. The company has issued all of the preference shares (at par) but the issued ordinary share capital is only N2.5m, leaving N1.5m as authorised but unissued ordinary share capital. This allows the directors to issue the remaining N1.5m of capital without being required to ask

shareholders for further permission.

Shares have a stated par value, say 25p or Sp. This nominal value usually bears no relation to the price at which the shares could be sold or their subsequent value on the stock market. So let us assume Green has 10 million ordinary shares issued, each with a par value of 25p (N2.5m total nominal value divided by the nominal price per share, 25p = 10m shares); these were originally sold for N2 each, raising N20m, and the present market value is N3.80 per share.

The par value has no real significance and for the most part can be ignored. However, a point of confusion can arise when one examines company accounts because issued share capital appears on the balance sheet at par value and so often seems pathetically small. This item has to be read in conjunction with the share premium account, which represents the difference between the price received by the company for the shares and the par value of those shares. Thus, in the case of Green the premium on each share was 200p - 25p = 175p. The total share premium in the balance sheet will be N17.5m.

Limited companies, pies and listed companies

Limited liability means that the ordinary shareholders are only liable up to the amount they have invested or have promised to invest in purchasing shares. Lenders and other creditors are not able to turn to the ordinary shareholder should they find on a liquidation that the company, as a separate legal 'person', has insufficient assets to repay them in full. This contrasts with the position for a partner in a partnership who will be liable for all the debts of the business to the point where personal assets such as houses and cars can be seized to be sold to pay creditors.

Private companies, with the suffix 'Limited' or 'Ltd' are the most common form of company (over 95 per cent of all companies). The less numerous, but more influential, form of company is a public limited company (or just public companies). These firms must display the suffix 'plc'. The private company has no minimum amount of share capital and there are restrictions on the type of purchaser who can be offered shares in the enterprise, whereas the plc has to have a minimum share capital of N50,000 but is able to offer shares to a wide range of potential investors. Not all public companies are quoted on a stock market. This can be particularly confusing when the press talks about a firm 'going public' - it may have been a public limited company for years and has merely decided to 'come to the market' to obtain a quotation. Strictly speaking, the term 'listed' should only be applied to those firms on the Official List but the term is used rather loosely and shares on AIM are often referred to as being quoted or listed.

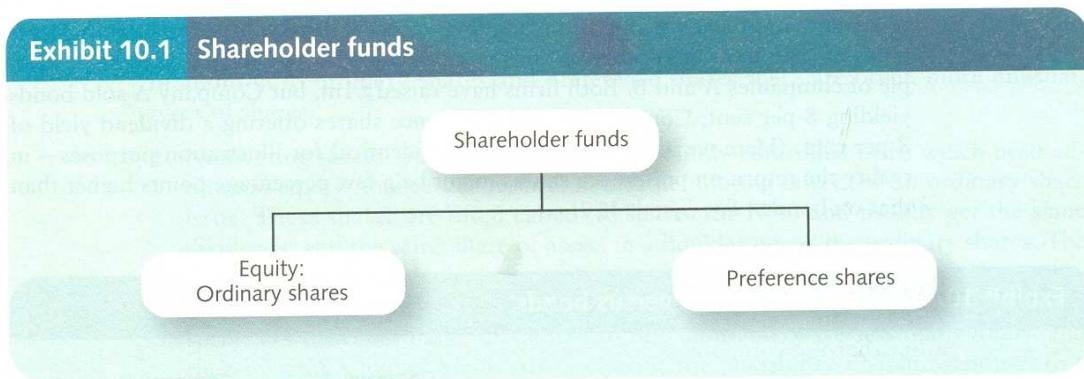
3.1 Preference shares

Preference shares usually offer their owners a fixed rate of dividend each year. However if the firm has insufficient profits the amount paid would be reduced, sometimes to zero. Thus, there is no guarantee that an annual income will be received, unlike with debt capital. The dividend on preference shares is paid before anything is paid out to ordinary shareholders - indeed, after the preference dividend obligation has been met there may be nothing left for ordinary shareholders. Preference shares are attractive to some investors because they offer a regular income at a higher rate of return than that available on fixed interest securities, e.g. bonds. However this higher return also comes with higher risk, as the preference dividend ranks after bond interest, and upon liquidation preference holders are further back in the queue as recipients of the proceeds of asset sell-offs.

Preference shares are part of shareholders' funds but are not equity share capital. The holders are not usually able to benefit from any extraordinarily good performance of the

firm - any profits above expectations go to the ordinary shareholders. Also preference shares usually carry no voting rights, except if the dividend is in arrears or in the case of liquidation.

Exhibit 10.1 shows the basic division of shareholder funds.



Advantages to the firm of preference share capital

Preference share capital has the following advantages to the firm.

- 1 Dividend 'optional': Preference dividends can be omitted for one or more years. This can give the directors more flexibility and a greater chance of surviving a downturn in trading. Although there may be no legal obligation to pay a dividend every year the financial community is likely to take a dim view of a firm which missed a dividend - this may have a deleterious effect on the ordinary share price as investors become nervous and sell.
- 2 Influence over management: Preference shares are an additional source of capital which, because they do not (usually) confer voting rights, do not dilute the influence of the ordinary shareholders on the firm's direction.
- 3 Extraordinary profits: The limits placed on the return to preference shareholders mean that the ordinary shareholders receive all the extraordinary profits when the firm is doing well (unless the preference shares are 'participating' - see below).
- 4 Financial gearing considerations: There are limits to safe levels of borrowing. Preference shares are an alternative, if less effective, shock absorber to ordinary shares because of the possibility of avoiding the annual cash outflow due on dividends. In some circumstances a firm may be prevented from raising finance by borrowing as this increases the risk of financial distress and the shareholders may be unwilling to provide more equity risk capital. If this firm is determined to grow by raising external finance, preference shares are one option.

Disadvantages to the firm of preference share capital

Preference share capital also has disadvantages to the firm.

- 1 High cost of capital: The higher risk attached to the annual returns and capital c preference shareholders to demand a higher level of return than debt holders.
- 2 Dividends are not tax deductible: Because preference shares are regarded as part of shareholders' funds the dividend is regarded as an appropriation of profits. Tax is payable on the firm's profit before the deduction of the preference dividend. In con-

trust, lenders are not regarded as having any ownership rights and interest has to be paid whether or not a profit is made. This cost is regarded as a legitimate expense reducing taxable profit. In recent years preference shares have become a relatively unpopular method of raising finance because bonds and bank loans, rival types of long-term finance, have this tax advantage. This is illustrated by the example of companies A and B. Both firms have raised N1m, but Company A sold bonds yielding 8 per cent, Company B sold preference shares offering a dividend yield of 8 per cent. (Here we assume the returns are identical for illustration purposes - in reality the return on preference shares might be a few percentage points higher than that on bonds.) See Exhibit 10.2.

Exhibit 10.2 Preference shares versus bonds

Profits before tax, dividends and interest

Interest payable on bonds

Taxable profit

Tax payable @ 30% of taxable profit

Preference dividend

Available for ordinary shareholders

Company A has a lower tax bill because its bond interest is used to reduce taxable profit, resulting in an extra N4,000 (N84,000 - N60,000) being available for the ordinary shareholders.

Types of preference shares

There are a number of variations on the theme of preference share. Here are some features which can be added,

Cumulative: If dividends are missed in any year the right to eventually receive a dividend is carried forward. These prior-year dividends have to be paid before any payout to ordinary shareholders.

Participating: As well as the fixed payment, the dividend may be increased if the company has high profits. (Usually the additional payment is a proportion of any ordinary dividend declared.)

Redeemable: These have a finite life, at the end of which the initial capital investment will be repaid. Irredeemable have no fixed redemption date.

Convertibles: These can be converted at the holder's request into ordinary shares at specific dates and on pre-set terms (for example, one ordinary share for every two preference shares). These shares often carry a lower yield (dividend as a proportion of share price) since there is the attraction of a potentially large capital gain.

Variable rate: A variable dividend is paid. The rate may be linked to general interest rates, e.g. LIBOR or to some other variable factor.

3.2 Methods of issue

The sponsor will look at the motives for wanting a quotation, at the amount of money that is to be raised, at the history and reputation of the firm and will then advise on the best method of issuing the shares. There are various methods, ranging from a full-scale offer for sale to a relatively simple introduction. The final choice often rests on the costs of issue, which can vary considerably. Here are the main options:

Offer for sale

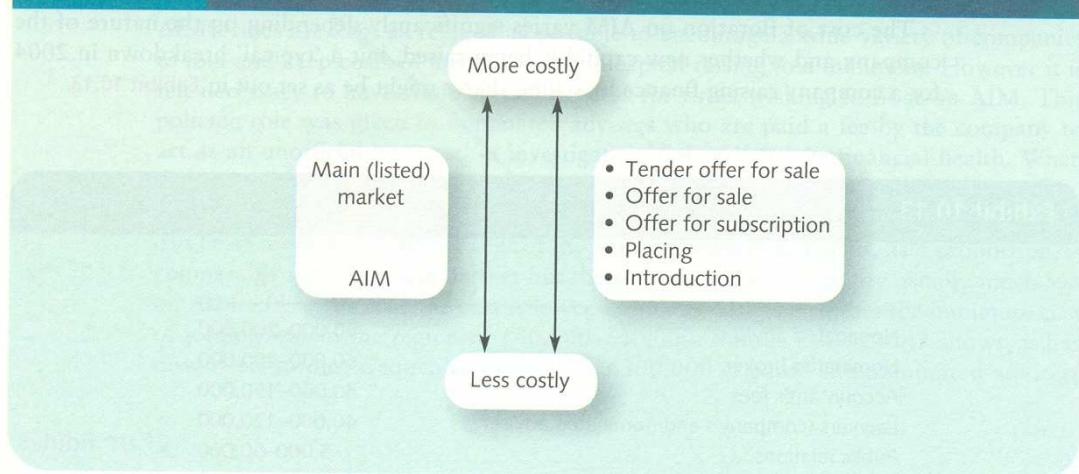
The company sponsor offers shares to the public by inviting subscriptions from institutional and individual investors. Sometimes newspapers carry a notice and an application form. However, most investors will need to contact the sponsor or the broker to obtain an application form.

The costs of new issues

There are three types of cost involved when a firm makes an issue of equity capital:

- Administrative/transaction costs;
- The equity cost of capital;
- Market pricing costs.

Exhibit 10.14 Costs of new issues



3.3 Rights issues

A rights issue is an invitation to existing shareholders to purchase additional shares in the company. This is a very popular method of raising new funds. It is easy and relatively cheap (compared with new issues). Directors are not required to seek the prior consent of shareholders. These require that a company raising new equity capital by selling shares first offers those shares to the existing shareholders. The owners of the company are entitled to subscribe for the new shares in proportion to their existing holding. This will enable them to maintain the existing percentage ownership of the company - the only difference is that each slice of the company cake is bigger because it has more financial resources under its control.

The shares are usually offered at a significantly discounted price from the market value of the current shares - typically 10-20 per cent. Shareholders can either buy these shares themselves or sell the 'right' to buy to another investor. For further reassurance that the firm will raise the anticipated finance, rights issues are usually underwritten by institutions.

An example

Take the case of the imaginary listed company Swell plc with 100 million shares in issue. It wants to raise N25m for expansion but does not want to borrow it. Given that its existing shares are quoted on the stock market at 120k, the new rights shares will have to be issued at a lower price to appeal to shareholders because there is a risk of the market share price falling in the period between the announcement and the purchasing of new shares. (The offer must remain open for at least three weeks.) Swell has decided that the N25m will be obtained by issuing 25 million shares at 100k each. Thus the ratio of new shares to old is 25:100. In other words, this issue is a 'one-for-four' rights issue. Each shareholder will be offered one new share for every four already held. The discount on these new shares is 20k or 16.7 per cent. The market price of Swell shares will not be able to stay at 120k after the rights issue is complete. The ex-rights price is the price at which the shares should theoretically sell after the issue. This is calculated as follows:

Four existing shares at a price of 120p	480k
One new share for cash at 100k	<u>100k</u>
Value of five shares	580k
Value of one share ex-rights 580k/5	116k

An alternative way of viewing this is to focus on the worth of the firm before and after the rights. Prior to the issue the total capitalisation of the firm was N120m (N1.20 x 100 million shares). The rights issue put another N25m into the company but also created 25 million additional shares. A company that was previously valued at N120m which then adds N25m of value to itself in the form of cash should be worth N145m. This company now has 125 million shares; therefore each share is worth N1.16 (disregarding stock market fluctuations and revaluations of the company):

$$\frac{\text{Total market capitalisation}}{\text{Total shares available}} = \frac{\text{N145}}{\text{N125m}} = \text{N1.16}$$

The shareholders have experienced a decline in the price of their old shares from 120k to 116k. A fall of this magnitude necessarily follows from the introduction of new shares at a discounted price. However the loss is exactly offset by the gain in share value on the new rights issue shares. They cost 100k but have a market price of 116k. This can be illustrated through the example of Sid, who owned 100 shares worth N120 prior to the rights announcement. Sid loses N4 on the old shares - their value is now N116. However he makes a gain of N4 on the new shares:

Cost of rights shares (25 x N1)	N25
Ex-rights value (25 x N1.16)	<u>N29</u>
Gain	N4

What if a shareholder does not want to take up the rights?

As owners of the firm all shareholders must be treated in the same way. To make sure that some shareholders do not lose out because they are unwilling or unable to buy more shares the law requires that shareholders have a third choice, other than to buy or not buy the new shares. This is to sell the rights on to someone else on the stock market (selling the rights nil paid). Take the case of impoverished Sid, who is unable to find the necessary N25. He could sell the rights to subscribe for the shares to another investor and not have to go through the process of taking up any of the shares himself. Indeed, so deeply enshrined are pre-emption rights that even if the shareholder does nothing the company will sell his rights to the new shares on his behalf and send the proceeds to him. Thus, Sid would benefit to the extent of 16k per share or a total of N4 (if the market price stays constant) which adequately compensates for the loss on j the 100 shares he holds. But the extent of his control over the company has been reduced - his percentage share of the votes has decreased.

The value of a right on one new share is:

Theoretical market value of share ex-rights - subscription price = 116k – 100k = 16k

The value of a right on one old share in Swell is:

Theoretical market value of share ex-rights - subscription price

No. of old shares required to purchase one new share

$$\frac{116 - 100}{4} = 4p$$

Ex-rights and cum-rights

Shares bought in the stock market which are designated cum-rights carry with them to the new owner the right to subscribe for the new shares in the rights issue. After a cutoff date the shares go ex-rights, which means that any purchaser of old shares will not have the right to the new shares; they remain with the former shareholder.

The price discount decision

It does not matter greatly whether Swell raises 125m on a one-for-four basis at 100k or on a one-for-three basis at 75k per share, or on some other basis (*see* Exhibit 10.17).

Exhibit 10.17 Comparison of different rights bases

Rights basis	Number of new shares (m)	Price of new shares (k)	Total raised (Nm)
1 for 4	25	100	25
1 for 3	33.3	75	25
1 for 2	50	50	25
1 for 1	100	25	25

As Exhibit 10.17 shows, whatever the basis of the rights issue, the company will receive N25m and the shareholders will see the price of their old shares decrease, but this will be exactly offset by the value of the rights on the new shares. However, the ex-rights

price will change. For a one-for-three basis it will be N108.75:

Three shares at 120k	360k
One share at 75k	<u>75k</u>
Value of four shares	435k
Value of one share (435/4)	108.75k

If Swell chose the one-for-one basis this would be regarded as a deep-discounted rights issue. With an issue of this sort there is only a minute probability that the market price will fall below the rights offer price and therefore there is almost complete certainty that the offer will be taken up. It seems reasonable to suggest that the underwriting service provided by the institutions is largely redundant here and that the firm can make a significant saving. Yet 95 per cent of all rights issues are underwritten,⁶ usually involving between 100 and 400 sub-underwriters. The underwriting fees used to be a flat 2 per cent of the offer. Of this the issuing house received 0.5 per cent, the broker received 0.25 per cent and the sub-underwriter 1.25 per cent (the same distribution as in a new issue). However, fees have fallen recently and can now be as little as 0.75 per cent for low-risk deep-discounted issues.

When the press talks glibly of a rights offer being 'very attractively priced for shareholders' they are generally talking nonsense. Whatever the size of the discount, the same value will be removed from the old shares to leave the shareholder no worse or better off. Logically value cannot be handed over to the shareholders from the size of the discount decision. Shareholders own all the company's shares before and after the rights issue - they can't hand value to themselves without also taking value from themselves. Of course, if the prospects for the company's profits rise because it can now make brilliant capital expenditures, which lead to dominant market positions, then the value of shares will rise - for both the old and the new shares. But this is value creation that has nothing to do with the level of the discount.

3.4 Other equity issues

Some companies argue that the lengthy procedures and expense associated with rights issues (for example, a minimum three-week offer period) frustrate directors' efforts to take advantage of opportunities in a timely fashion. Firms in the USA have much more freedom to bypass pre-emption rights. They are able to sell blocks of shares to securities houses for distribution elsewhere in the market. This is fast and has low transaction costs. If this were permitted in the NG there would be a concern for existing shareholders: that is, they could experience a dilution of their voting power and/or the share could be sold at such a low price that a portion of the firm is handed over to new shareholders too cheaply.

The NG authorities have produced a compromise. Here firms must obtain shareholders' approval through a special resolution (a majority of 75 per cent of those voting) at the company's annual general meeting or at an extraordinary general meeting to waive the pre-emption right. Even then the shares must not be sold to outside investors at more than a 5 per cent discount to the share price. This is an important condition. It does not make any difference to existing shareholders if new shares are offered at a deep discount to the market price as long as they are offered to them. If external investors get a discount there is a transfer of value from the current shareholders to the new.

Placings and open offers

In placing, new shares *from* companies already quoted on the stock market are sold directly to a narrow group of external investors. The institutions, wearing their hat of existing shareholders, have produced guidelines to prevent abuse, which normally only allow a placing of a small proportion of the company's capital (a maximum of 5 per cent in a single year and no more than 7.5 per cent is to be added to the company's equity capital over a rolling three-year period) in the absence of a *claw back*. Under claw back existing shareholders have the right to reclaim the shares as though they were entitled to them under a rights issue. They can buy them at the price they were offered to the external investors. With a claw-back the issue becomes an 'open offer'. The major difference compared with a rights issue is that if they do not exercise this claw-back right they receive no compensation for a reduction in the price of their existing shares - there are no nil-paid rights to sell.

Acquisition for shares

Shares are often issued to purchase businesses or assets. This is usually subject to shareholder approval.

Vendor placing

If a company wishes to pay for an asset such as a subsidiary of another firm or an entire company with newly issued shares, but the vendor does not want to hold the shares, the purchaser could arrange for the new shares to be bought by institutional investors for cash. In this way the buyer gets the asset, the vendors (for example shareholders in the target company in a merger or takeover) receive cash and the institutional investor makes an investment.

There is usually a claw-back arrangement for a vendor placing (if the issue is more than 10 per cent of market capitalisation of the acquirer). Again, the price discount can be no more than 5 per cent of the current share price.

Bought deal

Instead of selling shares to investors companies are sometimes able to make an arrangement with a securities house whereby it buys all the shares being offered for cash. The securities house then sells the shares on to investors included in its distribution network, hoping to make a profit on the deal. Securities houses often compete to buy a package of shares from the company, with the highest bidder winning. The securities house takes the risk of being unable to sell the shares for at least the amount that they paid. Given that some of these bought deals are for over *jS100m*, these securities houses need substantial capital backing. Bought deals are limited by the 5 per cent pre-emption rules.

3.5 Scrip issues

Scrip issues do not raise new money: a company simply gives shareholders more shares in proportion to their existing holdings. The value of each shareholding does not change, because the share price drops in proportion to the additional shares. They are also known as capitalisation issues or bonus issues. The purpose is to make shares more attractive by bringing down the price. So a company with shares trading at N15 on the Exchange might distribute two 'free' shares for everyone held - a two-for-one scrip issue. Since the amount of money in the firm and its economic potential is constant the share price will theoretically fall to N5.

With a scrip issue there will be some adjustment necessary to the balance sheet. If we suppose that the pre-scrip issued share capital was N200m (25k- par value x 800m shares) and the profit and loss account reserves accumulated from previous years amounted to N500m, then after the two-for-one scrip issue the issued share capital figure rises to 1600m (2511par value x 2,400m shares) and the profit and loss account reserve (revenue reserve) falls to N100m. Thus N400m of profit and loss reserves are 'capitalised' into issued share capital.

A number of companies have an annual scrip issue while maintaining a constant dividend per share, effectively raising the level of profit distribution. For example, if a company pays a regular dividend of 20k per share but also has one-for-ten scrip, the annual income will go up by 10 per cent. (A holder of 10 shares who previously received 20011' now receives 220k on a holding of 11 shares.) Scrip issues are often regarded as indicating confidence in future earnings increases. If this new optimism is expressed in the share price it may not fall as much as theory would suggest.

Scrip dividends are slightly different: shareholders are offered a choice between receiving a cash dividend or receiving additional shares. This is more like a rights issue because the shareholders are making a cash sacrifice if they accept the scrip shares. Shareholders are able to add to their holdings without paying stockbrokers' commission.

A share split (stock split) means that the nominal value of each share is reduced in proportion to the increase in the number of shares, so the book value of shares remains the same. So, for example, a company may have one million shares in issue with a nominal value of 5011 each. It issues a further one million shares to existing shareholders with the nominal value of each share reducing to 25k, but total nominal value remains at N500,000. Of course, the share price will halve - assuming all else is constant.

If the share price goes too low, say 15k a company may decide to consolidate its shares. This is the opposite of a split: the number of shares is reduced and the nominal value of each remaining share rises. If the nominal (par) value is 5k the company could consolidate on the basis of five shares for one. Every five 5k nominal share would be replaced by a 25lronominal share, which would then trade in the market at 75k= 15p x 5(or slightly more if investors are more attracted to shares within a normal price range).

Warrants

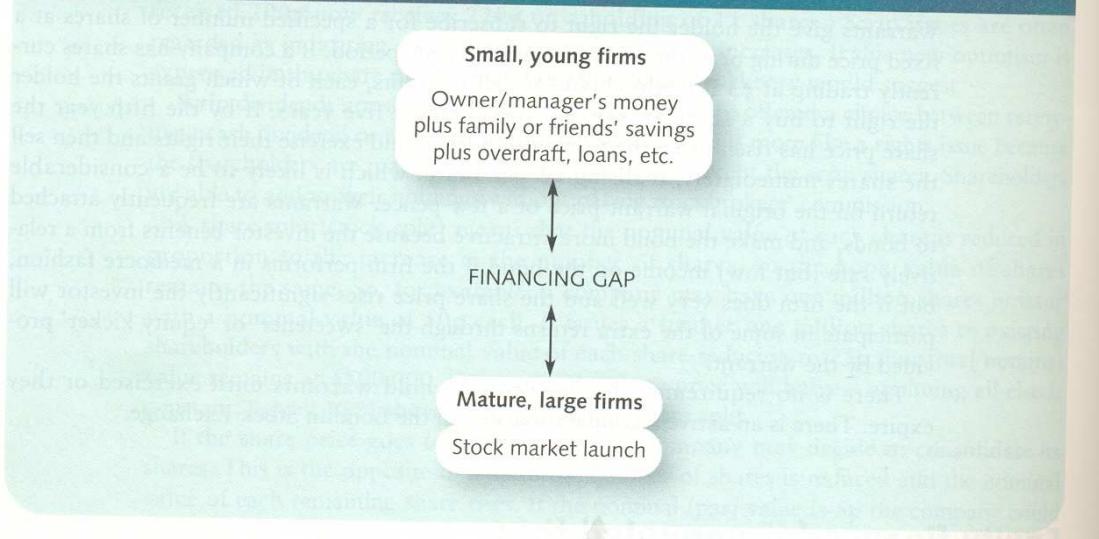
Warrants give the holder the right to subscribe for a specified number of shares at a fixed price during or at the end of a specified time period. If a company has shares currently trading at N3 it might choose to sell warrants, each of which grants the holder the right to buy a share at, say, f4 over the next five years. If by the fifth year the share price has risen to N6 the warrant holders could exercise their rights and then sell the shares immediately, realising N2 per share, which is likely to be a considerable return on the original warrant price of a few pence. Warrants are frequently attached to bonds, and make the bond more attractive because the investor benefits from a relatively safe (but low) income on the bond if the firm performs in a mediocre fashion, but if the firm does very well and the share price rises significantly the investor will participate in some of the extra returns through the 'sweetener' or 'equity kicker' provided by the warrant.

There is no requirement for investors to hold warrants until exercised or they expire. There is an active secondary market on the London Stock Exchange.

3.7 Equity finance for unquoted firms

We have looked at some of the details of raising money on the Stock Exchange. In the commercial world there are thousands of companies which do not have access to the Exchange. We now consider a few of the ways that unquoted firms can raise equity

Exhibit 10.22 The financing gap



The financing gap

Small companies usually rely on retained earnings, capital injections from the founder family and bank borrowing for growth. More mature companies can turn to the stock market to raise debt or equity capital. In between these two, it is suggested, lies a financing gap. The intermediate businesses are too large or too fast growing to ask the individual shareholders for more funds or to obtain sufficient bank finance, and they are not ready to launch on the stock market (*see Exhibit 10.22*).

These companies may be frustrated in their plans to exploit market opportunities by a lack of available funds. To help fill this gap there has been the rapid development of the venture capital (or private equity) industry over the past 20 years. Today over N10bn per year is supplied by formal venture capital suppliers to unquoted NG firms compared with just a few million in 1979. Currently there are 10,000 NG companies with three million employees (one in six of the non-government workforce) financed by private equity money. The tremendous growth of venture capital has to a large extent plugged the financing gap which so vexed politicians and business people alike in the 1970s and early 1980s.

Venture capital/private equity

Venture capital (VC) funds provide finance for unquoted firms with high growth potential. Venture capital is a medium- to long-term investment and can consist of a package of debt and equity finance. Venture capitalists take high risks by investing in the equity of young companies often with a limited (or no) track record. Many of their investments are into little more than a management team with a good idea - which may not have started selling a product or even developed a prototype. It is believed, as a rule of thumb in the venture capital industry, that out of ten investments two will fail completely, two will perform excellently and the remaining six will range from poor to very good.

Venture capitalists therefore expect to get a return of between five and ten times their initial equity investment in about five to seven years. This means that the firms receiving

equity finance are expected to produce annual returns of at least 26 per cent. Alongside the usual drawbacks of equity capital from the investors' viewpoint (last in the queue for income and on liquidation, etc.), investors in small unquoted companies also suffer from a lack of liquidity because the shares are not quoted on a public exchange. There are a number of different types of venture capital.

Seedcorn: This is financing to allow the development of a business concept. Development may also involve expenditure on the production of prototypes and additional research.

Start-up: A product or idea is further developed and/or initial marketing is carried out. Companies are very young and have not yet sold their product commercially.

Other early-stage: Funds for initial commercial manufacturing and sales. Many companies at this stage will remain unprofitable.

Expansion (Development): Companies at this stage are on to a fast-growth track and need capital to fund increased production capacity, working capital and for the further development of the product or market. Professor Steve Young's company Entropic provides an example of this.

Management buy-outs (MBO): Here a team of managers make an offer to their employers to buy a whole business, a subsidiary or a section so that they own and run it for themselves. Large companies are often willing to sell to these teams, particularly if the business is under-performing and does not fit with the strategic core business. Usually the management team has limited funds of their own and so call on venture capitalists to provide the bulk of the finance.

Management buy-ins (MBI): A new team of managers from outside an existing business buy a stake, usually backed by a venture capital fund.

Public-to-private (PTP): The management of a company currently quoted on a stock exchange may return it to unquoted status with the assistance of venture capital finance being used to buy the shares.

Venture capital firms are less keen on financing seedcorn, start-ups and other early stage companies than expansions, MBOs and MBIs. This is largely due to the very high risk associated with early-stage ventures and the disproportionate time and costs of financing smaller deals.

Because of the greater risks associated with the youngest companies, the VC funds may require returns of the order of 50-80 per cent per annum. For well-established companies with a proven product and battle-hardened and respected management the returns required may drop to the high 20s. These returns may seem exorbitant, especially to the managers set the task of achieving them, but they have to be viewed in the light of the fact that many VC investments will turn out to be failures and so the overall performance of the VC funds is significantly less than these figures suggest. In fact the British Venture Capital Association which represents 'every major source of venture capital in the NG' reports that returns on funds are not excessively high. The overall long-term net returns to investors for funds between 1980 and 1999 measured to the end of 2003 stood at 13.6 per cent.

There are a number of different types of VC providers, although the boundaries are increasingly blurred as a number of funds now raise money from a variety of sources. The independents can be firms, funds or investment trusts, either quoted or private, which have raised their capital from more than one source. The main sources are pension and insurance funds, but banks, corporate investors and private individuals also put money into these VC funds. Captives are funds managed on behalf of a parent

institution (banks, pension funds, etc.). Semi-captives invest funds on behalf of a parent and also manage independently raised funds.

For the larger investments, particularly MBOs and MBIs, the venture capitalist may provide only a fraction of the total funds required. Thus, in a N50m buyout the venture capitalist might supply (individually or in a syndicate with other VC funds), say, N15m in the form of share capital (ordinary and preference shares). Another N20m may come from a group of banks in the form of debt finance. The remainder may be supplied as mezzanine debt - high-return and high-risk debt which usually has some rights to share in equity values should the company perform well.

Venture capitalists generally like to have a clear target set as the eventual 'exit' (or 'take-out') date. This is the point at which the VC can recoup some or all of the investment. The majority of exits are achieved by a sale of the company to another firm, but a popular method is a flotation on a stock market. Alternative exit routes are for the company to repurchase its shares or for the venture capitalist to sell the holding to an institution such as an investment trust or to another private equity group ('a secondary buyout').

Venture capital funds are rarely looking for a controlling shareholding in a company and are often content with a 20 or 30 per cent share. They may also provide funds by the purchase of convertible preference shares which give them rights to convert to ordinary shares - which will boost their equity holding and increase the return if the firm performs well. They may also insist, in an initial investment agreement, on some widespread powers. For instance, the company may need to gain the venture capitalist's approval for the issue of further securities, and there may be a veto over acquisition of other companies. Even though their equity holding is generally less than 50 per cent the VC funds frequently have special rights to appoint a number of directors. If specific negative events happen, such as a poor performance, they may have the right to appoint most of the board of directors and therefore take effective control.

More than once the founding entrepreneur has been aggrieved to find him/herself removed from power. (Despite the loss of power, they often have a large shareholding in what has grown to be a multi-million naira company.) They are often sufficiently upset to refer to the fund which separated them from their creation as 'vulture capitalist'. But this is to focus on the dark side. When everything goes well, we have, as they say in the business jargon, 'a win-win-win situation': the company receives vital capital to grow fast, the venture capitalist receives a high return and society gains new products and economic progress.

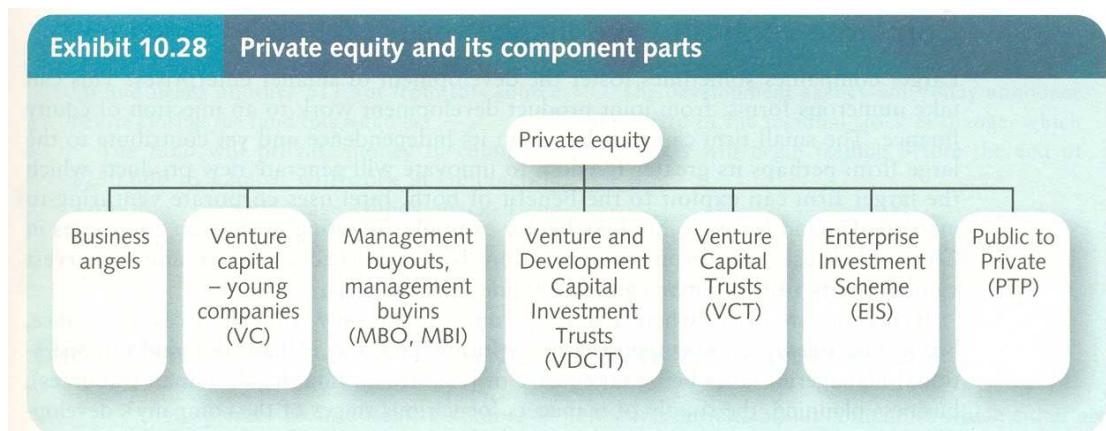
The venture capitalist can help a company with more than money. Venture capitalists usually have a wealth of experience and talented people able to assist the budding entrepreneur. Many of the NG's most noteworthy companies were helped by the VC industry, for example Water-stones bookshops, Oxford Instruments (and in America: Apple computers, Sun Microsystems, Netscape, Lotus and Compaq).

Venture capital is most powerful in the United States and in other Anglo-Saxon economies. Indeed, some would go so far as to say the Silicon Valley would not exist without it.

Private equity

As share investment outside of stock markets has grown it has become differentiated. The main categories are shown in Exhibit 10.28. The title over arching all these activities is private equity. Private equity is defined as medium- to long-term finance provided in return for an equity stake in potentially high-growth unquoted companies. In this more differentiated setting the term venture capital is generally confined to describing the

building of companies from the ground floor, or at least from a very low base. Management buyouts and buying of established businesses (already off the ground floor) has become a specialist task, with a number of dedicated funds. Many of these funds are formed as private partnerships by wealthy individuals, a high proportion of which are American owned. However, there are funds available to small investors, such as 3i, that still conduct traditional VC business and MBOs and MBIs. The small investor can buy shares in these stock market listed funds. They are frequently classified as venture and development capital investment trusts (VDCITs). The disadvantage of VDCITs is the absence of tax benefits. This is where the Venture Capital Trusts (VCTs) and the Enterprise Investment Scheme (EIS) come in. They both offer significant tax breaks to investors in small unquoted companies. Finally, some funds have specialised in providing financial and professional support to quoted companies that wish to leave the stock market public-to-private deals.



Corporate venturing and incubators

Larger companies sometimes foster the development of smaller enterprises. This can take numerous forms, from joint product development work to an injection of equity finance. The small firm can thereby retain its independence and yet contribute to the large firm: perhaps its greater freedom to innovate will generate new products which the larger firm can exploit to the benefit of both. Intel uses corporate venturing to increase demand for its technology by, for example, investing in start-up companies in China. Shell uses it to promote innovation. BT established a venture unit to harvest value from its 14,000 patents and 2,500 unique inventions.

Incubators are places where a start-up company not only will gain access to finance, but will be able to receive support in many forms. This may include all humdrum operational managerial tasks being taken care of (e.g. accounting, legal, and human resources), business planning, the supply of managers for various stages of the company's development, property management, etc. As a result the entrepreneurial team can concentrate on innovation and grow the business, even if they have no prior managerial experience.

Exercise: 1. What are the main advantages and disadvantages of raising finance through selling
 a. ordinary shares and
 b. preference shares.

4.0 CONCLUSION

Companies are dissatisfied with being quoted on a stock exchange or have never been quoted and feel no need to join. Reading of these provide a wider understanding of the place of stock markets, their importance to some firms and how many companies are able to expand and produce wealth without them.

5.0 SUMMARY

There are a number of alternative ways of raising finance by selling shares. The advantages and problems associated with each method and type mean that careful thought has to be given to establishing the wisest course of action for a firm, given its specific circumstances. Failure here could mean an unnecessary loss of control, an unbalanced capital structure, an excessive cost of raising funds or some other destructive outcome. But getting the share question right is only one of the key issues involved in financing a firm.

6.0 REFERENCES

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7.0 TUTOR MARKED ASSIGNMENT

1. Describe the three costs associated with gaining a flotation on a stock exchange by selling shares to new shareholders.

UNIT 8

LONG TERM DEBT FINANCE

1.0 INTRODUCTION

The concept of borrowing money to invest in real assets within a business is a straightforward one, yet in the sophisticated capital markets of today with their wide variety of financial instruments and forms of debt, the borrowing decision can be bewildering.

Should the firm tap the domestic bond market? Would bank borrowing be best? If so, on what terms, fixed or floating rate interest, a term loan or a mortgage? And what about syndicated lending, mezzanine finance and high-yield bonds? The variety of methods of borrowing long-term finance is infinite. This unit will outline the major categories and illustrate some of the fundamental issues a firm may consider when selecting its finance mix.

2.0 OBJECTIVES

When you complete this unit, you should be able to identify or explain

- The nature and the main types of bonds, their pricing and their valuation
- The main considerations for a firm when borrowing from banks
- The role of mezzanine and ‘high-yield’ bond financing as well as a securitization and project finance
- The value of the international debt market
- The term structure of interest rates and the reasons for its existence

3.0 Some fundamental features of debt finance

Put at its simplest, debt is something that has to be repaid. Corporate debt repayments have taken the form of interest and capital payments as well as more exotic compensations such as commodities and shares. The usual method is a combination of a regular interest, with capital (principal) repayments either spread over a period or given as a lump sum at the end of the borrowing. Debt finance is less expensive than equity finance, not only because the costs of raising the funds (for example arrangement fees with a bank or the issue costs of a bond) are lower, but because the annual return required to attract investors is less than for equity. This is because investors recognise that investing in a firm via debt finance is less risky than investing via shares. It is less risky because interest is paid out before dividends are paid so there is greater certainty of receiving a return than there would be for equity holders. Also, if the firm goes into liquidation, the holders of a debt type of financial security are paid back before shareholders receive anything.

Offsetting these plus-points for debt are the facts that lenders do not, generally, share in the value created by an extraordinarily successful business and there is an absence of voting power - although debt holders are able to protect their position to some extent through rigorous lending agreements.

When a company pays interest the tax authorities regard this as a cost of doing business and therefore it can be used to reduce the taxable profit. This lowers the effective cost to the firm of servicing the debt compared with servicing equity capital through dividends which are not tax deductible. Thus to the attractions of the low required

return on debt we must add the benefit of tax deductibility.

There are dangers associated with raising funds through debt instruments. Creditors are often able to claim some or all of the assets of the firm in the event of non-compliance with the terms of the loan. This may result in liquidation. Institutions which provide debt finance often try to minimise the risk of not receiving interest and their original capital. They do this by first of all looking to the earning ability of the firm, that is, the pre-interest profits in the years over the period of the loan. As a back-up they often require that the loan be secured against assets owned by the business, so that if the firm is unable to pay interest and capital from profits the lender can force the sale of the assets to receive their legal entitlement. The matter of security has to be thought about carefully before a firm borrows capital. It could be very inconvenient for the firm to grant a bank a fixed charge on a specific asset - say a particular building - because the firm is then limiting its future flexibility to use its assets as it wishes. For instance, it will not be able to sell that building, or even rent it without the consent of the bank or the bondholders.

3,1

Bonds

A bond is a long-term contract in which the bondholders lend money to a company. In return the company (usually) promises to pay the bond owners a series of interest payments, known as coupons, until the bond matures. At maturity the bondholder receives a specified principal sum called the par (face or nominal) value of the bond. This is usually £100 in the UK and \$1,000 in the USA. The time to maturity is generally between seven and 30 years although a number of firms, for example Disney, IBM and Reliance of India, have issued 100-year bonds.

Bonds may be regarded as merely IOUs (I owe you) with pages of legal clauses expressing the promises made. Some corporate bonds are sufficiently liquid to trade on the London Stock Exchange, but the majority of trading occurs in the over-the-counter (OTC) market directly between an investor and a bond dealer. To have access to a secondary market means that the investor who originally provided the firm with money does not have to hold on to the bond until the maturity date (the redemption date). However, because so many investors buy and then hold to maturity rather than trade in and out bonds generally have very thin secondary markets compared with shares. The amount the investor receives in the secondary market might be more or less than what he/she paid. For instance, imagine an investor paid £99.80 for a bond which promised to pay a coupon of 9 per cent per year on a par value of £100 and to repay the par value in seven years. If one year after issue interest rates on similar bonds are 20 per cent per annum no one will pay £99.80 for a bond agreement offering £9 per year for a further six years plus £100 on the redemption date. We will look at a method for calculating exactly how much they might be willing to pay later in the unit.

These negotiable (that is tradable in a secondary market) instruments come in a variety of forms. The most common is the type described above with regular (usually semi-annual) fixed coupons and a specified redemption date. These are known as straight, plain vanilla or bullet bonds. Other bonds are a variation on this. Some pay coupons every three months, some pay no coupons at all (called zero coupon bonds these are sold at a large discount to the par value and the investor makes a capital gain by holding the bond), some bonds do not pay a fixed coupon but one which varies depending on the level of short-term interest rates (floating-rate or variable-rate bonds), some have interest rates linked to the rate of inflation. In fact, the potential for variety and innovation is almost infinite. Bonds issued in the last few years have linked the interest rates paid or the principal payments to a wide variety of economic events, such as the price of silver, exchange-rate movements, stock market indices, the price of oil, gold, copper - even to the occurrence of an earthquake. These bonds were generally designed to let companies

adjust their interest payments to manageable levels in the event of the firm being adversely affected by some economic variable changing. For example, a copper miner pays lower interest on its finance if the copper price falls. In 1999 Sampdoria, the Italian football club, issued a €3.5m bond that paid a higher rate of return if the club won promotion to the 'Serie N' division (2.5 per cent if it stayed in Serie B, 7 per cent if it moved to Series A). If the club rose to the top four in Serie A the coupon would rise to 14 per cent.

Debentures and loan stocks

The most secured type of bond is called a debenture. They are usually secured by either a fixed or a floating charge against the firm's assets. A fixed charge means that specific assets are used as security which, in the event of default, can be sold at the insistence of the debenture bondholder and the proceeds used to repay them. Debentures secured on property may be referred to as mortgage debentures. A floating charge means that the loan is secured by a general charge on all the assets of the corporation. In this case the company has a high degree of freedom to use its assets as it wishes, such as sell them or rent them out, until it commits a default which 'crystallises' the floating charge. If this happens a receiver will be appointed with powers to dispose of assets and to distribute the proceeds to the creditors. Even though floating-charge debenture holders can force liquidation, fixed-charge debenture holders rank above floating-charge debenture holders in the payout after insolvency.

The terms bond, debenture and loan stock are often used interchangeably and the dividing line between debentures and loan stock is a fuzzy one. As a general rule debentures are secured and loan stock is unsecured but there are examples which do not fit this classification. If liquidation occurs, the unsecured loan stockholders rank beneath the debenture holders and some other categories of creditors such as the tax authorities. In the USA the definitions are somewhat different and this can be confusing. There a debenture is an unsecured bond and so the holders become general creditors who can only claim assets not otherwise pledged. In the USA the secured form of bond is referred to as the mortgage bond and unsecured shorter-dated issues (less than 15 years) are called notes.

Bonds are often referred to collectively as fixed-interest securities. While this is an accurate description for many bonds, others do not offer regular interest payments that are fixed amounts. Nevertheless they are all lumped together as fixed interest to contrast these types of loan instrument with equities that do not carry a promise of a return.

Trust deeds and covenants

Bond investors are willing to lower the interest they demand if they can be reassured that their money will not be exposed to a high risk. This reassurance is conveyed by placing risk-reducing restrictions on the firm. A trust deed sets out the terms of the contract between bondholders and the company. The trustees ensure compliance with the contract throughout the life of the bond and have the power to appoint a receiver. The loan agreement will contain a number of affirmative covenants. These usually include the requirements to supply regular financial statements, interest and principal payments. The deed may also state the fees due to the lenders and details of what procedures are to be followed in the event of a technical default, for example non-payment of interest.

In addition to these basic covenants are the negative (restrictive) covenants. These restrict the actions and the rights of the borrower until the debt has been repaid in full. Some examples are:

Limits on further debt issuance: If lenders provide finance to a firm they do so, on certain assumptions concerning the riskiness of the capital structure. They will want to

ensure that the loan does not become more risky due to the firm taking on a much greater debt burden relative to its equity base, so they limit the amount and type of further debt issues - particularly debt which is higher ('senior debt') ranking for interest payments and for a liquidation payment. Subordinated debt - with low ranking on liquidation - is more likely to be acceptable.

Dividend level: Lenders are opposed to money being taken into the firm by borrowing at one end, while being taken away by shareholders at the other. An excessive withdrawal of shareholder funds may unbalance the financial structure and weaken future cash flows.

Limits on the disposal of assets: The retention of certain assets, for example property and land, may be essential to reduce the lenders' risk.

Financial ratios: A typical covenant here concerns the interest cover, for example: 'The annual pre-interest pre-tax profit will remain four times as great as the overall annual interest charge'. Other restrictions might be placed on working capital ratio levels, and the debt to net assets ratio. In the case of Photobition the interest cover threshold is 3.25 - ~u. While negative covenants cannot provide completely risk-free lending they can influence the behaviour of the management team so as to reduce the risk of default. The lenders' risk can be further reduced by obtaining guarantees from third parties (for example guaranteed loan stock). The guarantor is typically the parent company of the issuer.

Despite a raft of safeguards the fact that bondholders are still exposed to some degree of risk was brought home painfully to the bondholders in Barings Bank in 1996. They had lent £100m on the understanding that the money would be used for standard merchant banking activities. When they lost their entire investment due to the extraordinary activities of Nick Leeson in the derivatives markets their response was to issue writs for compensation from three stockbrokers and a dozen former Barings directors, claiming that misleading information was given about Barings' business when in January 1994 the bond issue was launched.

Repayments

The principal on many bonds is paid entirely at maturity. However, there are bonds which can be repaid before the final redemption date. One way of paying for redemption is to set up a sinking fund that receives regular sums from the firm which will be sufficient, with added interest, to redeem the bonds. A common approach is for the company to issue bonds where it has a range of dates for redemption; so a bond dated 2012-2016 would allow a company the flexibility to repay a part of the principal in cash over four years. Another way of redeeming bonds is for the issuing firm to buy the outstanding bonds by offering the holder a sum higher than or equal to the amount originally paid. A firm is also able to purchase bonds on the open market.

Some bonds are described as 'irredeemable' as they have no fixed redemption date. From the investor's viewpoint they may be irredeemable but the firm has the option of repurchase and can effectively redeem the bonds.

Bond variations

Bonds which are sold at well below the par value are called deep discounted bonds, the most extreme form of which is the zero coupon bond. It is easy to calculate the rate of return offered to an investor on this type of bond. For example, if a company issues a bond at a price of £60 which is redeemable at £100 in eight years the annualised rate of return (r) is:

$$60(1 + r)^8 = 100$$

$$r = \frac{100 - 60}{60} = 0.066 \text{ or } 6.6\%$$

These bonds are particularly useful for firms with low cash flows in the near term, for

example firms engaged in a major property development which will not mature for many years.

A major market has developed over the past two decades called the floating-rate note (FRN) market (also called the variable-rate note market). Two factors have led to the rapid growth in FRN usage. First, the oscillating and unpredictable inflation of the 1970s and early 1980s caused many investors to make large real-term losses on fixed rate bonds as the interest rate fell below the inflation rate. As a result many lenders became reluctant to lend at fixed rates on a long-term basis. This reluctance led to floaters being cheaper for the issuer because it does not need to offer an interest premium to compensate the investor for being locked into a fixed rate. Secondly, a number of corporations, especially financial institutions, hold assets which give a return that varies with the short-term interest rate level (for example bank loans and overdrafts) and so prefer to have a similar floating-rate liability. These instruments pay an interest that is linked to a benchmark rate - such as the LIBOR (London Inter-Bank Offered Rate - the rate that banks charge each other for borrowed funds). The issuer will pay, say, 70 basis points (0.7 of a percentage point) over six-month LIBOR. The coupon is set for (say) the first six months at the time of issue, after which it is adjusted every six months; so if LIBOR was 10 per cent, the FRN would pay 10.7 per cent for that particular six months.

There are many other variations on the basic vanilla bond, two of which will be examined later - high-yield bonds and convertible bonds. We now turn to another major source of long-term debt capital - bank borrowing.

3.1 Bank borrowing

An alternative to going to the capital markets to raise money via a public bond issue or a private bond placement is to borrow directly from a bank. In this case a tradable security is not issued. The bank makes the loan from its own resources and over time the borrowing company repays the bank with interest. Borrowing from banks is attractive to companies for the following reasons.

- **Administrative and legal costs are low:** Because the loan arises from direct negotiation between borrower and lender there is an avoidance of the marketing, arrangement, regulatory and underwriting expenses involved in a bond issue.
- **Quick:** The key provisions of a bank loan can be worked out speedily and the funding facility can be in place within a matter of hours.
- **Flexibility:** If the economic circumstances facing the firm should change during the life of the loan banks are generally better equipped - and are more willing - to alter the terms of the lending agreement than bondholders. Negotiating with a single lender in a crisis has distinct advantages.
- **Available to small firms:** Bank loans are available to firms of almost any size whereas the bond market is for the big players only.

Factors for a firm to consider

There are a number of issues a firm needs to address when considering bank borrowing.

Costs: The borrower may be required to pay an arrangement fee, say 1 per cent of the loan, at the time of the initial lending, but this is subject to negotiation and may be bargained down. The interest rate can be either fixed or floating. If it is floating then the rate will generally be a certain percentage above the banks' base rate. For customers in a good bargaining position this may be 1 or 2 per cent 'over base'. For customers in a poorer bargaining position offering a higher-risk proposal the rate could be 5 per cent or more over the base rate. The interest rate will be determined not only by the riskiness of the

undertaking and the bargaining strength of the customer but also by the degree of security for the loan and the size of loan economies of scale in lending mean that large borrowers pay a lower interest rate. A generation ago it would have been more normal to negotiate fixed-rate loans but sharp movements of interest rates in the 1970s and 1980s meant that banks and borrowers were less willing to make this type of long-term commitment. Most loans today are 'variable rate'.

Floating-rate borrowings have advantages for the firm over fixed-rate borrowings:

- If interest rates fall the cost of the loan falls.
- At the time of arrangement fixed rates are usually above floating rates (to allow for lenders' risk of misforecasting future interest rates).
- Returns on the firm's assets may go up at times of higher interest rates and fall at times of lower interest rates, therefore the risk of higher rates is offset.

However floating rates have some disadvantages:

- The firm may be caught out by a rise in interest rates.
- There will be uncertainty about the precise cash outflow impact of the interest. Firms need to plan ahead; in particular, they need to estimate amounts of cash coming in and flowing out, not least so that they can pay bills on time. Fixed rates contribute to greater certainty on cash flows.

Security

When banks are considering the provision of debt finance for a firm they will be concerned about the borrower's competence and honesty. They need to evaluate the proposed project and assess the degree of managerial commitment to its success. The firm will have to explain why the funds are needed and provide detailed cash forecasts covering the period of the loan. Between the bank and the firm stands the classic gulf called 'asymmetric information' in which one party in the negotiation is ignorant of, or cannot observe, some of the information which is essential to the contracting and decision-making process. The bank is unable to assess accurately the ability and determination of the managerial team and will not have a complete understanding of the market environment in which they propose to operate. Companies may overcome bank uncertainty to some degree by providing as much information as possible at the outset and keeping the bank informed of the firm's position as the project progresses.

The finance director and managing director need to consider both the quantity and quality of information flows to the bank. An improved flow of information can lead to a better and more supportive relationship. Firms with significant bank financing requirements to fund growth will be well advised to cultivate and strengthen understanding and rapport with their bank(s). The time to lay the foundations for subsequent borrowing is when the business does not need the money, so that when loans are required there is a reasonable chance of being able to borrow the amount needed on acceptable terms.

Another way for a bank to reduce its risk is to ensure that the firm offers sufficient collateral for the loan. Collateral provides a means of recovering all or the majority of the bank's investment should the firm fail. If the firm is unable to meet its loan obligations then holders of fixed-charge collateral can seize the specific asset used to back the loan. Also, on liquidation, the proceeds of selling assets will go first to the secured loan holders, including floating-charge bank lenders. Collateral can include stocks, debtors and equipment as well as land, buildings and marketable investments such as shares in other companies. In theory banks often have this strong right to seize assets or begin proceedings to liquidate. In practice they are reluctant to use these powers because the realisation of full value from an asset used as security is sometimes difficult and such Draconian action can bring adverse publicity. Banks are careful to create a margin for

error in the assignment of sufficient collateral to cover the loan because, in the event of default, assigned assets usually command a much lower price than their value to the company as a going concern. A quick sale at auction produces bargains for the buyers of liquidated assets and usually little for the creditors.

Another safety feature applied by banks is the requirement that the firm abide by a number of loan covenants which place restrictions on managerial action in a similar fashion to bond covenants (*see* section on bonds earlier in this unit).

Finally, lenders can turn to the directors of the firm to provide additional security. They might be asked to sign personal guarantees that the firm will not default.

Personal assets (such as homes) may be used as collateral. This erodes the principle of limited liability status and is likely to inhibit risk-taking productive activity. However for many smaller firms it is the only way of securing a loan and at least it demonstrates the commitment of the director to the success of the enterprise.

Repayment

A firm must carefully consider the period of the loan and the repayment schedules in the light of its future cash flows. It could be disastrous, for instance, for a firm engaging in a capital project which involved large outlays for the next five years followed by cash inflows thereafter to have a bank loan which required significant interest and principal payments in the near term. For situations like these repayment holidays or grace periods may be granted, with the majority of the repayment being made once cash flows are sufficiently positive.

It may be possible for a company to arrange a mortgage-style repayment schedule in which monthly payments from the borrower to the lender are constant throughout the term.

A term loan is a business loan with an original maturity of more than one year and a specified schedule of principal and interest payments. It may not be secured and has the advantage over the overdraft of not being repayable at the demand of the bank at short notice. The terms of the loan are usually tailored to the specific needs of the individual borrower and these are capable of wide variation. A proportion of the interest and the principal can be repaid monthly or annually and can be varied to correspond with the borrower's cash flows. It is rare for there to be no repayment of the principal during the life of the loan but it is possible to request that the bulk of the principal is paid in the later years. Banks generally prefer self-amortising term loans with a high proportion of the principal paid off each year. This has the advantage of reducing risk by imposing a programme of debt reduction on the borrowing firm.

The repayment schedule agreed between bank and borrower is capable of infinite variety. The retail and investment banks are not the only sources of long-term loans. Insurance companies and other specialist institutions such as 3i will also provide long-term debt finance.

3.3 Syndicated loans

For large loans a single bank may not be able or willing to lend the whole amount. To do so would be to expose the bank to an unacceptable risk of failure on the part of one of its borrowers. Bankers like to spread their lending to gain the risk-reducing benefits of diversification. They prefer to participate in a number of syndicated loans in which a few banks each contribute a portion of the overall loan. So, for a large multinational company loan of, say, N500m, a single bank may provide N30m, with perhaps 100 other banks contributing the remainder. The bank originating the loan will usually manage the syndicate and is called the lead manager (there might be one or more lead banks). This bank (or these banks) may invite a handful of other banks to co-manage the loan who

then persuade other banks to supply much of the funding. That is, they help the process of forming the syndicate group of banks in the general syndication. The managing bank also underwrites much of the loan while inviting other banks to underwrite the rest - that is, guaranteeing to provide the funds if other banks do not step forward. Syndicated loans are available at short notice and can be provided discreetly (helpful if the money is to finance a merger bid, for example). Syndicated loans generally offer lower returns than bonds, but as they rank above most bonds on liquidation payouts there is less risk. The loans carry covenants similar to those on bond agreements. The volume of new international syndicated loans now runs into hundreds of billions of pounds per year.

3.4 Credit rating

Firms often pay to have their bonds and other loans rated by specialist credit-rating organisations. The debt rating depends on the likelihood of payments of interest and/or capital not being paid (that is, default) and on the extent to which the lender is protected in the event of a default by the loan contract (the recoverability of the debt). UK government gilts have an insignificant risk of default whereas unsecured subordinated corporate loan stock has a much higher risk. We would expect that firms in stable industries and with conservative accounting and financing policies and a risk averse business strategy would have a low risk of default and therefore a high credit rating. Companies with a high total debt burden, a poor cash flow position, in a worsening market environment causing lower and more volatile earnings, will have a high default risk and a low credit rating. The leading organisations providing credit ratings are Moody's, Standard & Poor's (S&P) and Fitch. The highest rating is AAA or Aaa (triple-A rated). Such a rating indicates very high quality. The capacity to repay interest and principal is extremely strong. Single A indicates a strong capacity to pay interest and capital but there is some degree of susceptibility to impairment as economic events unfold. BBB indicates adequate debt service capacity but vulnerability to adverse economic conditions or changing circumstances. Bond C rated debt has predominantly speculative characteristics. The lowest is D which indicates the firm is in default. Ratings of BBB- (or Baa3 for Moody's) or above are regarded as 'investment grade' - this is important because many institutional investors are permitted to invest in investment grade bonds only (*see* Exhibit 11.6). Bonds rated below this are called high-yield (or junk) bonds. The specific loan is rated rather than the borrower. If the loan does not have a rating it could be that the borrower has not paid for one, rather than implying anything sinister, the rating and re-rating of bonds is followed with great interest by borrowers and lenders and can give rise to some heated argument. Credit ratings are of great concern to the borrowing corporation because bonds with lower ratings tend to have higher costs. The exhibit also shows the proportion of bonds in each credit rating category defaulting over a five-year period. Those rated below investment grade have a much higher probability of default. Those rated CCC have a worse than 50:50 chance of default.

When examining data on default rates it is important to appreciate that default is a wide-ranging term, and could refer to any number of events from a missed payment to bankruptcy. For some of these events all is lost from the investor's perspective. For other events a very high percentage, if not all, of the interest and principal is recovered. Hickman (1958) observed that defaulted publicly held and traded bonds tended to sell for 40 cents on the dollar. This average recovery rate rule-of-thumb seems to have held over time. Standard & Poor's published a study of the recovery rates on defaulted bond issues in 1999. They obtained prices of defaulted bonds at the end of the default month for 533 S&P-rated straight debt issues that defaulted between 1 January 1981 and 1 December 1997. Roughly, investors who liquidate a position in defaulted subordinated securities shortly after default can expect to recover, on average, 36-37 cents in the dollar.

Exhibit 11.6 A comparison of Moody's and Standard & Poor's rating scales

Standard & Poor's	Moody's	Grades	
AAA	Aaa	Prime, maximum safety	
AA+	Aa1	High grade, high quality	
AA	Aa2		
AA-	Aa3		
A+	A1	Upper medium	
A	A2		
A-	A3		
BBB+	Baa1	Lower medium	
BBB	Baa2		
BBB-	Baa3		
BB+	Ba1	Speculative	
BB	Ba2		
BB-	Ba3		
B+	B1	Highly speculative	
B	B2		
B-	B3		
CCC+	Caa1	Substantial risk	
CCC	Caa2	In poor standing	
CCC-	Caa3		
CC	Ca	Extremely speculative	
C	C	May be in default	
D		Default	

3.5 Mezzanine debt and high-yield (junk) bonds

Mezzanine debt is debt offering a high return with a high risk. It may be either unsecured or secured but ranking behind senior loans for payment of interest and capital. This type of debt generally offers interest rates two to nine percentage points more than that on senior debt and frequently gives the lenders some right to a share in equity values should the firm perform well. It is a kind of hybrid finance ranking for payment below straight debt but above equity - it is thus described alternatively as subordinated, intermediate or low grade. One of the major attractions of this form of finance for the investor is that it often comes with equity warrants or share options attached which can be used to obtain shares in the firm - this is known as an 'equity kicker'. These may be triggered by an event such as the firm joining the stock market.

Mezzanine finance tends to be used when bank borrowing limits are reached and the firm cannot or will not issue more equity. The finance it provides is cheaper (in terms of required return) than would be available on the equity market and it allows the owners of a business to raise large sums of money without sacrificing control. It is a form of finance which permits the firm to move beyond what is normally considered acceptable debt: equity ratios (gearing or leverage levels).

Bonds with high-risk and high-return characteristics are called high-yield (junk) bonds (they are rated below investment grade by rating agencies with ratings of Bs and Cs). These may be bonds which started as apparently safe investments but have now become riskier ('fallen angels') or they may be bonds issued specifically to provide higher-risk finance instruments for investors. This latter type began its rise to prominence in the USA in the 1980s. This money has been used to spectacular effect in corporate America - the most outstanding event was the \$25bn takeover of RJR Nabisco using primarily junk

bonds. The rise of the US junk bond market meant that no business was safe from the threat of takeover, however large.

The high-yield bond is much more popular in the USA than in Europe because of the aversion (constrained by legislation) to such instruments in the major financial institutions. The European high-yield bond market is in its infancy. The first high-yield bonds denominated in European currencies were issued as recently as 1997 when Geberit, a Swiss/UK manufacturer, raised DM 157.5m by selling 10-year bonds offering an interest rate which was 423 basis points (4.23 per cent) higher than the interest rate on a 10-year German government bond (bund). Since then there have been over 100 issues. Nevertheless the European high-yield market remains about one-tenth the size of the US one but it is growing rapidly has been a rapid growth in mezzanine finance. This is usually a private form of debt (e.g. loan), rather than a publicly traded bond form of debt. However mezzanine notes are sometimes issued which are tradable in a secondary market. Mezzanine finance has proved to be particularly useful to managers involved in a man Even though the high-yield bond market has not developed as strongly on this side of the Atlantic there has been a rapid growth in mezzanine finance. This is usually a private form of debt (e.g. loan), rather than a publicly traded bond form of debt. However, mezzanine finance has proved to be particularly useful to managers involved in management buyout (MBO) which by necessity requires high levels of debt, that is, leverage, buyouts (LBOs). A typical LBO would have a financial structure as follows:

- 60 per cent from senior bank or other debt providers;
- 25-30 per cent from subordinated debt - for example, mezzanine finance, unsecured low-ranking bonds and/or preference shares;
- 10-15 per cent equity.

Fast-growing companies also make use of mezzanine finance. It has proved a particularly attractive source for cable television companies, telecommunications and some media businesses which require large investments in the near term but also offer a relatively stable profits flow in the long term.

Mezzanine financing has been employed, not only by firms 'gearing themselves up' to finance merger activity, but also for leveraged recapitalisations. For instance, a firm might have run into trouble, defaulted and its assets are now under the control of a group of creditors, including bankers and bondholders. One way to allow the business to continue would be to persuade the creditors to accept alternative financial securities in place of their debt securities to bring the leverage (financial gearing) to a reasonable level. They might be prepared to accept a mixture of shares and mezzanine finance.

The

mezzanine instruments permit the holders to receive high interest rates in recognition of the riskiness of the firm, and they open up the possibility of an exceptionally high return from warrants or share options should the firm get back to a growth path. The alternative for the lenders may be a return of only a few pence in the pound from the immediate liquidation of the firm's assets.

Mezzanine finance and high debt levels impose a high fixed cost on the firm and can be a dangerous way of financing expansion and therefore have their critics. On the other hand, some commentators have praised the way in which high gearing and large annual interest payments have focused the minds of managers and engendered extraordinary performance. Also, without this finance, many takeovers, buyouts and financial restructurings would not take place.

Financing a leveraged buyout

If the anticipated cash flows are reasonably stable then a highly leveraged buyout may

give an exceptional return to the shareholders. Take the case of Sparrow, a subsidiary of Hawk plc. The managers have agreed a buyout price of £10m, equal to Sparrow's assets. They are able to raise £1m from their own resources to put into equity capital and have borrowed £9m. The debt pays an interest rate of 14 per cent and the corporate tax rate is 25 per cent (payable one year after year-end). Profits before interest and tax in the first year after the buyout are expected to be £1.5m and will grow at 25 per cent per annum thereafter. All earnings will be retained within the business to payoff debt.

In the first few years the debt burden absorbs a large proportion of the rapidly increasing profits. However it only takes six years for the entire debt to be retired. The shareholders then own a business with assets of over £10m, an increase of over tenfold on their original investment. The business is also producing a large annual profit which could make a stock market flotation attractive, in which case the value of the shares held by the management will probably be worth much more than £10m.

3.6 Convertible bonds

Convertible bonds carry a rate of interest in the same way as vanilla bonds, but they also give the holder the right to exchange the bonds at some stage in the future into ordinary shares according to some prearranged formula. The owner of these bonds is not obliged to exercise this right of conversion and so the bond may continue until redemption as an interest-bearing instrument. Usually the conversion price is 10-30 per cent greater than the existing share price. So if a N100 bond offered the right to convert to 40 ordinary shares the conversion price would be N2.50 (that is, N100/40) which, given the current market price of the shares of, say, N2.20, would be a conversion premium of:

$$\frac{2.50 - 2.20}{2.20} = 0.136 \text{ or } 13.6\%$$

2.20

In a rising stock market it is reasonable to suppose that most convertible bonds issued with a small conversion premium will be converted to shares. However this is not always the case. Northern Foods (with the brand names Express Dairies, Eden Vale, Fox's Biscuits, Palethorpe Sausages, Pork Farms and Bowyers) issued convertible bonds in February 1993. The issue raised N91.28m. The bonds were to be redeemed in 15 years if they had not been converted before this and were priced at a par value of N100. The coupon was set at 6.75 per cent and the conversion price was at 326k per share. From this information we can calculate the conversion ratio:

$$\text{Conversion ratio} = \frac{\text{Nominal (par) value of bond}}{\text{Conversion price}} = \frac{N100}{N3.26} = 30.67 \text{ shares}$$

Each bond carries the right to convert to 30.67 shares, which is equivalent to paying 326k for each share at the N100 par value of the bond.

The conversion price was set at a premium of 18.11 per cent over the ordinary share price at the time of pricing which was 276k ($(326 - 276)/276 = 18.11\%$). At the time of the issue many investors may have looked at the low interest rate on the convertible (for 15-year bonds in 1993 6.75 per cent was low) and said to themselves that although this was greater than the dividend yield on shares (4-5 per cent) it was less than that on conventional bonds, but offsetting this was the prospect of capital gains made by converting the bonds into shares. If the shares rose to, say, N4, each N100 bond could be converted to 30.67 shares worth $30.67 \times N4 = N122.68$. Unfortunately the share price by 2005 had fallen to about N1.58 and so the conversion right had not gained any intrinsic value - perhaps by the year 2008 it will be worthwhile exchanging the bonds for shares. In the meantime the investors at least have the

comfort of a N6.75 coupon every year.

The value of a convertible bond (also called an 'equity-linked bond') rises as the value of ordinary shares increases but at a lower percentage rate. If the share price rises

Exhibit 11.12 Summary of convertible bond technical jargon

- Conversion ratio This gives the number of ordinary shares into which a convertible bond may be converted:

$$\text{Conversion ratio} = \frac{\text{Nominal (par) value of bond}}{\text{Conversion price}}$$

- Conversion price This gives the price of each ordinary share obtainable by exchanging a convertible bond:

$$\text{Conversion price} = \frac{\text{Nominal (par) value of bond}}{\text{Number of shares into which bond may be converted}}$$

- Conversion premium This gives the difference between the conversion price and the market share price, expressed as a percentage:

$$\text{Conversion premium} = \frac{\text{Conversion price} - \text{Market share price}}{\text{Market share price}} \times 100$$

- Conversion value This is the value of a convertible bond if it were converted into ordinary shares at the current share price:

$$\text{Conversion value} = \text{Current share price} \times \text{Conversion ratio}$$

above the conversion price the investor may exercise the option to convert if he/she anticipates that the share price will at least be maintained and the dividend yield is higher than the convertible bond yield. If the share price rise is seen to be temporary the investor may wish to hold on to the bond.

3.7 Valuing bonds

Bonds, particularly those which are traded in secondary markets such as the London Stock Exchange, are priced according to supply and demand. The main influences on the price of a bond will be the general level of interest rates for securities of that risk level and maturity. If the coupon is less than the current interest rate the bond will trade at less than the par value of N100. Take the case of an irredeemable bond with an annual coupon of 8 per cent. This financial asset offers to any potential purchaser a regular N8 per year for ever (i.e. 8 per cent of the par value of N100). When the bond was first issued general interest rates for this risk class may well have been 8 per cent and so the bond may have been sold at N100. However interest rates change over time. Suppose that the rate demanded by investors is now 10 per cent. Investors will no longer be willing to pay N100 for an instrument that yields N8 per year. The current market value of the bond will fall to N80 ($N8/0.10$) because this is the maximum amount needed to pay for similar bonds given the current interest rate of 10 per cent. If the coupon is more than the current market interest rate the market price of the bond will be greater than the nominal (par) value. Thus if market rates are 6 per cent the irredeemable bond will be priced at N133.33 ($N8/0.06$).

The formula relating the price of an irredeemable bond, the coupon and the market rate of

interest is:

$$PD \equiv i$$

$$kD$$

where $P D$ = price of bond

i = nominal annual interest (the coupon rate x nominal (par) value of the bond)

kD = market discount rate, annual) return required on similar bonds

Also:

$$\frac{I}{VD} = kD$$

where $V D$ = total market value of all of the bonds of this type

I = total annual nominal interest of all the bonds of this type

We may wish to establish the market rate of interest represented by the market price of the bond. For example, if an irredeemable bond offers an annual coupon of 9.5 per cent and is currently trading at N87.50, with the next coupon due in one year, the rate of return is:

$$\frac{KD}{PD} = \frac{i}{1 + kD}$$

$$87.5 = \frac{9.5}{1 + 0.1086} = 0.1086 \text{ or } 10.86\%$$

Redeemable bonds

A purchaser of a redeemable bond buys two types of income promise: first the coupon, second the redemption payment. The amount that an investor will pay depends on the amount these income flows are worth when discounted at the rate of return required on that risk class of debt. The relationships are expressed in the following formulae:

$$PD = 1 + kD (1 + kD)2 \quad (1 + kD)3 \quad (1 + kD)n$$

and:

$$1 + kD (1 + kD)2 \quad (1 + kD)3 \quad (1 + kD)n$$

where i_1, i_2 and i_3 = nominal interest per bond in years 1,2 and 3 up to n years

= total nominal interest in years 1,2 and 3 up to n years

= redemption value of a bond, and total redemption of all bonds in year n , the redemption or maturity date

To calculate the rate of return demanded by investors from a particular bond we can compute the internal rate of return. For example Bluebird plc issued a bond many years ago which is due for redemption at par of £100 in three years. The coupon is 6 per cent and the market price is £91. The rate of return now offered in the market by this bond is found by solving for $k D$:

$$PD = \frac{i1}{1 + kD} + \frac{i2}{(1 + kD)^2} + \frac{Rn + i3}{(1 + kD)^3}$$

$$91 = \frac{6}{1 + kD} + \frac{6}{(1 + kD)^2} + \frac{6}{(1 + kD)^3}$$

To solve this requires the skills learned in calculating internal rates of return. At an interest rate (kD) of 9 per cent, the right side of the equation amounts to £92.41. At an interest rate of 10 per cent the right-hand side of the equation amounts to £90.05. Using linear interpolation:

Interest rate

Value of discounted cash flows 9% :£92.41 £91 10% £90.05

$$k = 9\% + \frac{92.41 - 91}{92.41 - 90.05} \times (10 - 9) = 9.6\%$$

The two types of interest yield

There are two types of yield for fixed-interest securities. The *interest yield* (also known as the flat yield, income yield and running yield) is the gross (before tax) interest amount divided by the current market price of the bond expressed as a percentage:

$$\frac{\text{Gross interest (coupon)}}{\text{Market price}} \times 100$$

Thus for a holder of Bluebird's bonds the interest yield is:

$$\frac{\text{£6}}{\text{£91}} \times 100 = 6.59\%$$

This is a gross yield. The after-tax yield will be influenced by the investor's tax position.

Net interest yield = Gross yield $(1 - T)$,

where T = the tax rate applicable to the bondholder

This is not the true rate of return available to the investor because we have failed to take into account the capital gain over three years to the expiry of the bond.

At a time when interest rates are higher than 6.59 per cent it is obvious that any potential purchaser of Bluebird bonds in the market will be looking for a return other than from the coupon. That additional return comes in the form of a capital gain over three years of N100 - N91. A rough estimate of this annual gain is $(9/91) + 3 = 3.3$ per cent per year. When this is added to the interest yield we have an approximation to the second type of yield, the yield to maturity (also called the redemption yield). The yield to maturity of a bond is the discount rate such that the present value of all the cash inflows from the bond (interest plus principal) is equal to the bond's current market price. The rough estimate of 9.89 per cent ($6.59\% + 3.3\%$) has not taken into account the precise timing of the investor's income flows. When this is adjusted for, the yield to maturity is 9.6 per cent - the internal rate of return calculated above. Thus the yield to maturity includes both coupon payments and the capital gain or loss on maturity.

In the Financial Times bond tables the column headed 'bid yield' is the yield to maturity given the current bid price (traders quote bid and offer prices, the bid is the price at which market makers will buy from investors, the offer price is what an investor would pay to buy).

Semi-annual interest

The example of Bluebird given above is based on the assumption of annual interest payments. This makes initial understanding easier and reflects the reality for many types of bond, particularly internationally traded bonds. However UK companies usually issue domestic sterling bonds with semi-annual interest payments. A bond offering a coupon of 9 per cent would pay £4.50 half-way through the year and the remainder at the end. The rate of return calculation on these bonds is slightly more complicated. For example Redwing plc has an 11 per cent bond outstanding which pays interest semi-annually. It will be redeemed in two years at £100 and has a current market price of £96, with the next interest payment due in six months. The redemption yield on this bond is calculated as follows:

Cash flows

Point in time (years) Cash flow 0.5 £5.5 1 £5.5 1.5 £5.5 2.0 £5.5 2.0 £100

The nominal interest rate over a six-month period is 5.5 per cent (11 %/2):

$$96 = \frac{5.50}{1 + kd/2} + \frac{5.50}{(1 + kd/2)^2} + \frac{5.50}{(1 + kd/2)^3} + \frac{5.50}{(1 + kd/2)^4} + \dots$$

At a rate of 6 per cent for $kd/2$ the right-hand side equals:

$$\begin{aligned} 5.50 \times 4\text{-period annuity } @ 6\% &= 5.50 \times 3.4651 = 100 \text{ plus } (1 + 0.06)^4 & 19.058 & \underline{79.209} \\ &\underline{\$98.267} \end{aligned}$$

At a $kd/2$ the right-hand side equals rate of 7 per cent for

$$\begin{aligned} 5.50 \times 4\text{-period annuity } @ 7\% &= 5.50 \times 3.3872 = (1 + 0.07)^4 \text{ plus } 100 & 18.630 \\ &\underline{76.290} \\ &\underline{\$94.920} \end{aligned}$$

The IRR of the cash flow equals:

$$\begin{aligned} 6\% + \underline{98.267 - 96} \\ 98.267 - 94.92 \times (7 - 6) = 6.68\% \end{aligned}$$

The IRR needs to be converted from a half-yearly cash flow basis to an annual basis:

$$(1 + 0.0668)^2 - 1 = 0.1381 \text{ or } 13.81\%$$

3.8

International sources of debt finance

Larger and more creditworthy companies have access to a wider array of finance than small firms. These companies can tap the Euromarkets which are informal (unregulated) markets in money held outside its country of origin. For example there is a large market in Eurodollars. These are dollar credits (loans) and deposits managed by a bank not

resident in the USA. This has the distinct advantage of transactions not being subject to supervision and regulation by the authorities in the USA. So, for example, an Italian firm can borrow dollars from a Spanish bank in the UK and the US regulatory authorities have no control over the transaction. There is a vast quantity of dollars held outside the USA and this money is put to use by borrowers. The same applies to all the major currencies - the money is lent and borrowed outside its home base and therefore is beyond the reach of the domestic regulators. Today it is not unusual to find an individual holding a dollar account at a UK bank - a Euro-deposit account - which pays interest in dollars linked to general dollar rates. This money can be lent to firms wishing to borrow in Eurodollars prepared to pay interest and capital repayments in dollars. There are large markets in Euro Swiss Francs, Euro-sterling, Euro-yen and many other currencies. The title 'Euro' is misleading as this market is not limited to the European currencies or European banks (and is unconnected with the European single currency, the euro). The title came about because the modern market was started when the former Soviet Union transferred dollars from New York to a French bank at the height of the cold war in 1957. The cable address happened to be EUROBANK. This was long before the currency called the euro was conceived. Nowadays, there is daily Euro-securities business transacted in all of the major financial centres. To add a little precision: 'Eurocurrency' is short-term (less than one year) deposits and loans outside the jurisdiction of the country in whose currency the deposit/loan is denominated; 'Euro-credit' is used for the market in medium- and long-term loans in the Euromarkets.

The companies which are large enough to use the Euro-securities markets are able to put themselves at a competitive advantage *vis-a-vis* smaller firms. There are at least four advantages:

- The finance available in these markets can be at a lower cost in both transaction costs and rates of return.
- There are fewer rules and regulations such as needing to obtain official authorisation to issue or needing to or needing to queue to issue, leading to speed, innovation and lower costs.
- There may be the ability to hedge foreign currency movements. For example, if a firm has assets denominated in a foreign currency it can be advantageous to also have liabilities in that same currency to reduce the adverse impact of exchange-rate movements.
- National markets are often not able to provide the same volume of finance. The borrowing needs of some firms are simply too large for their domestic markets to supply. To avoid being hampered in expansion plans large firms can turn to the international market in finance.

For these international firms there are three sources of debt finance:

- a. the domestic or national market;
- b. the financial markets of other countries which make themselves open to foreign firms - the foreign debt market;
- c. the Euro-securities market which is not based in anyone country and is not therefore regulated by any country.

3.9 Project finance

A typical project finance deal is created by an industrial corporation providing some equity capital for a separate legal entity to be formed to build and operate a project, for example an oil pipeline, an electricity power plant. The project finance loan is then provided as bank loans or through bond issues direct to the separate entity. The significant feature is that the loan returns are tied to the cash flows and fortunes of a particular

project rather than being secured against the parent firm's assets. For most ordinary loans the bank looks at the credit standing of the borrower when deciding terms and conditions. For project finance, while the parent companies' credit standing is a factor, the main focus is on the financial prospects of the project itself.

To make use of project finance the project needs to be easily identifiable and separable from the rest of the company's activities so that its cash flows and assets can offer the lenders some separate security. Project finance has been used across the globe to finance power plants, roads, ports, sewage facilities, telecommunications networks and much more.

Project finance has grown rapidly over the last 25 years. Globally, about £50bn is lent in this form per year. A major stimulus has been the development of oil prospects. For the UK, the North Sea provided a number of project finance opportunities. Many of the small companies which developed fields and pipelines would not have been able to participate on the strength of their existing cash flow and balance sheet, but they were able to obtain project finance secured on the oil or fees they would later generate.

There is a spectrum of risk sharing in project finance deals. At one extreme there are projects where the parent firm (or firms) accepts the responsibility of guaranteeing that the lenders will be paid in the event of the project producing insufficient cash flows. This is referred to as recourse finance because the lenders are able to seek the 'help' of the parent. At the other extreme, the lenders accept an agreement whereby, if the project is a failure, they will lose money and have no right of recourse to the parent company. If the project's cash flows are insufficient the lenders only have a claim on the assets of the project itself rather than on the sponsors or developers.

Between these two extremes there might be deals whereby the borrower takes the risk until the completion of the construction phase (for example, provides a completion guarantee) and the lender takes on the risk once the project is in the operational phase. Alternatively, the commercial firm may take some risks such as the risk of cost overruns and the lender takes others such as the risk of a government expropriating the project's assets.

The sums and size of projects are usually large and involve a high degree of complexity and this means high transaction and legal costs. Because of the additional risk to the lenders the interest rates charged tend to be higher than for conventional loans. Whereas a well-known highly creditworthy firm might pay 20 basis points (0.20 per cent) over LIBOR for a 'normal' parent company loan, the project company might have to pay 100 basis points (1 per cent) above LIBOR.

Advantages of project finance

Project finance has a number of advantages

- 1 **Transfer of risk:** By making the project a stand-alone investment with its own financing, the parent can gain if it is successful and is somewhat insulated if it is a failure, in that other assets and cash flows may be protected from the effects of project losses. This may lead to a greater willingness to engage in more risky activities, which may benefit both the firm and society. Of course, this benefit is of limited value if there are strong rights of recourse.
- 2 **Off-balance-sheet financing:** The finance is raised on the project's assets and cash flows and therefore is not recorded as debt in the parent company's balance sheet. This sort of off-balance-sheet financing is seen as a useful 'wheeze' or ploy by some managers - for example, gearing limits can be bypassed. However, experienced lenders and shareholders are not so easily fooled by accounting tricks.
- 3 **Political risk:** If the project is in a country prone to political instability, with a tendency towards an anti-transnational business attitude and acts of appropriation, a more cautious way of proceeding may be to set up an arm's length (separate company)

relationship with some risk being borne by the banking community particularly banks in the host country.

4 Simplifies the banking relationship: In cases where there are a number of parent companies, it can be easier to arrange finance for a separate project entity than to have to deal with each of the parent companies separately.

5 Managerial incentives: Managers of projects may be given an equity stake in the project if it is set up as a separate enterprise. This can lead to high rewards for exceptional performance.

3.10 Sale and leaseback

If a firm owns buildings, land or equipment it may be possible to sell these to another firm (for example a bank, insurance company or specialised leasing firm) simultaneously agree to lease the property back for a stated period under specific terms. The seller receives cash immediately but is still able to use the asset. However the seller has created a regular cash flow liability for itself. A number of retailers have used their extensive property assets for sale and leaseback transactions so that they could plough the proceeds into further expansion.

In a number of countries the tax regime propels sale and leaseback transactions. For example, some property owners are unable to use depreciation and other tax allowances (usually because they do not have sufficient taxable profits). The sale of the asset to an organisation looking to reduce taxable profits through the holding of depreciable assets enables both firms to benefit. Furthermore, the original owner's subsequent lease payments are tax deductible.

A further advantage is thought to be the efficiency boost sale and leaseback gives to the firm because managers are made more aware of the value of the assets used in the business.

A sale and leaseback has the drawback that the asset is no longer owned by the firm and therefore any capital appreciation has to be forgone. Also long lease arrangements of this kind usually provide for the rental payments to increase at regular intervals, such as every three or five years. Companies sometimes find that the leaseback arrangement eliminates the flexibility to move to cheaper premises. There are other factors limiting the use of sale and leaseback as a financial tool. Leasing can involve complex documentation and large legal fees, which often make it uneconomic to arrange leases for less than £20m. There is also a degree of inflexibility: for example, unwinding the transaction if, say, the borrower wanted to move out of the property can be expensive. Another disadvantage is that the property is no longer available to be offered as security for loans.

3.11 Securitisation

In the strange world of modern finance you sometimes need to ask yourself who ends up with your money when you pay your monthly mortgage, or your credit card bill or the instalment payment on your car. In the old days you would have found that it was the organisation you originally borrowed from and whose name is at the top of the monthly statement. Today you cannot be so sure because there is now a thriving market in repackaged debt. In this market, a mortgage lender, for example, collects together a few thousand mortgage 'claims' it has (the right of the lender to receive regular interest and capital from the borrowers); it then sells those claims in a collective package to other institutions, or participants in the market generally. This permits the replacement of long-term assets with cash (improving liquidity and gearing) which can then be used to generate more mortgages. The borrower is often unaware that the mortgage is no longer owned by the original lender and everything appears as it did before, with the mortgage

company acting as a collecting agent for the buyer of the mortgages. The mortgage company usually raises this cash by selling asset-backed securities (ABS) to other institutions (the 'assets' are the claim on interest and capital) and so this form of finance is often called *asset securitisation*. These asset-backed securities may be bonds sold into a market with many players.

Asset backed securitisation involves the pooling and repackaging of a relatively small, homogeneous and illiquid financial assets into liquid securities.

The sale of the financial claims can be either 'non-recourse', in which case the buyer of the securities from the mortgage firm bears the risk of non-payment by the borrowers, or with recourse to the mortgage lender.

This form of securitisation is regarded as beneficial to the financial system, because it permits banks and other financial institutions to focus on those aspects of the lending process where they have a competitive edge. Some, for example, have a greater competitive advantage in originating loans than in funding them, so they sell the loans they have created, raising cash to originate more loans.

EXERCISES: 1. What are the relative advantage and drawbacks of debt and equity finance.

4.0 CONCLUSION

So far this unit has taken a fairly detailed look at a variety of ways of raising money by selling shares and has examined the main methods of raising funds through long-term debt. The decision to raise equity or debt finance is neither simple nor straightforward. In the next unit we consider a wider array of financial sources and types, from leasing to factoring.

5.0 SUMMARY

Knowledge of these will enable the finance manager or other executives to select and structure the different forms of finance to maximize the firm's potential. Topics covered later draw on the knowledge gained to permit informed discussion of such crucial questions as: What is the appropriate mixture of debt and equity? How is the cost of various forms of finance calculated? How can the risk of certain forms of finance (for example a floating-interest-rate term loan) be reduced?

6.0 REFERENCE

The Financial Times Guild to Investing

Glen Arnold, Great Britain – 2004

Corporate Financial Management

Glen Arnold, Great Britain – 2005

Monetary Economics

B. Julia Beecham, Great Britain - 1990

Question And Answer on Nigeria Money & Capital Market

Adeola A. Kupoluyi, Nigeria -2005

7.0 TUTOR MARKED ASSIGNMENT

1. Blackaby plc issued a bond with a par value of £100 in September 2005, redeemable in September 2011 at par. The coupon is 8 per cent payable annually in September. The facts available from this are:

the bond might have a par value of £100 but this may not be what investors will pay for it;
the annual cash payment will be £8 (8 per cent of par); in September 2011, £100 will be handed over to the bondholder.

Question 1

What is the price investors will pay for this bond at the time of issue if the market rate of interest for a security in this risk class is 7 per cent?

Question 2

What is the bond's value in the secondary market in September 2008 if interest rates rise by 200 basis points (i.e. for this risk class they are 9 per cent) between 2005 and 2008?
(Assume the next coupon payment is in one year.)

UNIT 9

SHORT-TERM AND MEDIUM-TERM FINANCE

1.0 INTRODUCTION

Short-term and medium-term finance is presented in this unit as the third major category of funding. This is not meant to imply that the forms of finance described in this unit are any less important than the first two (equity and long-term debt finance). Indeed, for many firms, especially smaller ones, a combination of overdrafts and loans, trade credit, leasing and hire purchase make up the greater part of the funding needs. Large companies have access to stock markets, bond markets and syndicated loan facilities. These are often closed to the smaller firm, so, in order to achieve their expansion programmes, they turn to the local banks and the finance houses as well as their suppliers for the wherewithal to grow. The giants of the corporate world have access to dozens of different types of finance, but they also value the characteristics, cheapness and flexibility of the forms discussed here.

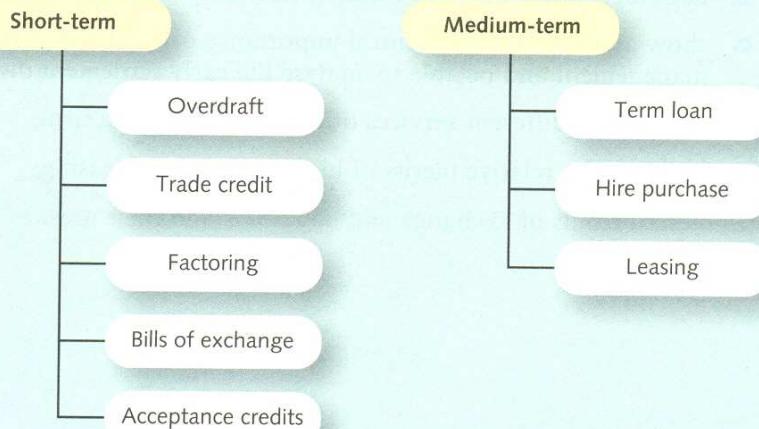
2.0 OBJECTIVES

When you complete this unit, you should be able to explain/identify:

- The bank overdraft and the bank term loan
- The central importance of trade credit and good debtor management and be able to analyse the early settlement discount offer.
- The different services offered by a factoring firm
- The relative merits of hire purchase and leasing
- Bills of exchange and bank bills and their uses.

The definitions of short-term and medium-term finance are not clear-cut. Usually finance which is repayable within a year is regarded as short, whereas that due for repayment between one and seven years is taken to be medium. But these cut-offs are not to be taken too seriously. Quite often an overdraft facility, which is due for repayment in, say, six months or one year, is regularly 'rolled over' and so may become relied upon as a medium- or even long-term source of funds. Leasing, which is usually classified as a medium-term source, can be used for periods of up to 15 years in some circumstances, in others it is possible to lease assets for a period of only a few weeks, for example, a computer or photocopier. The forms of finance we will examine in this unit are listed in **Exhibit 12.1**.

Exhibit 12.1 The main forms of short-term and medium-term finance



3.0 Bank sources

For most companies and individuals banks remain the main source of externally raised finance. Ten years earlier the most common form of bank borrowing was the overdraft facility. As we shall see there has been a remarkable shift, so that now the term loan has come to dominate.

Overdraft

Usually the amount that can be withdrawn from a bank account is limited to the amount put in. However business and other financial activity often requires some flexibility in this principle, and it is often useful to make an arrangement to take more money out of a bank account than it contains - this is an overdraft.

An overdraft is a permit to overdraw on an account up to a stated limit.

Overdraft facilities are usually arranged for a period of a few months or a year and interest is charged on the excess drawings.

Advantages of overdrafts

Overdrafts have the following advantages.

1. Flexibility The borrowing firm is not asked to forecast the precise amount and duration of its borrowing at the outset but has the flexibility to borrow up to a stated limit. Also the borrower is assured that the moment the funds are no longer required they can be quickly and easily repaid without suffering a penalty.
- 2 Cheapness Banks usually charge two to five percentage points over base rate depending on the creditworthiness, security offered and bargaining position of the borrower. There may also be an arrangement fee of, say, 1 per cent of the facility. However, many banks have dropped arrangement fees completely to attract borrowers. These charges may seem high but it must be borne in mind that overdrafts are often loans to smaller and riskier firms which would otherwise have to pay much more for their funds. Large and well-established borrowers with low gearing and plenty of collateral can borrow on overdraft at much more advantageous rates. A major saving comes from the fact that the banks charge interest on only the daily outstanding balance. So, if a firm has large cash inflow one week it can use this to reduce its overdraft, temporarily lowering the interest payable, while retaining the ability to

borrow more another week.

Overdraft interest can also be deducted from income to determine the profits to be subject to tax.

Drawbacks of an overdraft

A major drawback to an overdraft is that the bank retains the right to withdraw the facility at short notice. Thus a heavily indebted firm may receive a letter from the bank insisting that its account be brought to balance within a matter of days. This right lowers the risk to the lender because it can quickly get its money out of a troubled company; this allows it to lower the cost of lending. However it can be devastating for the borrower and so firms are well advised to think through the use to which finance provided by way of an overdraft is put. It is not usually wise to use the money for an asset which cannot be easily liquidated; for example, it could be problematic if an overdraft is used for a bridge-building project which will take three years to come to fruition.

Another major consideration for the borrower is the issue of security. Banks usually take a fixed charge (on a specific asset) or a floating charge ('floats' over the general assets of the firm). Alternatively, or in addition, the bank may require a personal guarantee of the directors or owners of the business.

Conditions of lending

A bank will generally examine the following factors before lending to a firm:

- 1 Cash flow projections A healthy set of projected cash flows will usually be required to show sufficient profitability and liquidity to payoff the overdraft at the end of the agreed period.
- 2 Creditworthiness: This goes beyond examining projected future cash flows and asset backing and considers important factors such as character and talents of the individuals leading the organisation.
- 3 The amount that the borrower is prepared to put into the project or activity, relative to that asked from the bank. If the borrower does not show commitment by putting their money into a scheme banks can get nervous and stand-offish.
- 4 Security The back-up of specific assets or a charge over a large body of general assets will help to reassure a lender that it will be repaid one way or another. Bankers may look at a firm or a project on two levels. First, they might consider a 'liquidation analysis' in which they think about their position in a scenario of bankruptcy. Secondly, they will look at a firm or project on the assumption that it is a 'going concern', where cash flows rather than assets become more important.

Overdrafts are particularly useful for seasonal businesses because the daily debit balance interest charge and the absence of a penalty for early repayment mean that this form of finance can be cheaper than a loan.

The risk of a sudden withdrawal of an overdraft facility for most firms is very slight: banks do not generate goodwill and good publicity by capriciously and lightly cancelling agreed overdrafts. The high street banks came in for strong criticism in the early 1990s: 'In 1993 the best that could be said about the relationship between banks and their small firm customers was that both sides were in a state of armed neutrality'. They were said to have failed to lower interest rates to small firms to the same extent as general base rates, of not supporting start-ups, of having excessive fees, of being too ready to close down a business and being too focused on property-based security backing rather than looking at the cash flows of the proposed activity.

Term loans

A term loan is a loan of a fixed amount for an agreed time and on specified terms. These loans are normally for a period of between three and seven years, but the period can range from one to 20 years. The specified terms will include provisions regarding the repayment schedule. If the borrower is to apply the funds to a project which will not generate income for perhaps the first three years it may be possible to arrange a grace period during which only the interest is paid, with the capital being paid off once the project has a sufficiently positive cash flow. Other arrangements can be made to reflect the pattern of cash flow of the firm or project: for example a 'balloon' payment structure is one when only a small part of the capital is repaid during the main part of the loan period, with the majority repayable as the maturity date approaches. A 'bullet' repayment arrangement takes this one stage further and provides for all the capital to be repaid at the end of the loan term.

Not all term loans are drawn down in a single lump sum at the time of the agreement. In the case of a construction project which needs to keep adding to its borrowing to pay for the different stages of development, an instalment arrangement might be required with, say, 25 per cent of the money being made available immediately, 25 per cent at foundation stage and so on. This has the added attraction to the lender of not committing large sums secured against an asset not yet created. From the borrower's point of view a drawdown arrangement has an advantage over an overdraft in that the lender is committed to providing the finance if the borrower meets prearranged conditions, whereas with an overdraft the lender can withdraw the arrangement at short notice.

The interest charged on term loans can be at either fixed or floating rates. The fixed rate is generally at a higher rate of interest than the floating rate at the time of arrangement because of the additional risk to the lender of being unable to modify rates as an uncertain future unfolds. In addition, the borrower may pay an arrangement fee which will largely depend on the relative bargaining strength of the two parties.

A term loan often has much more accompanying documentation than an overdraft because of the lengthy bank commitment. This will include a set of obligations imposed on the borrowing firm such as information flows to the bank as well as gearing and liquidity ratio constraints. If these financial ratio limits are breached or interest and capital is not paid on the due date the bank has a right of termination, in which case it could decide not to make any more funds available, or, in extreme cases, insist on the repayment of funds already lent. Banks are unlikely to rush into declaring default, seizing assets and liquidating a firm because, even if they take such draconian action, they may not get much of their funds back, and the adverse publicity is a disincentive. Instead they will often try to reschedule or restructure the finance of the business. Usually the bank expects either a fixed or floating charge over the firm's assets and/or guarantees from third parties.

3.1

Trade credit

Perhaps the simplest and the most important source of short-term finance for many firms is trade credit. This means that when goods or services are delivered to a firm for use in its production they are not paid for immediately. These goods and services can then be used to produce income before the invoice has to be paid.

The writer has been involved with a number of small business enterprises, one of which was a small retail business engaged in the selling of crockery and glassware Crocks. Exhibit 12.7 is an example of a real invoice (with a few modifications to hide the identity of the supplier). When we first started buying from this supplier we, as a matter of course, applied for trade credit. We received the usual response, that the supplier requires two references vouching for our trustworthiness from other suppliers that have granted us trade credit in the past, plus a reference from our bankers. Once these confidential

references were accepted by the supplier they granted us normal credit terms for retailers of our type of product, that is, 30 days to pay from the date of delivery. One of the things you learn in business is that agreements of this kind are subject to some flexibility. We found that this supplier does not get too upset if you go over the 30 days and pay around day 60: the supplier will still supply to the business on normal credit terms even if you do this on a regular basis.

Each time supplies were delivered by this firm we had to make a decision about when to pay. Option 1 is to pay on the 14th day to receive 21 per cent discount (see note at the bottom of the invoice). Option 2 is to take 60 days to pay. (Note: with Option 1 the 21 per cent deduction is on the 'nett goods' amount, which is the value of the invoice before value added tax (VAT) is added, that is N217.30.)

Exhibit 12.7 A typical invoice

Supplier XYZ plc

54 West Street, Sussex

Invoice number 501360

Date 29/02/98

Invoice address

Crocks
Melton Mowbray
Leics.
LE13 1XH

Branch address
Crocks®
Grantham
Lincolnshire

INVOICE

Account TO2251	Customer order No. 81535	Sales order TO1537	Carrier	AEP 090	Despatch No. 000067981	Due date 28/03/98	Page 1
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Item	Part code	Description	Unit of sale	Quantity despatched	Unit price	%	Amount	VAT code
1	1398973	Long glass	each	12	0.84	0.00	10.08	0
2	12810357	Tumbler	each	12	0.84	0.00	10.08	0
3	1395731	Plate	each	60	1.10	0.00	66.00	0
4	1258732	Bowls	each	30	4.23	0.00	126.90	0
5	1310102	Cup	each	1	4.24	0.00	4.24	0
VAT 0: 217.30 @ 17.5%								

Note our settlement terms:

2½% discount may be deducted for payment within 14 days of invoice date; otherwise due 30 days strictly nett.

Nett goods	217.30
Charges	0.00
VAT	38.03
	255.33

Option 1

$$N217.30 \times 0.025 = N5.43$$

So, we could knock N5.43 off the bill if we paid it 14 days after delivery. This looks good but we do not yet know whether it is better than the second option.

Option 2

This business had an overdraft, so if we could avoid taking money from the bank account the interest charge would be less. How much interest could be saved by taking an additional 46 days (60 - 14) to pay this invoice? Assuming the annual percentage rate (APR) charged on the overdraft is 10 per cent the daily interest charge is:

$$(1+d)365 = 1+i$$

$$d = \frac{365}{(1+i)} - 1$$

$$= \frac{365}{(1+0.1)} - 1 = 0.00026116$$

where d = daily interest, and i = annual interest

Interest charge for 46 days:

$$(1 + 0.00026116)46 - 1 = 0.01208 \text{ or } 1.208\%$$

If we go for the early settlement discount and pay on day 14 we would have to borrow N255.33 minus the discount of N5.43 over a 46-day period at 10 per cent per annum interest:

$$(255.33 - 5.43) \times 0.01208 = N3.02$$

Thus N3.02 interest is saved by delaying payment to the sixtieth day, compared with a saving of over N5 on the option of paying early.² In this particular case taking extended trade credit is not the cheapest source of finance; it is cheaper to use the overdraft facility. Many suppliers to our business did not offer a discount for early settlement. This gives the impression that trade credit finance is a free source of funds and therefore the logical course of action is to get as much trade credit as possible. The system is therefore open to abuse. However the corrective to that abuse is that a supplier will become tired of dealing with a persistent late payer and will refuse to supply, or will only supply on a basis of payment in advance. Another point to be borne in mind is that gaining a bad reputation in the business community may affect relationships with other suppliers.

Advantages of trade credit

Trade credit has the following advantages.

- 1 Convenient/informal/cheap: Trade credit has become a normal part of business, especially in most product markets.
- 2 Available to companies of any size Small companies, especially fast-growing ones, often have a very limited range of sources of finance to turn to. Banks frequently restrict overdrafts and loans to the asset backing available.

3.2 Trade debtor management

Trade credit is a two-edged sword for businesses. Firms usually benefit from being granted credit by their suppliers but because of the necessity of providing credit to their customers they are burdened with additional costs. To gain a true appreciation of trade credit we need to examine the subject from the other side of the fence and ask: 'What considerations does the credit provider have to take into account?'

Trade debtors are the sales made on credit as yet unpaid.

The management of debtors³ involves a trade-off (see **Exhibit 12.9**). On the one hand, the more generous a company is in allowing its customers to delay payment, the greater the sales. Trade credit as well as offering cheap finance to customers, sends a signal of supplier reputation and financial health. On the other hand, longer credit terms impose costs of financing those goods and services until they are paid for. There may also be a strain on the company's liquidity with a large proportion of the company's assets tied up in debtors (typically one-quarter to one-third of the company's assets are in the form of debtors). In addition there is the risk of the customer defaulting on the payment and there are also the sometimes considerable costs of administering an effective debtor management system.

Exhibit 12.9 The Debtor Trade-off

Gains in Sales	Costs of finance Liquidity risk Risk of default Costs of administration
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The solution to the debtor trade-off is to compare the incremental returns from a more accommodating credit stance with the incremental costs. The following points are relevant in trade credit management.

Credit (debtor) policy

The first issue in the management of trade debtors is to decide whether to grant credit at all. Credit is not inevitable; many businesses, for example service-based organisations, from hairdressers to vehicle repairers, choose not to offer any credit. Some compromise and offer credit on sales above a certain value, say N100. If a firm decides that it is in its best interest to allow delayed payment then it needs to set up a system of rules and guidelines which will amount to a debtor policy.

Assessing credit risk

Granting credit is, in effect, the granting of a loan. It is important to assess the probability of either delayed payment or complete failure to pay. Information to make this judgement can come from a variety of sources. First, the customer's accounts could be examined.

An analysis of the accounts could give some idea of the liquidity and solvency of the customer as well as its trading performance and growth trajectory. If the credit provider does not wish to become involved in the detail of credit checking it could employ a credit reporting agency which uses accounting information combined with knowledge of the problems other companies have had with the customer and special enquiries to rate creditworthiness. In addition to trade references from existing suppliers and bank references the debtor management department could canvass the opinion and impressions of the salespeople. This can be a rich source of anecdotal evidence, as they are the individuals who are most likely to meet the customer in the work environment.

If the customer has been buying from an organisation for some time then that organisation will have a set of records on which to base an assessment of risk. Using this information, and keeping the corporate 'eyes and ears' open in day-to-day dealings for signs of customers experiencing liquidity problems, the supplier can take risk-reducing action early. For example if a customer has gradually increased the length of time between delivery and payment and the sales team report that the customer's shops are looking understocked, the firm might move the customer from 30-day credit period terms to payment on delivery.

Many companies allocate customers to different risk classes and treat each category

differently. Some customers are allowed 60 days, while others are only permitted 10 days. Special discounts are available to some and not to others. Certain small, poorly capitalised companies present particular problems to the supplying firm as it is faced with the difficult choice of whether or not to sell. The first order from a company like this might be valued at only N1,000, the profit on which is only, say, N200. But the supplier has somehow to estimate the lost sales and profits for all future years if it refuses credit on this first purchase. These could mount up to a large present value. In addition, a lost customer will turn to a competitor firm for supplies and assist their expansion. On the other hand, there is a chance that the N1,000 will not be received or may be received months after the due date.

Once customers have been classified into risk categories it is possible to decide whether or not to trade with particular types of firms. For example, suppose that a group of customers have been assessed to have a one in eight probability of not paying:

Sales to these firms	100,000
Less bad debts (118 x 100,000)	<u>-12,500</u>
Income from sales	87,500
Costs of production, distribution, etc.-	<u>80,000</u>
Incremental profit	<u>N7,500</u>

Given the present costs of production and creditworthiness of the customers it is worthwhile selling goods on credit to these firms. However a careful watch will have to be placed on firms of this risk class as their position can deteriorate rapidly.

Assessing credit risk is an area of management which relies less on numerical frameworks than on sound and experienced judgement. There are two rules to bear in mind:

- 1 **Focus effort on the most risky:** Some sales are to large, safe, regular customers with a good reputation for prompt payment. Do not put large resources into monitoring these accounts. Concentrate time and effort on the problematic customers.
- 2 **Accept some risk: it may lead to greater profit:** The minimisation of bad debt is not the key objective. Customers less than perfectly safe may have to be accepted to make sales and generate profit. For example a relatively risky small customer may be granted credit in the hope that one day it will become large and established.

Agreeing terms

Having decided to sell on credit to a particular firm the supplier has to agree the precise details with the customer. This is going to be heavily influenced by the factors discussed earlier: industry tradition, bargaining strength and product type. Firms usually adopt terms which require payment in a number of days from the invoice date or the delivery date (in theory these should be close together). An alternative system requires payment on or before the last day of the month following the date of invoice. Thus goods delivered on 5 August are paid for on 30 September. This approach can lead to almost two months' credit and customers quickly appreciate the advantage of making sure deliveries are made at the start of each month. Payment is usually by means of a cheque, but increasingly direct bank transfers are used, where the customer's bank automatically pays a certain number of days after receiving notification from the supplier.

Customers are generally given credit limits, that is, a maximum amount that can be outstanding at anyone time. For example, suppose a customer has taken delivery of five consignments of goods over a three-week period from one supplier amounting to N2,000, which is equal to its credit limit with that supplier. That firm will be refused any more

deliveries until it has paid off some of its arrears.

Goods are normally sold under a contract whereby the supplier can take repossession should the buyer fail to pay. This has the advantage that the supplier avoids becoming a lowly general creditor of the company and therefore being way down the pecking order in a liquidation. If the goods are perishable the supplier may grant only short credit terms because of the absence of good collateral.

The size of the orders may influence the terms of credit. Customers ordering small quantities are more expensive to manage than those that place large orders and therefore their credit period may be less generous.

Collecting payment

An effective administration system for debtors must be established. The firm needs clearly defined procedures and the customers need to be informed and/or warned that they are expected to conform to certain rules. Some profitable companies go bankrupt because they fail to collect the cash from vital customers to sustain production and satisfy their own creditors. The following list sets out some elements of a good system.

Be strict with the credit limit: Insist on payment for previous orders before dispatching more goods if the credit limit is breached.

Send invoices promptly: Ensure that there is no delay between delivery of the goods and dispatch of the invoice, so that the customer is made aware of the due date for payment as early as possible.

Systematically review debtors: One measure useful in reviewing debtors is the average collection period (ACP) (alternatively called the debtor collection period or debtor days). For example, if a firm has £1.5m of outstanding debtors and an annual turnover of £20m, the average collection period is:

$$\text{Debtors outstanding} = \frac{1,500,000}{\text{Average daily sales}} = 27 \text{ days}$$
$$= \frac{1,500,000}{20,000,000/365}$$

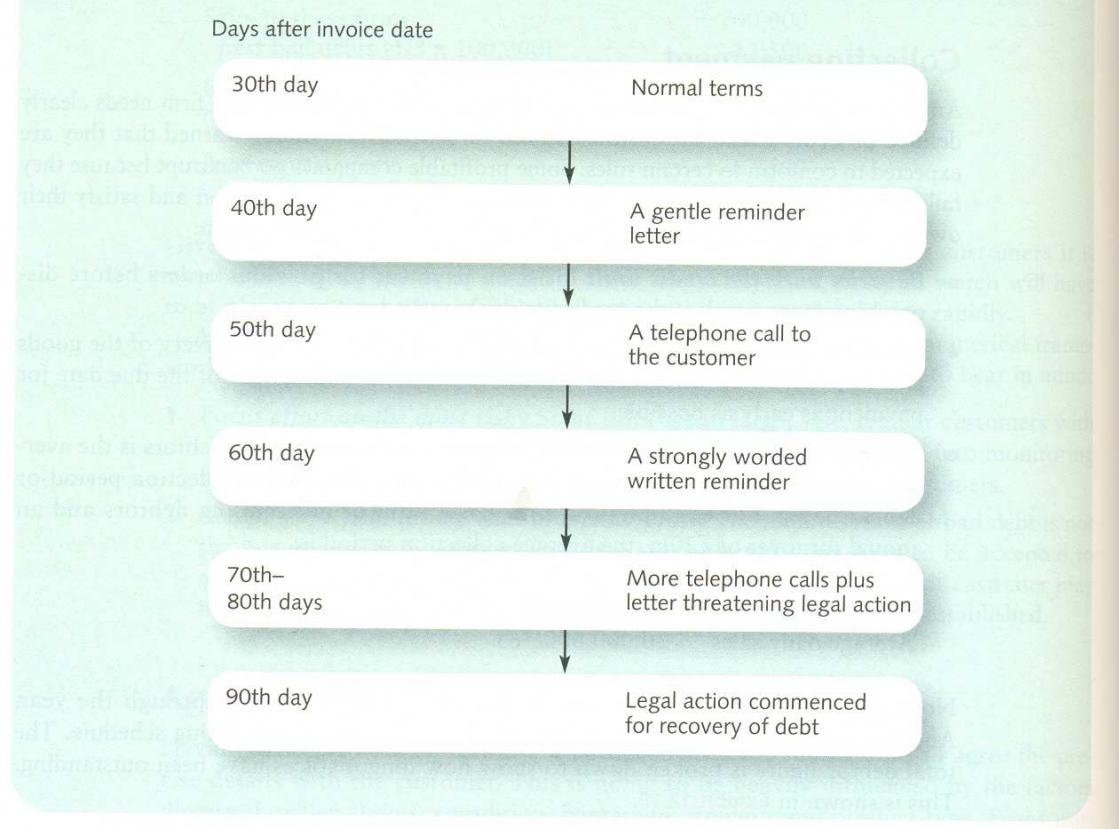
Note that if sales are seasonal the 'acceptable' ACP may vary through the year. Another guide to aid decision making and prompt action is the ageing schedule. The total debtor figure is broken down to show how long invoices have been outstanding. This is shown in Exhibit 12.10.

Exhibit 12.10 An ageing schedule

Period account has been outstanding (days)	Total debtors (%)
0–29	42
30–59	40
60–89	10
90–119	6
120+	2

Slow payers have to be chased: Any good system will call for a response immediately a debtor has failed to pay on time. This does not mean jumping to court action to recover the debt. There will be a sequence of actions before the drastic involvement of lawyers. Exhibit 12.11 shows a typical sequence.

Exhibit 12.11 Stages in payment collection



A balance has to be struck when pressing for payment between the effort, expense and lost goodwill on the one hand and the cost of financing the loan to a customer (and the growing risk of non-payment) on the other. The gain from receiving payment one day earlier is:

$$d = \frac{365}{(1 + i) - 1}$$

where d = daily interest and i = annual cost of capital.

For example, the gain of receiving N100,000 one day earlier when the annual cost of capital is 12 per cent is:

$$d = \frac{365}{(1 + (0.12)) - 1} = 0.000310538 \\ N100,000 \times 0.000310538 = N31.05$$

Cash discounts are used as part of the collecting system due to the benefits they give if they stimulate early settlement. Early settlement reduces the cost of carrying the loan. Also, the longer an account remains unpaid the greater the risk of eventual default, the greater the strain on liquidity and the costs of administering the debtors ledger. The level of discount has to be considered very carefully as the effective cost can be extremely high.

Take the case of a firm that normally collects debts after 40 days which introduces a 3 per cent discount for payment on the tenth day. If customers took advantage of this, the cost on an annual basis would be:

$$\text{Discount over 30 days is: } \frac{3}{100 - 3} = 0.0309278 \text{ or } 3.09\% \text{ for a 30-day period}$$

$$\text{The number of 30-day periods per year is: } \frac{365}{30} = 12.167$$

The annual interest rate is:

$$(1.0309278)12.167 - 1 = 44.9\%$$

The effective cost of the discount is very large and has to be offset against the improved cash flow, lowered bad debt risk, lowered liquidity risk, administration costs and increased sales. The use of the cash discount has been further complicated by the fact that some customers abuse the system and take the discount even if they delay payment beyond the specified time.

Another way of encouraging payment at the contracted time is to make it clear that interest will be charged on overdue accounts. Suppliers are often reluctant to use this method as it has the disadvantage of creating resentment and blank refusals to pay the interest.

Firms that grant trade credit need to establish a policy on what to do when an invoice is highly unlikely to be paid, that is, it becomes a bad debt. In many cases there comes a stage when it is better to cease pursuing a debtor than to incur any more expense. The firm will need to work out a set of criteria for deciding when to write off a bad debt.

Integration with other disciplines

Customers sometimes see a glimpse of the conflict between the objectives of the sales team and the finance departments of suppliers. Sales representatives go out of their way to find new customers and to gain large orders from existing clients only to find that head office has vetoed the opening of a new account or is enforcing a strict credit limit. The sales personnel often spend years cultivating a relationship which can be seriously damaged by the harsh actions of the debtor collection department, ranging from

unpleasant letters to court action. On the other hand, the debtor management department may complain that the sales representatives offer the customer excessively generous terms for the customer's risk class in order to meet a monthly sales target. Such conflicts need careful handling. Inter-function communication will help, as will an ethos of shareholder wealth enhancement with rewards and penalties directed at that goal in all departments.

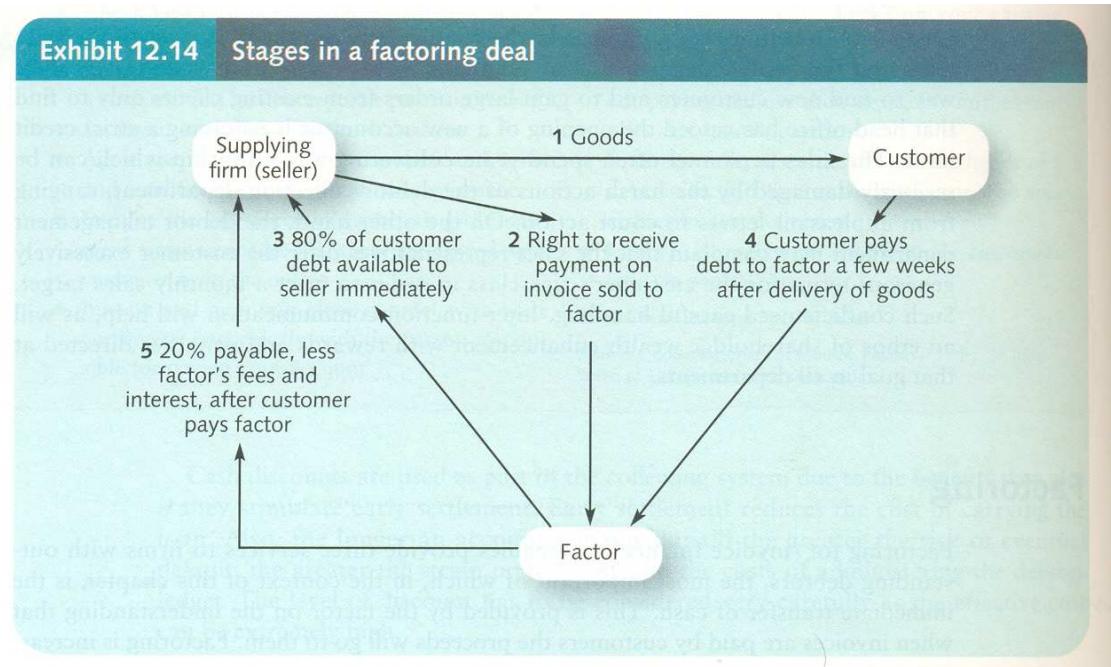
3.3 Factoring

Factoring (or 'invoice finance') companies provide three services to firms with outstanding debtors, the most important of which, in the context of this unit, is the immediate transfer of cash. This is provided by the factor on the understanding that when invoices are paid by customers the proceeds will go to them. Factoring is increasingly used by companies of all sizes as a way of meeting cash flow needs induced by rising sales and debtor balances. Three closely related services are offered by factors. These are the provision of finance, sales ledger administration and credit insurance.

1 The provision of finance

At anyone time a typical business can have a fifth or more of its annual turnover outstanding in trade debts: a firm with an annual turnover of NSm may have a debtor balance of Nlm. These large sums create cash difficulties which can pressurise an otherwise healthy business. Factors step in to provide the cash needed to support stock levels, to pay suppliers and generally aid more profitable trading and growth. The factor will provide an advanced payment on the security of outstanding invoices. Normally about 80 per cent of the invoice value can be made available to a firm immediately (with some factors this can be as much as 90 per cent). The remaining 20 per cent is transferred from the factor when the customer finally pays up. Naturally the factor will charge a fee and interest on the money advanced. The cost will vary between clients depending on sales volume, the type of industry and the average value of the invoices. **Exhibit 12.14** shows the stages in a typical factoring transaction. First, goods are delivered to the customer and an invoice is sent. Secondly, the supplier sells the right to receive the invoice amount to a factor in return for, say, 80 per cent of the face value now. Thirdly, some weeks later the customer pays the sum owing, which goes to the factor and finally, the factor releases the remaining 20 per cent to the supplier less interest and fees.

Exhibit 12.14 Stages in a factoring deal



Factors frequently reject clients as unsuitable for their services. The factor looks for 'clean and unencumbered debts' so that it can be reasonably certain of receiving invoice payments. It will also want to understand the company's business and to be satisfied with the competence of its management.

This form of finance has some advantages over bank borrowing. The factor does not impose financial ratio covenants or require fixed asset backing. Also the fear of instant withdrawal of a facility (as with an overdraft) is absent as there is usually a notice period. The disadvantages are the raised cost and the unavailability of factoring to companies with many small-value transactions.

2 Sales Ledger Administration

Companies, particularly young and fast-growing ones, often do not want the trouble and expense of setting up a sophisticated system for dealing with the collection of outstanding debts. For a fee (0.5-2.5 per cent of turnover) factors will take over the functions of recording credit sales, checking customers' creditworthiness, sending invoices, chasing late payers and ensuring that debts are paid. The fees might seem high, say N100,000 for a firm with a turnover of N5m, but the company avoids the inhouse costs of an administrative team and can concentrate attention on the core business. Moreover factors are experienced professional payment chasers who know all the tricks of the trade (such as 'the cheque is in the post' excuse) and so can obtain payment earlier. With factoring, sales ledger administration and debt collection generally come as part of the package offered by the finance house, unlike with invoice discounting (see below).

3 Credit insurance

The third service available from a factor is the provision of insurance against the possibility that a customer does not pay the amount owed. The charge for this service is generally between 0.3 per cent and 0.5 per cent of the value of the invoices.

Recourse and non-recourse

Most factoring arrangements are made on a non-recourse basis, which means that the factor accepts the risk of non-payment by the customer firm. For accepting this risk the factor will not only require a higher return but also want control over credit assessment, credit approval and other aspects of managing the sales ledger to ensure payment. Some firms prefer recourse factoring in which they retain the risk of customer default but also continue to maintain the relationship with their customers through the debt collection function without the sometimes overbearing intervention of the factor. With confidential invoice factoring the customer is usually unaware that a factor is the ultimate recipient of the money paid over, as the supplier continues to collect debts, acting as an agent for the factor.

Invoice discounting

With invoice discounting, invoices are pledged to the finance house in return for an immediate payment of up to 90 per cent of the face value. The supplying company guarantees to pay the amount represented on the invoices and is responsible for collecting the debt. The customers are generally totally unaware that the invoices have been discounted. When the due date is reached it is to be hoped that the customer has paid in full. Regardless of whether the customer has paid, the supplying firm is committed to handing over the total invoice amount to the finance house and in return receives the remaining 10 per cent less service fees and interest. Note that even invoice discounting is subject to the specific circumstances of the client agreement and is sometimes made on a non-recourse basis. The key differences between invoice discounting and factoring are that the former is usually with recourse to the supplying company and collection from the customer is made by the supplying company. If a company needs the services of sales ledger administration and collection then factoring is appropriate.

The finance provider usually only advances money under invoice discounting if the supplier's business is well established and profitable. There must be an effective and professional credit control and sales ledger administration system. Charges are usually lower than for factoring because the sales ledger administration is the responsibility of the supplying company. Fees are 0.2 per cent to 0.8 per cent of company sales plus interest comparable with business overdraft rates.

3.4

Hire purchase

With hire purchase the finance company buys the equipment that the borrowing firm needs. The equipment (plant, machinery, vehicles, etc.) belongs to the hire purchase (HP) company. However the finance house allows the 'hirer' firm to use the equipment in return for a series of regular payments. These payments are sufficient to cover interest and contribute to paying off the principal. While the monthly instalments are still being made, the company has the satisfaction and security of being the legal owner and so can take repossession if the hirer defaults on the payments. After all payments have been made the hirer becomes the owner, either automatically or on payment of a modest option-to-purchase fee. Nowadays, consumers buying electrical goods or vehicles have become familiar with the attempts of sales assistants to sell an HP agreement also so that the customer pays over an extended period. Sometimes the finance is provided by the same organisation, but more often by a separate finance house. The stages in an HP agreement are as in Exhibit 12.17, where the company buys the durable good which is made available to the hirer firm for immediate use. A series of regular payments follows until the hirer owns the goods.

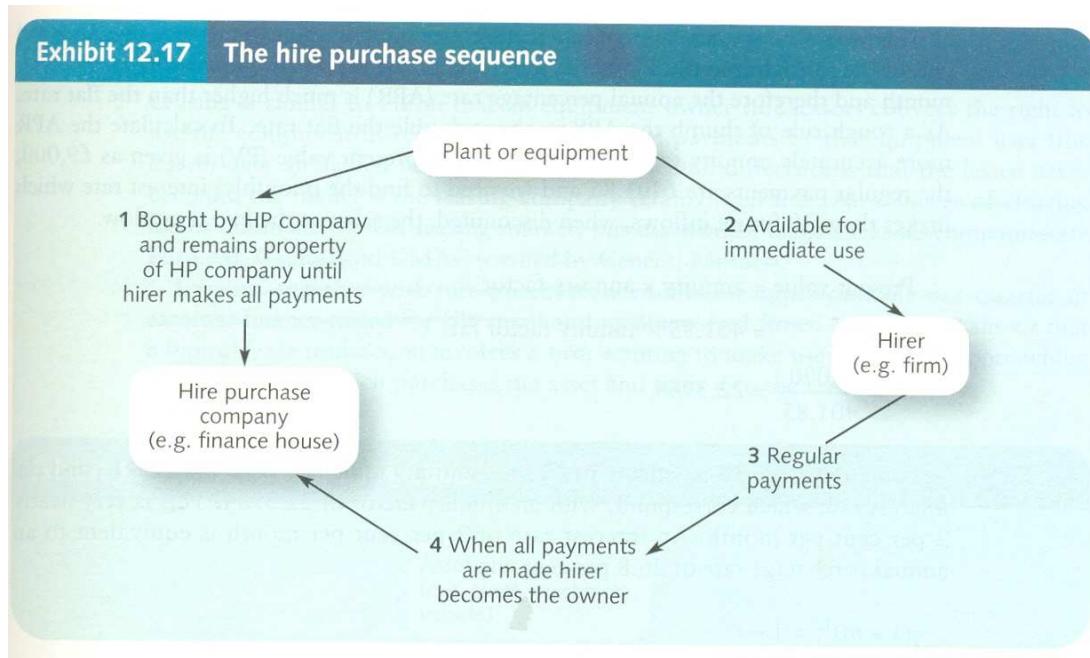
Some examples of assets that may be acquired on HP are as follows.

- Plant and machinery

- Business cars
- Commercial vehicles
- Agricultural equipment
- Hotel equipment
- Medical and dental equipment
- Computers, including software
- Office equipment

There are clearly some significant advantages of this form of finance. The main advantages are as follows.

1 Small initial outlay: The firm does not have to find the full purchase price at the outset. A deposit followed by a series of instalments can be less of a cash flow strain. The funds that the company retains by handing over merely a small deposit can be used elsewhere in the business for productive investment. Set against this are the relatively high interest charges and the additional costs of maintenance and insurance.



2 Easy and quick to arrange: Usually at point of sale allowing immediate use of the asset.

3 Certainty: This is a medium-term source of finance which cannot be withdrawn provided contractual payments are made, unlike an overdraft. On the other hand the commitment is made for a number of years and it could be costly to terminate the agreement. There are also budgeting advantages to the certainty of a regular cash outflow.

4 HP is often available when other sources of finance are not: For some firms the equity markets are unavailable and banks will no longer lend to them, but HP companies will still provide funds as they have the security of the asset to reassure them. (Note that if the asset is repossessed the hirer will not be reimbursed with any of the

payments made to that point.)

5. **Fixed-rate finance:** In most cases the payments are fixed throughout the HP period. While the interest charged will not vary with the general interest rate throughout the life of the agreement the hirer has to be aware that the HP company will quote an interest rate which is significantly different from the true annual percentage rate. The HP company tends to quote the flat rate. So, for example, on a N9,000 loan repayable in equal instalments over 30 months the flat rate might be 12.4 per cent. This is calculated by taking the total payments made over the two and a half years and dividing by the original N9,000. The monthly payments are N401.85 and therefore the total paid over the period is $N401.85 \times 30 = N12,055.50$. The flat interest is:

25

$$(12,055.50 / 9,000) - 1 = 0.1240 \text{ or } 12.4\%$$

This would be the true annual rate if the entire interest and capital were repaid at the end of the thirtieth month. However, a portion of the capital and interest is repaid each month, therefore the annual percentage rate (APR) is much higher than the flat rate. As a rough rule of thumb the APR is about double the flat rate. To calculate the APR more accurately annuity tables can be used. The present value (PV) is given as N9,000, the regular payments are N401.85 and we need to find the (monthly) interest rate which makes these 30 future inflows, when discounted, the same as the initial outflow.

Present value = annuity x annuity factor

$$9,000 = 401.85 \times \text{annuity factor (af)}$$

$$\text{af} = \frac{9,000}{401.85} = 22.3964$$

Look along the 30 payments row of the annuity table (see Appendix III) to find the interest rate which corresponds with an annuity factor of 22.3964. This is very nearly 2 per cent per month. An interest rate of 2 per cent per month is equivalent to an annual percentage rate of 26.8 per cent, viz.:

$$(1 + m) 12 = 1 - i$$

$$i = (1 + m)12 - 1$$

$$i = (1 + 0.02)12 - 1$$

$$i = 0.268 \text{ or } 26.8\%$$

If the writer's experience in buying a car on HP is anything to go by, obtaining the annual percentage rate (APR) from the sales representative is not easy - they tend to be much more interested in talking about the flat rate and emphasising the affordability of the monthly payments. The point is that you need to know the APR in order to compare alternative sources of finance. (Some HP providers are prepared to offer the option of variable rates, which rise and fall with general short-term interest rates, on longer-term agreements.)

- 6 **Tax relief:** The hirer qualifies for tax relief in two ways:

- a The asset can be subject to a writing-down allowance (WDA) on the capital expenditure. For example, if the type of asset is eligible for a 25 per cent WDA and originally cost N10,000 the using firm can reduce its taxable profits by N2,500 in the year of purchase; in the second year taxable profits will be lowered by $N7,500 \times$

$0.25 = N1,875$. If tax is levied at 30 per cent on taxable profit the tax bill is reduced by $N2,500 \times 0.30 = N750$ in the first year, and $N1,875 \times 0.3 = N562.50$ in the second year. Note that this relief is available despite the hirer company not being the legal owner of the asset.

- b Interest payments (an element of the monthly instalment) are deductible when calculating taxable profits.

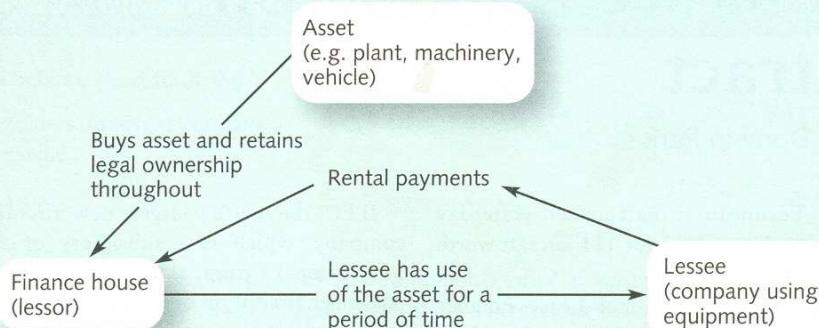
The tax reliefs are valuable only to profitable companies. Many companies do not make sufficient profit for the WDA to be worth having. This can make HP an expensive form of finance. An alternative form of finance which circumvents this problem (as well as having other advantages) is leasing.

3.5 Leasing

Leasing is similar to HP in that an equipment owner (the lessor) conveys the right to use the equipment in return for regular rental payments by the equipment user (the lessee) over an agreed period of time. The essential difference is that the lessee never becomes the owner - the leasing company retains legal title.

Exhibit 12.18 shows that a typical lease transaction involves a firm wanting to make use of an asset approaching a finance house which purchases the asset and rents it to the lessee.

Exhibit 12.18 A leasing transaction



It is important to distinguish between operating leases and finance leases.

It is important to distinguish between operating leases and finance leases.

Operating lease

Operating leases commit the lessee to only a short-term contract or one that can be terminated at short notice. These are certainly not expected to last for the entire life of the asset and so the finance house has the responsibility of finding an alternative use for the asset when the lessee no longer requires it. Perhaps the asset will be sold in the second-hand market, or it might be leased to another client. Either way the finance house bears the risk of ownership. If the equipment turns out to have become obsolete more quickly

than was originally anticipated it is the lessor that loses out. If the equipment is less reliable than expected the owner (the finance house) will have to pay for repairs. Usually, with an operating lease, the lessor retains the obligation for repairs, maintenance and insurance. It is clear why equipment which is subject to rapid obsolescence and frequent breakdown is often leased out on an operating lease. Photocopiers, for example, used by a university department are far better leased so that if they break down, the university staff will not deal with the problem. In addition the latest model can be quickly installed in the place of an outdated one. The most common form of operating lease is contract hire. These leases are often used for a fleet of vehicles. The leasing company takes some responsibility for the management and maintenance of the vehicles.

Operating leases are also useful if the business involves a short-term project requiring the use of an asset for a limited period. For example building firms often use equipment supplied under an operating lease (sometimes called plant hire). Operating leases are not confined to small items of equipment. There is a growing market in leasing aircraft and ships for periods less than the economic life of the asset, thus making these deals operating leases..

Finance lease

Under a finance lease (also called a capital lease or a full payout lease) the provider finance expects to recover the full cost (or almost the full cost) of the equipment, plus interest, over the period of the lease. With this type of lease the lessee usually has no right of cancellation or termination. Despite the absence of legal ownership the lessee will have to bear the risks and rewards that normally go with ownership: the lessee will usually be responsible for maintenance, insurance and repairs and suffer the frustrations of demand being below expectations or the equipment becoming obsolete more rapidly than anticipated. Most finance leases contain a primary and a secondary period. It is during the primary period that the lessor receives the capital sum plus interest. In the secondary period the lessee pays a very small 'nominal' rental payment. If the company does not want to continue using the equipment in the secondary period it may be sold second-hand to an unrelated company.

Advantages of leasing

The advantages listed for hire purchase also apply to leasing: small initial outlay, certainty, available when other finance sources are not, fixed-rate finance and tax relief. There is an additional advantage of operating leases and that is the transfer of obsolescence risk to the finance provider.

The tax advantages for leasing are slightly different from those for HP. The rentals paid on an operating lease are regarded as tax deductible and so this is relatively straightforward. However, for finance leases the tax treatment is linked to the modern accounting treatment. This was introduced to prevent some creative accounting which under the old system allowed a company to appear to be in a better gearing (debt/equity ratio) position if it leased rather than purchased its equipment.

Today finance leases have to be 'capitalised' to bring them on to the balance sheet. The asset is stated in the balance sheet and the obligations under the lease agreement are stated as a liability. Over subsequent years the asset is depreciated and, as the capital repayments are made to the lessor, the liability is reduced. The profit and loss account is also affected: the depreciation and interest are both deducted as expenses.

To buy or to lease?

A comparison of the relative costs of leasing through a finance lease and purchase through a bank loan is in practice a very complicated calculation. It is necessary to allow for the cost of capital and the tax treatment of alternative sources of finance.

These, in turn, depend on the precise circumstances of the company at the time. It is

further complicated by the timing of the tax payments and reliefs, by who pays for maintenance and the potential for a residual value of the asset at the end of the primary lease period. Added to all of that is the problem that the tax rules change frequently and so a method of calculation applicable at one time is quickly out of date. The point is that a proper comparison requires highly specialised knowledge and so is beyond the scope of this unit. However if a few simplifying assumptions are made the general principles can be conveyed easily. The simplifying assumptions are:

- a. Taxation does not exist.
- b. There is no value in the asset at the end of the lease period.
- c. The cost of capital applicable to the equipment is the same as the term loan interest rate; this is only valid if investors regard the lease and the bank loan as being perfect substitutes for each other with respect to the capital structure (gearing, etc.) and the cash flows.

3.6 Bills of exchange

A bill is a document which sets out a commitment to pay a sum of money at a specified point in time. The simplest example is an ordinary bank cheque which has been dated two weeks hence. The government borrows by selling Treasury bills which commit it to paying a fixed sum in, say, three months. Local authorities issue similar debt instruments, as do commercial organisations in the form of commercial bills.

Bills of exchange are mainly used to oil the wheels of overseas trade. They have a long history helping to promote international trade, particularly in the nineteenth and twentieth centuries. The seller of goods to be transported to a buyer in another country frequently grants the customer a number of months in which to pay. The seller will draw up a bill of exchange (called a 'trade acceptance' in international trade) - that is, a legal document is produced showing the indebtedness of the buyer. The bill of exchange is then forwarded to, and accepted by the customer, which means that the customer signs a promise to pay the stated amount and currency on the due date. The due date is usually 90 days later but 30, 60 or 180 days bills of exchange are not uncommon. The bill is returned to the seller who then has two choices, either to hold it until maturity, or to sell it to a bank or discount house (the bill is discounted). Under the second option the bank will pay a lower amount than the sum to be received in, say, 90 days from the customer. The difference represents the bank's interest.

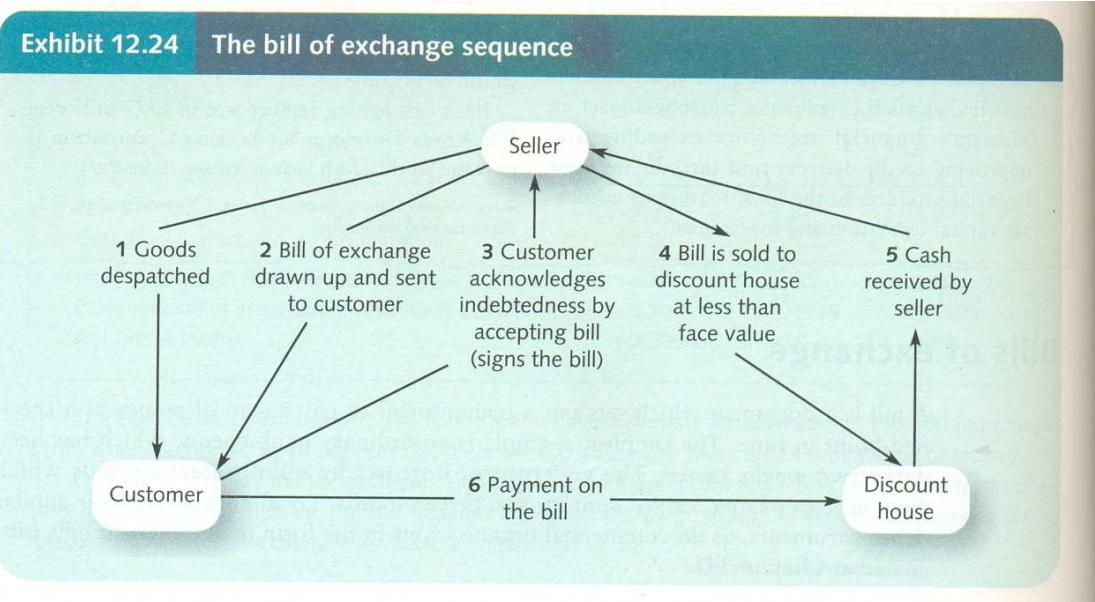
For example, if a customer has accepted a bill of exchange which commits it to pay N200,000 in 90 days the bill might be sold by the supplier immediately to a discount house or bank for N194,000. After 90 days the bank will realise a profit of N6,000 on a N194,000 asset, an interest rate of 3.09 per cent $((6,000/194,000) \times 100)$ over 90 days. This gives an approximate annual rate of:

$$\{1.0309\}^4 - 1 = 0.1296 = 12.96\%$$

Through this arrangement the customer has the benefit of the goods on 90 days credit, the supplier has made a sale and immediately receives cash from the discount house amounting to 97 per cent of the total due. The discounter, if it borrows its funds at less than 12.9 per cent, turns in a healthy profit. The sequence of events is shown in **Exhibit 12.24**.

Bills of exchange are normally only used for transactions greater than N75,000. The effective interest rate charged by the discounter is a competitive 1.5 per cent to 4 per cent over inter-bank lending rates depending on the credit-worthiness of the seller and the customer. The bank has recourse to both of the commercial companies: if the customer

does not pay then the seller will be called upon to make good the debt. This overhanging credit risk can sometimes be dealt with by the selling company obtaining credit insurance. Despite the simplification of Exhibit 12.24 many bills of exchange do not remain in the hands of the discounter until maturity but are traded in an active secondary market (the money market). Note also that not all bills of exchange are a form of temporary finance. Some are 'sight drafts', that is, payable on demand without a delay of a few days (as with 'time drafts' or 'term drafts').



3.7 Acceptance credits (bank bills or banker's acceptance)

In the case of acceptance credits the company which is in need of finance requests the drawing up of a document which states that the signatory will pay a sum of money at a set date in the future. This is 'accepted' by a bank rather than by a customer. (Simultaneously the company makes a commitment to pay the accepting bank the relevant sum at the maturity date of the bill.) This bank commitment to pay the holder of the acceptance credit can then be sold in the money markets to, say, another bank (a discounter) by the firm to provide for its cash needs. (Alternatively an importing company could give the acceptance credit to its overseas supplier in return for goods - and the supplier can then sell it at a discount if required.) The acceptance credit is similar to a bill of exchange between a seller and a buyer, but now the organisation promising to pay is a reputable bank representing a lower credit risk to any subsequent discounter. These instruments therefore normally attract finer discount rates than a trade bill. When the maturity date is reached the company pays the issuing bank the value of the bill, and the bank pays the ultimate holder of the bill its face value.

The company does not have to sell the acceptance credit immediately and so can use this instrument to plug finance gaps at opportune times. There are two costs of bank bill finance.

1 The bank charges acceptance commission for adding its name to the bill.

2 The difference between the discount price and the acceptance credit's due sum.

These costs are relatively low compared with those on overdrafts and there is an ability to

plan ahead because of the longer-term commitment of the bank..

EXERCISES: 1. What are the essential differences between an overdraft and a term loans?

4.0 CONCLUSION

The modern corporation has a rich array of alternative sources of funds available to it. Each organisation faces different circumstances and so the most appropriate mixture will change from one entity to another. Of the dozens of forms of finance discussed in this any organisation is unlikely to select more than five or six

5.0 SUMMARY

However, the knowledge gained by reading this unit and considering the relative merits of each type will, it is hoped, lead to a more informed choice and contribute to the achievement of the firm's objective.

6.0 REFERENCES

G. C. Arnold

The financial Time Guide to Investing (2004)

Glen Arnold

Corporate Financial Management (2005)

Blake D.

Financial Market Analysis (2000)

8.0 TUTOR MARKED ASSIGNMENT

Ronsons plc, the jewellery retailer, has a highly seasonal business with peaks in revenue in December and June. One of Ronsons' banks has offered the firm a N200,000 overdraft with interest charged at 10% p.a. (APR) on the daily outstanding balance, with N3,000 payable as an arrangement fee. Another bank has offered a N200,000 loan with a fixed interest rate of 10% p.a. (APR) and no arrangement fee. Any surplus cash can be deposited to earn 4% APR. The borrowing requirement for the forthcoming year is as follows:

Month	J	F	M	A	M	J	J	A	S	O	N	D
N000s	0	180	150	180	200	0	150	150	150	200	200	0

Which offer should the firm accept?

UNIT 10

TREASURY AND WORKING CAPITAL MANAGEMENT

1.0 INTRODUCTION

The last few chapters have been concerned with describing the various types of finance available and the markets on which they trade. This is valuable knowledge, but it is not enough to run an organisation efficiently. We need decision makers who are knowledgeable about the markets and instruments so that they can help guide the firm in selecting the appropriate balance in sourcing finance, and can take steps to reduce the risk associated with that finance. As well as dealing with major financial moves treasurers help with many small and short-term finance-related decisions. Despite being individually small and often routine, they are collectively extremely important for the well-being of the firm and the achievement of its goals. This chapter provides a brief overview of the role of the corporate treasurer, which includes involvement in many long-term decisions, but, because other chapters cover issues such as financial gearing or mergers, its main focus is on the shorter-term management of working capital. The decisions are usually handled by line managers, but specialist, such as accountants or treasurers, may assist.

An example of the sort of question that needs to be addressed in this area is, what should the organisation do with any temporary surplus cash? Should it merely be deposited in a bank account or should the firm be more adventurous and try to obtain a higher return by placing the funds in the money market? But then, what about the increased risk and loss of liquidity associated with some forms of lending?

Another area for action is the creation of a system which does not allow cash to lie idle or be unnecessarily tied up in, say, inventories of partially finished goods or debtors. The firm, naturally, has to put money into these areas to permit production and gain sales, but this should be kept at an optimum level, bearing in mind that money has an opportunity cost. The estimation of that optimum is far from easy. For instance, managers know that raw material and work-in-progress inventory are needed at a sufficiently high level to prevent the problems associated with running out of stock, for example through production stoppages and lost sales, but they do not want to incur the excessive costs of storage, deterioration and interest charges associated with warehouses full of stock piled up to prevent all risks of a stock-out. The difficult management task is to strike a balance of risks and costs and work out a policy for appropriate stock levels and reordering.

The quality of day-to-day interaction with banks, shareholders and other finance providers is also vitally important. Thought and time have to be devoted to cultivating these relationships. Anyone encounter with, or information flow to, these backers may be regarded as insignificant, but cumulatively an image of a business is created in the minds of some very influential people. Ideally that image needs to be professional and purposeful and to show a sound grasp of the competitive positioning and potential of the firm. A poor image can lead to increased cost of funds, the blocking of expansion and, in extreme cases, the removal of managers.

There are some other fundamental financing problems where the knowledge and experience of the corporate treasurer may also be drawn upon. For example, how does the firm obtain a balance between short-term and long-term borrowing, and how could the firm finance a merger?

The treasurer is additionally given the task of managing the risk associated with interest rate and exchange rate change. So a UK firm may sell Nlm of goods to a Canadian

importer on six months' credit invoiced in dollars. What the NG firm does not know is the quantity of naira it will receive when in six months it converts the dollars into naira. The treasury department will have a range of approaches available to remove the uncertainty and reassure other managers that the export deal will be a profitable one. Similarly, skilled individuals within the treasury will be able to hedge interest rate risk; that is, make arrangements which reduce the potential for interest rate movements to impact adversely on the firm.

These and many other duties involve small, short-term decisions in the main, but can make or break a company. The Economist described the treasury function as 'the financial engine room of companies',¹ meaning that these decisions do not necessarily have the grandeur and broad sweep of the decisions made on the bridge of the corporate ship but they are vital to maintaining its progress. This becomes all too tragically apparent when things go wrong in the engine room and companies founder due to poor working capital management, to running out of cash despite high profits or to losing a fortune on the derivative markets.

The need for good treasury management and working capital management has been with us ever since business began. They both focus on liquid resources (cash flow) and they both take into account risk. Few businesses, even the simplest, can afford to ignore the importance of the efficient planning and control of cash resources while allowing for risk. In small and medium-sized firms both functions will usually be undertaken by the chief accountant and his/her team. As firms grow it usually becomes necessary to appoint specialist staff skilled in treasury while maintaining a team dedicated to helping to ensure high-quality working capital decisions.

Working capital can be defined as the difference between current assets and current liabilities.

Working capital thus means net current assets, or net current liabilities (if current liabilities exceed current assets). It is the investment a company makes in assets which are in continual use and are turned over many times in a year. Working capital encompasses the following:

Short-term resources:

- Inventory
- debtors;
- investments;
- cash

Less: Short-term liabilities:

- trade creditors;
- short-term borrowing;
- other creditors repayable within a year.

2.0 OBJECTIVE

When you complete this unit you should be able to explain/identify/comment on:

- The main role of a treasury department and the key concerns of manager when dealing with working capital
- The factors influencing the balance of the different types of debt in terms of maturity, currency and interest rate.
- Awareness of the importance of the relationship between the firm and the financial community

- Demonstrate how the treasurer might reduce risk for the firm, perhaps through the use of derivative products
- The working capital cycle, the cash conversion cycle and an inventory model

3.0 The main areas of treasury and working capital management

Treasurers carry out a wide range of activities, from raising long-term finance to reducing interest rate risk. Exhibit 13.1 shows the main issues addressed by treasurers or by line managers dealing with inventory, debtors, creditors and cash resources.

The way in which the organisation is structured, and roles assigned to individuals to undertake this kind of decision, varies tremendously but the fundamental questions and the need for action remain. These are illustrated in Exhibit 13.1, where the over arching groups of issues to be addressed are shown. The first two, financing and risk management, are usually in the domain of the specialist treasury department, in collaboration with other senior managers, in large multinational firms. The third, is working capital and liquidity management, will require some input from the treasury team, especially for the investment of temporary cash, but many of these issues will be examined by line managers with the assistance of the finance and accounting team. The areas of responsibilities covered by either the treasurer or the financial controller (the head of the group concerned more with accounting issues rather than finance) will be unique for every firm, and the list in Exhibit 13.1 is far from exhaustive, but at least it provides a framework for considering the myriad decisions in this area.

Exhibit 13.1 The main areas of treasury and working capital management

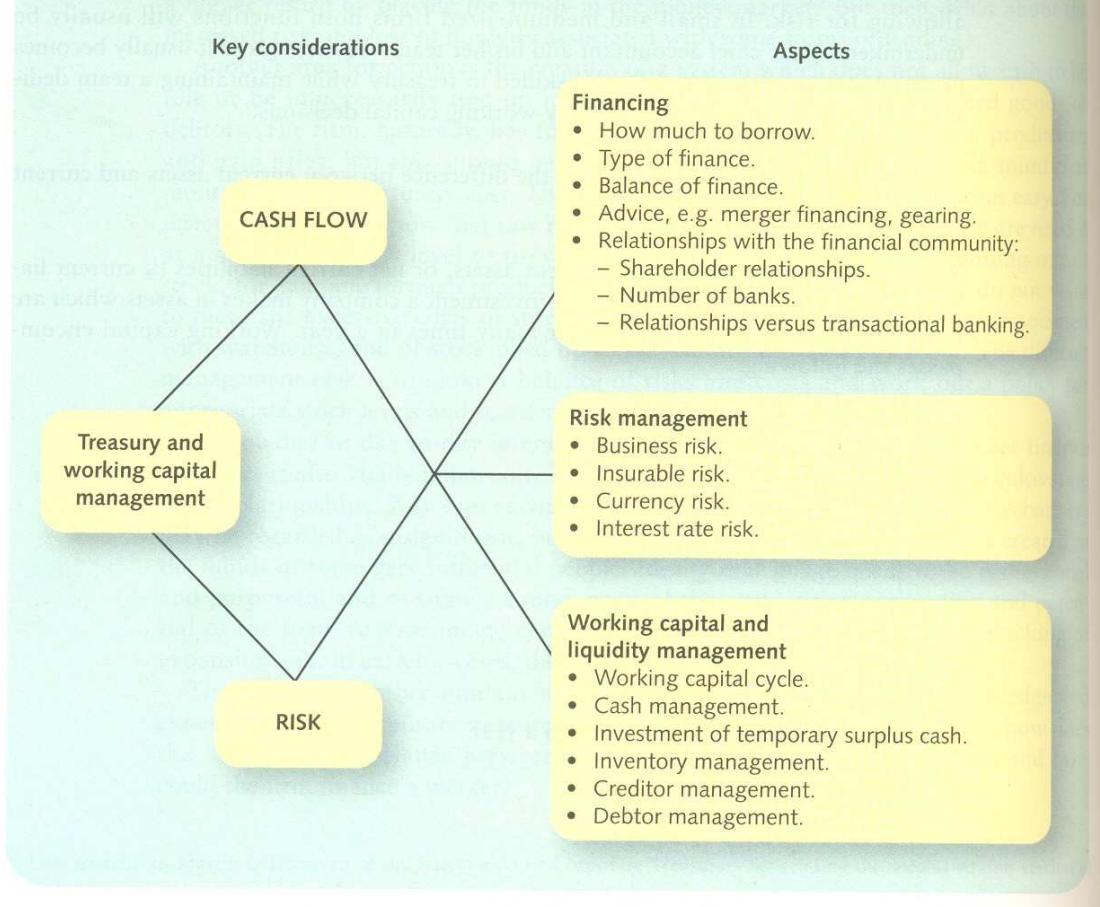


Exhibit 13.1 provides a guide for progress through this chapter but it must be noted that treasurers (leaving to one side the working capital specialists for the moment) must have knowledge of, and contribute toward, a wider range of corporate issues than those in Exhibit 13.1. The Association of Corporate Treasurers regard as key topics those listed in **Exhibit 13.2**.

Exhibit 13.2 Corporate treasury subjects

- | | |
|--|---|
| <ul style="list-style-type: none">1 <i>Corporate financial management</i><ul style="list-style-type: none">- Corporate strategy, valuation and investment appraisal- Corporate governance and legal responsibilities- Capital structure- Management of taxation- Financial accounting and reporting
2 <i>Capital markets and funding</i><ul style="list-style-type: none">- Equity and venture financing- Debt finance (capital markets)- Loan finance (banks)- Asset and project finance- Trade finance
3 <i>Money management</i><ul style="list-style-type: none">- Short term liquidity management- Cashflow forecasting | <ul style="list-style-type: none">- Cash management- International payment and clearing systems- EMU, EMS and the euro
4 <i>Risk management</i><ul style="list-style-type: none">- Business and financial risk analysis- Managing treasury market and credit risk- Managing operational risks- Pensions risk management
5 <i>Managing the treasury function</i><ul style="list-style-type: none">- Treasury policy and objectives- Treasury organisation and influence- Internal control and treasury audit- Treasury technology, systems and the internet- The treasurer in the financial community- The treasury professional |
|--|---|

Case study 13.1 gives some insight into the importance of the treasury department to one of the largest firms in the world, Cadbury Schweppes.

The former treasurer at Glynwed International plc (now Aga Foodservice Group plc), Christopher Purser, put quite a heavy emphasis on investor relations when describing the purpose of his job: 'To plan, organise and control the Glynwed International group's cash and borrowings so as to optimise interest and currency flows and minimise the cost of funds. To plan and execute communications programmes to enhance investors' confidence in Glynwed International's performance in the stock markets.' He lists five primary job accountabilities:

- 1 Manage the Group's cash and currency flows so as to:
 - minimise interest paid;
 - maximise interest earned;
 - minimise foreign currency exposure.
- 2 Ensure that sufficient funds are available at acceptable rates to meet the Group's cash flow requirements internationally.
- 3 Control, monitor and report the level of the Group's borrowings against available facilities and budgets.
- 4 Ensure that key financial analysts, fund managers and investors are aware of the Group's financial objectives; and performance.
- S Ensure that investors' confidence in the Group is enhanced through knowledge of and contact with the Group's top management.

3.1 Financing

Obtaining the most appropriate mixture of finance is likely to be of great importance to most firms. In this section we first examine the most appropriate forms of borrowing in terms of maturity of that borrowing, for example a short-term overdraft or a 20-year loan, as well as considering the question of the currency of the borrowing and the choice of fixed or floating interest rates; secondly, we look at retained earnings as a source of finance; and thirdly, we consider the more 'strategic' type of financing issues for which a

treasurer might be called upon to give advice. There follows a commentary on the importance of maintaining good relationships with the financial community.

Is it better to borrow long or short?

Once a company has decided to raise funds by borrowing, it then has to decide whether to raise the money through:

a short-term debt - a loan which has to be repaid within, say, one year;

b medium-term debt; or

c long-term debt - where the loan is paid over a 7-, 25- or even 100-year period.

There are a number of factors to be taken into consideration in making a decision of this nature.

Maturity structure: A company will usually try to avoid having all of its debts maturing at or near the same date. It could be disastrous if the firm was required to repay loan capital on a number of different instruments all within, say, a six-month period. Even if the firm is profitable the sudden cash outflow could lead to insolvency. A number of major YK retailers came perilously close to this in the early 1990s. In the late 1980s they had experienced a boom in sales and everything the management touched seemed to turn to gold. Buoyed up by over-optimism, they opened up dozens of new branches, funded to a large extent by medium-term finance. By the time these bank loans, bonds, etc. came to maturity in the early 1990s these shop chains were already suffering from a biting recession and an excessive cost base. Negotiations with bankers and others were necessary as loan covenants were broken and bankruptcy loomed. Most of the larger groups survived but they have learnt a hard lesson about the importance of spreading the dates for principal repayment.

Most companies include a breakdown of length of time to maturity of their debts in their annual report.

Costs of issue/arrangement: It is usually cheaper to arrange an overdraft and other one off short-term finance than long-term debt facilities, but this advantage is sometimes outweighed by the fact that if funds are needed over a number of years. Short-term debt has to be renewed more often than long-term debt. So over, say, a 20-year period, the issuing and arrangement costs of short-term debt may be much greater than for a 20-year bond.

Flexibility: Short-term debt is more flexible than long-term debt. If a business has fluctuations in its needs for borrowed funds, for example if it is a seasonal business, then for some months it does not need any borrowed funds, whereas at other times it needs large loans. A long-term loan may be inefficient because the firm will be paying interest even if it has surplus cash. True, the surplus cash could be invested but the proceeds are unlikely to be as great as the cost of the loan interest. It is cheaper to take out short-term loans or overdrafts when the need arises which can be paid back when the firm has high cash inflows.

The uncertainty of getting future finance: If a firm is investing in a long-term project which requires borrowing for many years it would be risky to finance this project using one-year loans. At the end of each year the firm has to renegotiate the loan or issue a new bond. There may come a time when lenders will not supply the new money. There may, for example, be a change in the bank's policy or a reassessment of the borrower's creditworthiness, a crisis of confidence in the financial markets or an imposition of government restrictions on lending. Whatever the reason, the project is halted and the firm loses money.

Thus, to some extent, the type of project or asset that is acquired determines the type of borrowing. If the project or asset is liquid and short term then short-term finance may be

favoured. If it is long term then longer-term borrowing gives more certainty about the availability of finance, and (possibly) the interest rate.

The term structure of interest rates: The yield curve is described in unit 8. There it is stated that it is usual to find interest rates on short-term borrowing which are lower than on long-term debt. This may encourage managers to borrow on a short-term basis. In many circumstances this makes sense. Take the case of Myosotis plc, which requires £10m of borrowed funds for a ten-year project. The corporate treasurer expects long-term

Exhibit 13.4 A shifting yield curve affects the relative cost of long- and short-term borrowing – the example of Rosa plc

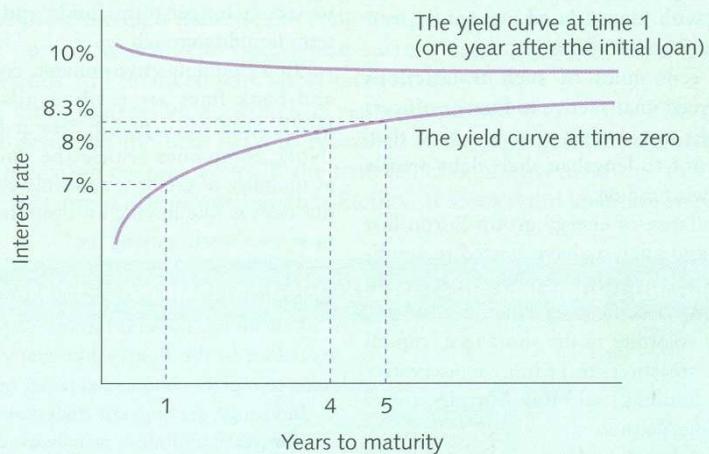
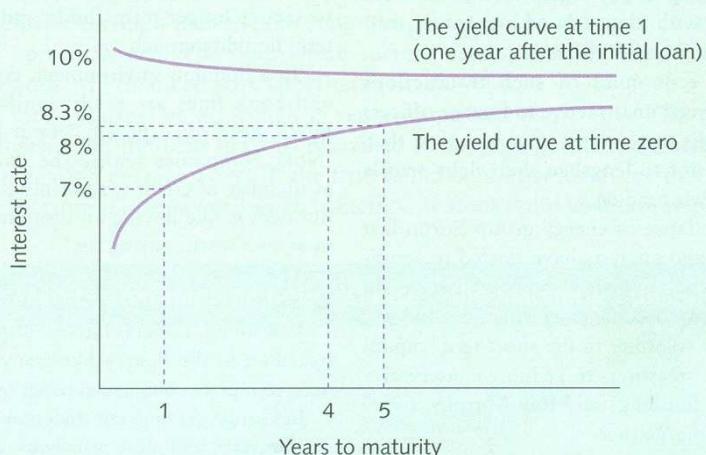


Exhibit 13.4 A shifting yield curve affects the relative cost of long- and short-term borrowing – the example of Rosa plc



The case of Rosa shows that it can be cheaper to borrow long at low points in the interest rate cycle despite the 'headline' interest charge on long-term debt being greater than on short-term loans.

To "match" or not to "match"

Firms usually come to the conclusion that there is a need for an appropriate mixture of debt finance with regard to length of time to maturity: some short-term borrowing is desirable alongside some long-term borrowing. The major factors which need to be taken into account in achieving the right balance are: a cost (interest rate, arrangement fee, etc.) and b risk (of not being able to renew borrowings, of the yield curve shifting, of not being able to meet a sudden outflow if the maturity is bunched, etc.). Some firms follow the 'matching' principle, in which the maturity structure of the finance matches the maturity of the project or asset. Here fixed assets and those current assets which are needed on a permanent basis (for example cash, minimum inventory or debtor levels) are financed through long-term sources, while current assets whose financing needs vary throughout the year are financed by short-term borrowings. Examples of the latter type of asset might be stocks of fireworks at certain times of the year, or investment in inventories of chocolate Easter eggs in the spring.

Thus there are three types of asset which need to be financed:

fixed assets;

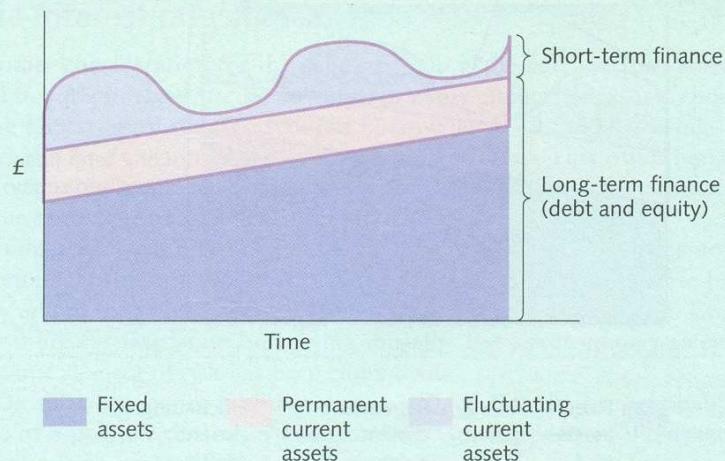
permanent current

assets; . fluctuating

current assets.

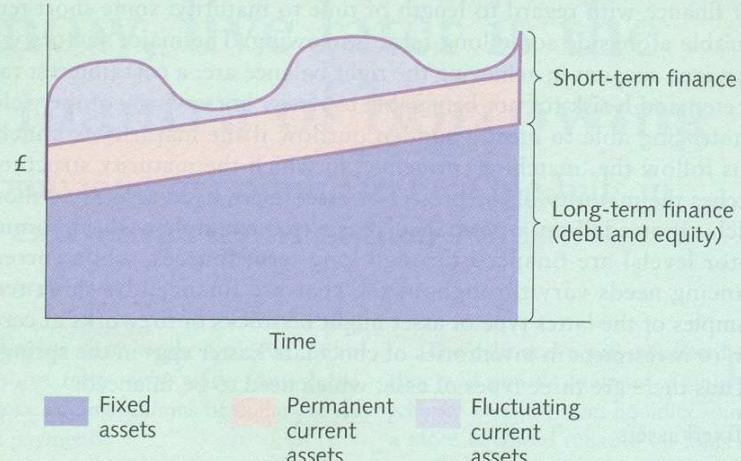
A firm taking the maturity matching approach is considered to be adopting a moderate stance. This is shown in Exhibit 13.6, where a rising level of total assets is financed principally through increases in long-term finance applied to fixed assets and permanent current assets. The fluctuating current assets, such as those related to seasonal variations, are financed with short-term funds.

Exhibit 13.6 Moderate financing policy stance – the matching principle



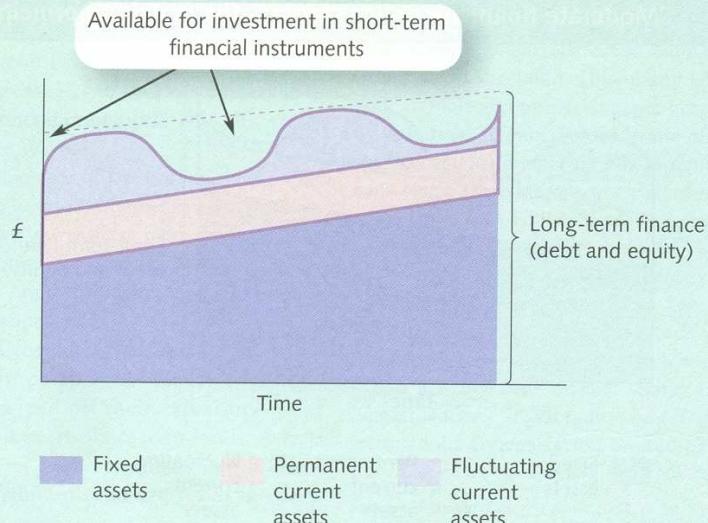
A more aggressive approach is represented in **Exhibit 13.7**. This entails more risk because of the frequent need to refinance to support permanent current assets as well as fluctuating current assets. If the firm relied on an overdraft for this it will be vulnerable to a rapid withdrawal of that facility. If stocks and cash are reduced to pay back the overdraft the firm may experience severe disruption, loss of sales and output, and additional costs because of a failure to maintain the minimum required working capital to sustain optimum profitability.

Exhibit 13.7 An aggressive financing policy



The low-risk policy is to make sure that long-term financing covers the total investment in assets. If there are times of the year when surplus cash is available this will be invested in short-term instruments. This type of policy is shown in **Exhibit 13.8**.

Exhibit 13.8 A conservative financing policy



Many managers feel much happier under the conservative approach because of the lower risk of being unable to pay bills as they arise. However such a policy may not be in the best interests of the owners of the firm. The surplus cash invested in short-term securities is unlikely to earn a satisfactory return relative to the cost of the long-term funds. In all likelihood shareholders would be better off if the firm reduced its long-term financing, by returning cash to shareholders or paying off some long-term loans.

There is no sound theoretical formula to help decide the balance between long- and short-term finance but many managers seem to follow a policy of matching the maturity of their assets and liabilities, thereby accepting a modest level of risk while avoiding excessive amounts of surplus investible funds. However this is far from universally accepted: for example, Microsoft had over \$50bn of cash and short-term investments in 2004.

The currency of borrowing

Deciding on the maturity structure of the firm's debt is one aspect of the financing. Another is selecting the currency in which to borrow. For transnational firms it is common to find borrowing in the currency of the country where the funds are to be invested. This can reduce exposure to foreign exchange rate changes. For example, suppose that Union Jack plc borrows N100m to invest in the USA. It exchanges the N100m into \$150m at the exchange rate of \$1.5 to the naira. The net cash flows in subsequent years are expected to be \$30m per annum. If the exchange rate remained constant Union Jack would therefore receive N20m per year to pay for the financing costs and produce a surplus. However if the rate of exchange moved to \$2 for every naira the annual cash inflow in sterling terms would be merely N15m.⁴ The project is producing N5m less than originally anticipated despite generating the same quantity of dollars, and this is insufficient as a rate of return for Union Jack. The risk attached to this project can

be reduced by ensuring that the liabilities are in the same currency as the income flow. So if Union Jack borrows \$150m to invest in the project, even though the exchange rate may move to \$2 : N1 the project remains viable.

The interest rate choice

Another consideration for the debt portfolio is the balance to be struck between fixed and floating interest-rate borrowings. In many circumstances it is thought advisable to have a mixture of the two types of borrowing. If all the borrowings are floating rate then the firm is vulnerable to rising interest rates. This often happens at the most unfortunate times: for example, at the start of recessions interest rates are usually high at the same time as sales are in decline.

Industries with high fixed-cost elements, which need a large volume of sales to maintain profitability, may be particularly averse to floating-rate borrowing as this may add to their cost base and create an additional source of risk. Even if they have to pay more for fixed-rate borrowing initially, the directors may sleep better knowing that one element of risk has been eliminated.

On the other hand, if all borrowing is fixed rate the firm is unable to take advantage of a possible decline in interest rates.

Retained earnings as a financing option

Internally generated funds from previous years' profits is the most important source of long-term finance for the typical firm, and yet it is so easily overlooked while attention is focused on the more glamorous ways of raising funds in the financial markets. Internal funds account for between one-third and two-thirds of the capital invested by UK firms. These are the profits retained within the firm after the payment of dividends. The retained earnings level is therefore the inverse of the decision to pay dividends. We now consider the advantages and disadvantages of retained earnings as a source of finance.

One significant advantage of retained earnings is that there is no dilution of the existing shareholders' share of corporate control or share of returns. If the alternative of raising long-term funds by selling additional shares to outside shareholders were taken this would reduce the proportionate shareholdings of the existing owners. Even a rights issue might alter the relative position of particular shareholders if some chose not to take up their rights. Secondly, retaining earnings avoids the issuing costs associated with new shares or bonds and the arrangement fees on bank loans. Thirdly, management may value the fact that, in contrast to the position with a new equity or debt issue, they do not have to explain in such detail the use to which the funds will be put. This 'advantage' may not be in the shareholders' best interest, however.

A potential disadvantage of relying on internally generated funds is that they are limited by the firm's profits. Some firms wish to invest and grow at a much faster rate than would be possible through retained earnings. Indeed, some biotechnology firms are not expected to have profits for many years and yet have ambitious growth targets. Also, using retained earnings means reducing the dividend payout. Shareholders, on the whole, like to receive a steadily rising dividend stream. They may not be willing to forgo this simply because the management have a large number of projects in which they wish to invest. Retained earnings also have the drawback of being uncertain as they fluctuate with the ups and downs of the company's fortunes. Depending on this source of finance alone carries the risk of not being able to obtain finance at a vital stage in an investment programme.

Perhaps the most serious problem associated with retained earnings is that many managers regard them as essentially 'free capital'. That is, there is no cost to this capital - no opportunity cost of using these funds. This can encourage firms to invest to a greater extent than can be justified by the availability of positive NPV projects. There can be a

resulting diminution of shareholders' wealth as the firm expands beyond a profitable size or diversifies into new areas, or acquires other firms. Forcing firms to raise funds externally subjects them to periodic scrutiny by critically minded investors who ask for a thorough justification.

Retained earnings are not free. Shareholders, by allowing the firm to keep profits within the business, are making a significant sacrifice. They are forgoing dividends which could be invested in other financial securities. These other financial securities, for example shares in other firms of the same risk class, would have given a return. Thus shareholders have an opportunity cost and so the return required on retained earnings is the same as for any equity capital invested at that level of risk.

The treasurer at a strategic level

Treasurers may be asked to advise on matters of great significance to the future direction of the firm. For example, the decision to merge with another firm or to purchase a major business (a trade purchase) will require some assessment of the ability of the organisation to finance such activity. The treasurer will be able to advise on the sources of finance available, the optimum mixture and the willingness of the financial community to support the initiative. In a similar fashion a treasurer could help with disposals of subsidiaries.

Their knowledge of financial markets may permit treasurers to advise on the course of interest rates and exchange rates and so may aid vital decisions such as whether to establish a manufacturing facility or begin a marketing campaign in another country. Forecasting interest and exchange rates is notoriously difficult and even the greatest so-called experts frequently predict the future erroneously, and yet the treasurer may be the only person in the company able to make an informed guess.

Another major area of concern is the total amount of borrowing a firm should aim for. If it does not borrow at all then it will be losing the advantage of cheap finance. On the other hand, high levels of borrowing increase the chances of financial distress and the firm could be liquidated. Striking the appropriate balance is important and the treasurer may have some input in this area.

Relationships with the financial community

Neglecting to engender good relationships with shareholders, banks and other financial institutions can result in severe penalties for the firm. The typical treasurer and chief financial officer of a corporation will spend a great deal of time communicating with major finance providers on a weekly, or even a daily basis.

There will be a planned and sustained effort to maintain mutual understanding between shareholders and the organisation. The treasurer might be asked to create a detailed and up-to-date picture of who the shareholders are and then to follow through with a high-quality flow of information, to enable shareholders to better appreciate the firm and its strategy in order to sustain their commitment. In the absence of informative communication to fill in gaps in their knowledge, shareholders may imagine all kinds of problems. If they are kept informed they are more likely to be supportive when the firm asks for additional finance, or asks for patience in times of difficulty, or appeals for the rejection of a merger bid. The point could be put even more simply: the shareholders own the firm and therefore both desire and deserve comprehensive information about its progress.

We turn now to banking relationships. Most firms make use of the services of more than one bank. A multinational firm may use over 100 banks. For example, Monsanto, the US chemical company, is proud of the fact that it has managed to cut the number down to 150 - it used to have 336. One reason for using so many banks is that large international firms have complex financial issues to deal with and anyone bank may not have all the requisite skills and infrastructure to cope with them. Also banks have a tendency to join

syndicates to make large loans to firms - an example here is Euro-tunnel with 225 banks. In addition, some companies operate in dozens of countries and so may value the local network of the domestic banks in each of those markets.

The relationship between banks and large corporations has changed over the past few years. In the 1980s corporate treasurers, in an attempt to cut costs and boost investment returns, increasingly insisted on banks competing with each other to offer the lowest-cost services. The provision of credit, the arrangement of bonds, notes, loans and commercial paper were put out to tender, as were the foreign exchange and cash management services. This competitive method is called 'transactional banking'. For a time, treasurers were content with the results but towards the end of the 1980s the drawbacks of this mercenary approach became apparent. Banks started to view some companies as one-off service takers interested in low cost only, and did not attempt to become knowledgeable about the firms. This led to complaints from corporations that banks were unable to provide more tailored advice and services which so many of them need. When crises arose, firms found banks deserting them and this often posed a threat to their existence. The lack of two-way knowledge meant a greater tendency to pull out of a difficult situation rather than help develop imaginative plans for regeneration. Also, maintaining contact with more than 100 bankers can be very costly if the treasury system is not to become chaotic.

Today the emphasis is back on 'relationship banking' in which there is much more intimacy, with corporations being open with their banks and attempting to nurture a long-term relationship. As a result, the quality of services from banks and the volume of consultancy service have risen. The banks are frequently willing to supply finance at a low interest rate as a loss leader so that they can pick up fee-based work later.

Risk Management

Running a business naturally entails taking risks - it is what business activity is about. Satisfactory profits rarely emerge from a risk-eliminating strategy; some risk is therefore inevitable. However it is up to managers of firms to select those risks the business might take and those which it should avoid. Take a company like GlaxoSmithKline which accepts high risks in its research and development programme. Should it also take a risk with exchange rates when it receives money from sales around the world, or should it try to minimise that particular type of risk? Risk reduction is often costly. For example, insurance premiums may be payable or transaction costs may be incurred in the derivative markets. Given the additional cost burden managers have to think carefully about the benefits to be derived from reducing or eliminating risk. There are at least three reasons firms sacrifice some potential profits in order to reduce the impact of adverse events.

It helps financial planning: Being able to predict future cash flows, can be advantageous and can allow the firm to plan and invest with confidence. Imagine trying to organise a business if the future cash flows can vary widely depending on what happens to the currency, the interest rate or the price of a vital raw material input.

Reduce the fear of financial distress: Some events can disrupt and damage a business to the point of threatening its existence. For example, massive claims have been made against firms involved in the production of asbestos. If it had not been for the passing on of this risk to the insurance companies many more of these firms would now be liquidated. A similar logic applies to the insurance of supertankers against an ocean oil spillage. By limiting the potential damage inflicted on firms, not only will the managers and shareholders benefit, but other finance providers, such as banks, will have greater confidence which will lower the cost of capital.

Some risks are not rewarded: It is possible to reduce risk in situations where there are no financial rewards for accepting that extra risk. For example, if British Airways

contracted to buy a dozen aircraft from Boeing for delivery over the next ten years and had to pay in dollars as each aero-plane was completed it would have to accept the risk of a recession in international flights and numerous other risks, but, in the sophisticated foreign exchange markets of today, at least it can eliminate one risk. It does not have to live with any uncertainty about the cost of the aero-planes in terms of sterling because it could make an arrangement with a bank at the outset to purchase the required number of dollars for a specified number of nairas at set dates in the future. (This is a forward agreement.) British Airways would then know precisely how many nairas will be needed to buy the dollars to pay Boeing in each year of the next decade.

There are many different types of risk that a commercial organisation has to deal with. We will discuss the four most important: business risk, insurable risk, currency risk and interest-rate risk.

Business risk

Many of the risks of operating in a competitive business environment have to be accepted by management to a greater or lesser extent. Sales may fall because of, say, recession, or innovative breakthroughs by competitors. Costs may rise because of, say, strong union power or government-imposed tariffs. For some of these risk elements there is little that management can do. However in many areas management can take positive action to reduce risk. For example consider a bakery company heavily dependent on buying in wheat. The managers are likely to be worried that the price of wheat may rise over the forthcoming months, thereby making their operations unprofitable. On the other hand farmers may be worried by the possibility of wheat falling in price. Both would value certainty. One way of achieving this is for the baker and farmer to enter into a wheat forward agreement, in which the baker agrees to take delivery of wheat at a later date at a price which is agreed today. Both sides now know exactly how much the wheat will be sold for and so can plan ahead.

There are other ways of reducing business risk. For example, firms are often faced with a choice between two machines. The first is highly specialised to a particular task, for example, turning out a particular component. The second, slightly more expensive machine can turn out the same component, but can also be used in a more flexible fashion to switch production to other components. The option to use the machine in alternative ways can sometimes have a high value and so it is worthwhile paying the extra initial set-up costs and even higher production costs.

Consider also an electricity generator contemplating the construction of a power plant. The installation of a coal-fired station would be N100m. This would leave the generator dependent on coal price movements for future profitability. An alternative power plant can be switched from coal to gas but costs an additional N30m. The value of the option to switch is then for the management to evaluate and weigh against the extra cost of construction.

Likewise, a car production line may be more expensive if it is to be capable of being used for a number of different models. But the option to use the facility for more than one type of car reduces the firm's risk by making it less dependent on one model. These are examples of real options.

Insurable risk

Many risks encountered by business can be transferred, through the payment of a premium, to insurance companies. These include factory fires, pollution damage and accidental damage to vehicles and machinery. Insurance companies are often better able to bear risk than ordinary commercial firms. The reasons for this are the following:

- ❖ experience in estimating probabilities of events and therefore 'pricing' risk more

- efficiently;
- ❖ knowledge of methods of reducing risk. They can pass on this knowledge to the commercial firms which may obtain lower premiums if they take precautionary measures;
- ❖ ability to pool risks, in other words, to diversify risk. The chance of an accident occurring in one firm is highly uncertain, but the probability of a particular proportion of a portfolio of insurance policies making a claim is fairly predictable.

Insurance can be an expensive option because of the tendency for insurance companies to charge for much more than the probability of having to payout. For example, if there was a one in a hundred chance of your N10,000 car being stolen in a year and never recovered then for every 100 cars insured the insurance company will expect one N10,000 claim per year. The insurance premium to each owner to cover this specific type of risk would, justifiably, be slightly over N100 ($N10,000/100$), to allow for a modest profit. However, in reality, the premium may be much more than this. The insurance company is likely to have to bear significant administrative costs in setting up the policy in the first place and then dealing with subsequent claims. Anyone who has had to communicate with an insurance company quickly becomes aware of the mountain of paperwork they generate annually. Insurance companies also have to charge premiums sufficiently high to cover the problems of 'adverse selection'. Put it this way: you may be a sensible car owner, being cautious about where you park your car, never leave the doors unlocked and live in a good part of town, but many of the other purchasers of theft insurance may be less fastidious and fortunate. The grouping together of good and bad risks tends to increase the cost of insurance to relatively good policyholders. This is made worse for the good policyholders by the increased tendency of those in high-risk situations to buy insurance. The third boost to insurance premiums comes from 'moral hazard' (the encouragement of bad behaviour) which causes holders of insurance to be less careful than they might otherwise be - the 'It's all right, don't worry, it's insured' syndrome. An extreme example of moral hazard has been created with the 'new-for-old' policies for electrical items in which a brand-new video cassette recorder, for example, is provided should the old one suffer accidental damage - some have been tempted to 'accidentally' drop the video!

These three additional costs may push insurance premiums beyond acceptable levels for a firm. In some cases large corporations have taken the bold decision to bear many insurable risks. They may still pay insurance premiums to safeguard against major events which threaten the continuance of the firm but accept routine risks themselves such as machine breakdown, accidents at work, etc. There seems little point in paying premiums just to receive a regular, but lower, inflow in return. The treasurer may have an important role in deciding which risks to insure and which to accept in-house.

Currency risk

Another major area of responsibility for the corporate treasurer is in the management of risk which arises because exchange rates move. Take the case of Acarus plc which has sold electrical goods to an Australian importer on six months' credit. The importer is sent an invoice requiring payment of A\$20m. The current exchange rate is two Australian dollars to one naira so if currency rates do not change in six months Acarus will receive N10m. If the exchange moves to A\$1.80 : N1 then Acarus will receive N11.11m, and will be very pleased with the extra N1.11m of income. However matters might turn out worse than expected. Say the rate of exchange moved to A\$2.20 : N1. Then Acarus would receive only N9.09m. If the management team are risk averse they may say to themselves, 'While we like the possibility of making additional profit on the deal this is more than outweighed by the downside risk of making less than N10m'. There are various

ways of ensuring that Acarus receives at least ₦10m and an entire unit is devoted to the subject of exchange-rate risk management. Here we will have just a taster. One of the possibilities is for Acarus to buy an option giving the firm the right but not the obligation to exchange A\$20m for sterling at a rate of A\$2 : N1 in six months. If the dollar appreciates against the naira to A\$1.80 then Acarus would choose not to exercise the option - to let it lapse and then exchange the A\$20m for N11.11m in the spot market in six months' time. Alternatively, if the dollar falls against sterling Acarus would insist on exercising the option to receive N10m rather than exchanging at the spot rate of A\$2.20 : N1 and therefore achieving a mere N9.09m. By purchasing the option Acarus ensures that the lowest amount it will receive is N10m and the upside potential is unrestrained. However it would need to pay a hefty premium to the option seller for passing on this risk - perhaps 2 to 4 per cent of the amount covered. The difficult part is weighing the cost of risk-reducing action against the benefit.

Interest-rate risk

Future interest rates cannot be predicted with any degree of accuracy. If a company has large amounts of floating-rate debt it could be vulnerable to interest-rate rises. Alternatively, a company with large fixed-rate debt could have to live with regret and higher debt costs than necessary, if interest rates fall.

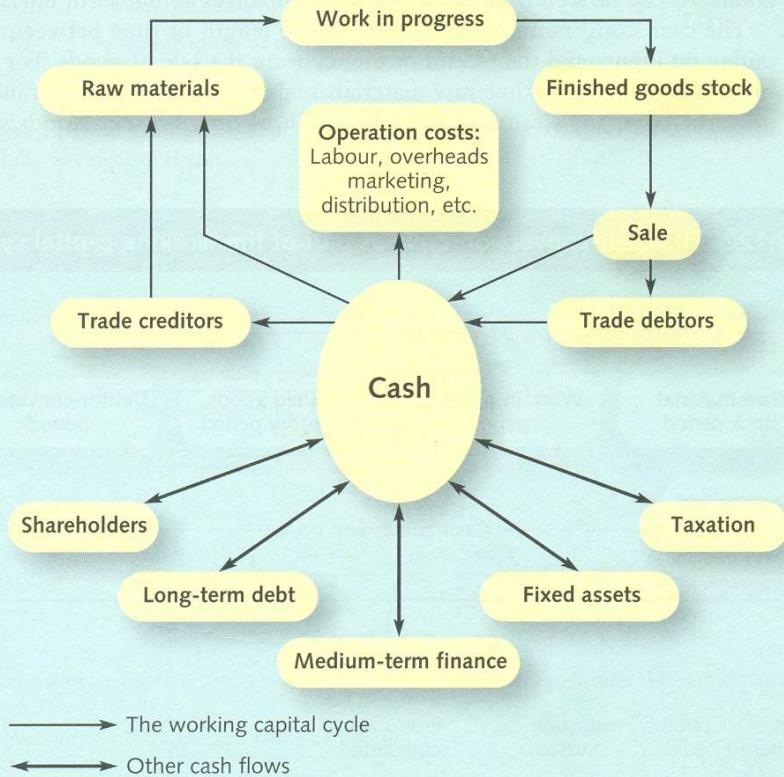
There is a wide variety of arrangements and financial products which enable a treasurer to reduce the firm's exposure to the vicissitudes of interest rates. Here we examine one of the weapons in the treasurer's armoury - the cap.

Ace plc wishes to borrow N20m to finance a major expansion. It does so at a floating rate plus 150 basis points. Rate is currently 8 per cent and therefore Ace pays a rate of 9.5 per cent. This loan is a large sum relative to Ace's capital base and profits, and the management are concerned that if the rate rises above 10 per cent the firm will get into serious financial difficulty. To avoid this Ace purchases a cap agreement by which a bank promises to pay any interest charge above a rate of 10 per cent. Thus, if two years later rate rises to 11 per cent, without the cap Ace would pay 12.5 per cent. However, Ace can call upon the bank which made the cap agreement to pay the extra 1 per cent. Ace's effective interest charge cannot go beyond a total of 10 per cent + 1.5 per cent = 11.5 per cent. What is more, Ace can benefit if interest rates fall because rates are linked to a variable rate at any rate below the cap. The premium charged by the bank for this form of interest-rate insurance can be quite substantial but there are ways of offsetting this cost, for example by simultaneously selling a floor, but consideration of this will have to wait until later. Suffice to say, the judicious management of interest-rate risk can be an important part of the treasurer's job description.

3.3 Working capital management

A firm needs to invest in order to thrive. Major long-term investments in a new factory or new machinery are part of that investment. Another necessary element for expansion is additional resources devoted to current assets. Higher levels of output call for extra inventories of raw materials and work in progress (WIP) (partially finished goods). More sales volume often means that additional credit is granted to customers so that the investment in debtors (receivables) increases. Greater sales usually means more inventory held in the form of finished goods. Also, a higher level of general business activity usually requires greater amounts of cash to oil the wheels. Some of the additional investment in inventories, debtors and cash may come from long-term sources of finance but in most cases short-term sources such as trade credit or a bank overdraft will cover much of the increased need.

Exhibit 13.11 A typical working capital cycle and other cash flows



The lower half of the diagram in Exhibit 13.11 shows non-working capital cash flows. These are generally infrequent events, involving large sums on each occasion and are of a long-term nature. They will not be considered any further in this unit.

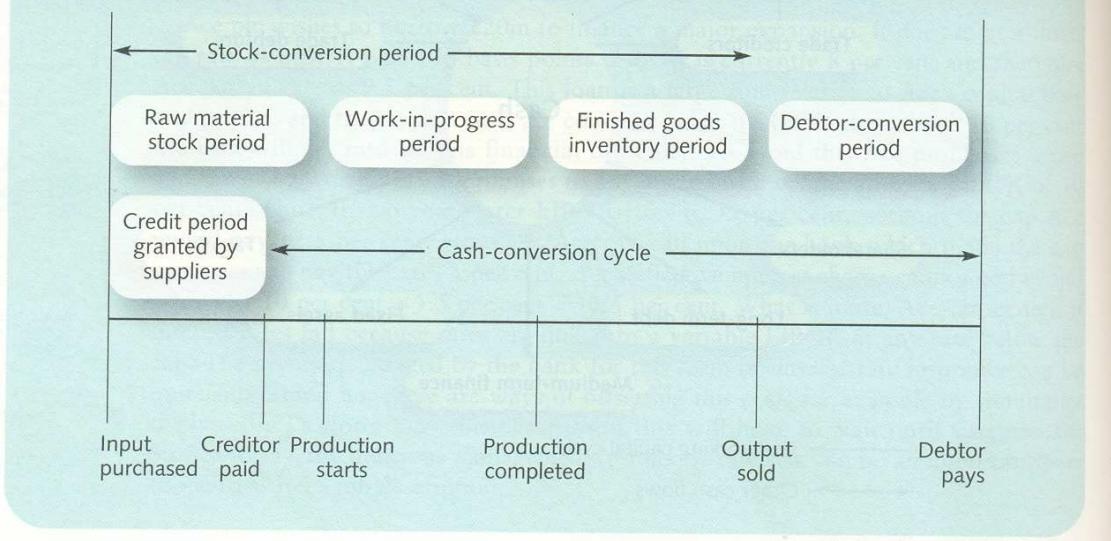
Money tied up in any stage in the working capital chain has an opportunity cost. In addition there are costs associated with storage and/or administration. The combined costs can be considerable and it is the art of good working capital management to so arrange the affairs of the business as to obtain a balance between the costs and benefits through raising or lowering stocks, cash, debtors and creditors to their optimum levels.

The amount invested by the average large UK firm in current assets is about 80 per cent of the amount devoted to fixed assets. The size and significance of working capital investment means that the success of an organisation may depend upon the wise implementation of well thought-out policies.

Cash-conversion cycle

The working capital cycle can be expressed in terms of the length of time between the acquisition of raw materials and other inputs and the inflow of cash from the sale of goods. As can be seen from Exhibit 13.12 this involves a number of intermediate stages. The cash-conversion cycle focuses on the length of time between the company's outlay on inputs and the receipt of money from the sale of goods.

Exhibit 13.12 The cash-conversion cycle as part of the working capital cycle



For manufacturing firms it is the average time raw materials remain in stock, plus the time taken to produce the company's output, plus the length of time finished goods stay within the company as a form of inventory, plus the time taken for debtors to pay, less the credit period granted by suppliers. The shorter this cycle the fewer resources the company needs to tie up. The cash-conversion cycle can be summarised as the stock-conversion period plus the debtor-conversion period less the credit period granted by suppliers see **Exhibit 13.13**.

Exhibit 13.13 Summary of cash-conversion cycle

$$\text{Cash-conversion cycle} = \text{Stock-conversion period} + \text{Debtor-conversion period} - \text{Credit period granted by suppliers}$$

The cash-conversation cycle can be calculated approximately using the terms set out in Exhibit 13.14

The cash-conversion cycle can, perhaps, be better understood when some numbers are attached. The figures given in **Exhibit 13.15** can be used to illustrate it.

Exhibit 13.15 Figures invented in order to calculate a cash-conversion cycle

Time (year end, as flow for year)	20X1 fm	20X2 fm	Mean fm	Per day during 20X2 F
Raw materials inventory	22	24	23	
Creditors	12	14	13	
Work-in-progress inventory	10	11	10.5	
Finished goods inventory	9	10	9.5	
Debtors	30	32	31	
Sales (annual)	150	170	-	465,753
Raw material usage (annual)	100	116	-	317,808
Cost of goods sold (annual)	130	146	-	400,000

The cash-conversion cycle is the length of time a naira is tied up in current assets. For the figures given in Exhibit 13.15 it is:

$$\text{Raw materials stock period} = \frac{23,000,000}{317,808} = 72 \text{ days}$$

$$\text{Less creditor period} = \frac{13,000,000}{317,808} = 41 \text{ days}$$

$$\text{Work-in-progress period} = \frac{10,500,000}{400,000} = 26 \text{ days}$$

$$\text{Finished goods inventory period} = \frac{9,500,000}{400,000} = 24 \text{ days}$$

$$\text{Debtor-conversion period} = \frac{31,000,000}{465,753} = 67 \text{ days}$$

$$\text{Cash-conversion cycle} = 148 \text{ days}$$

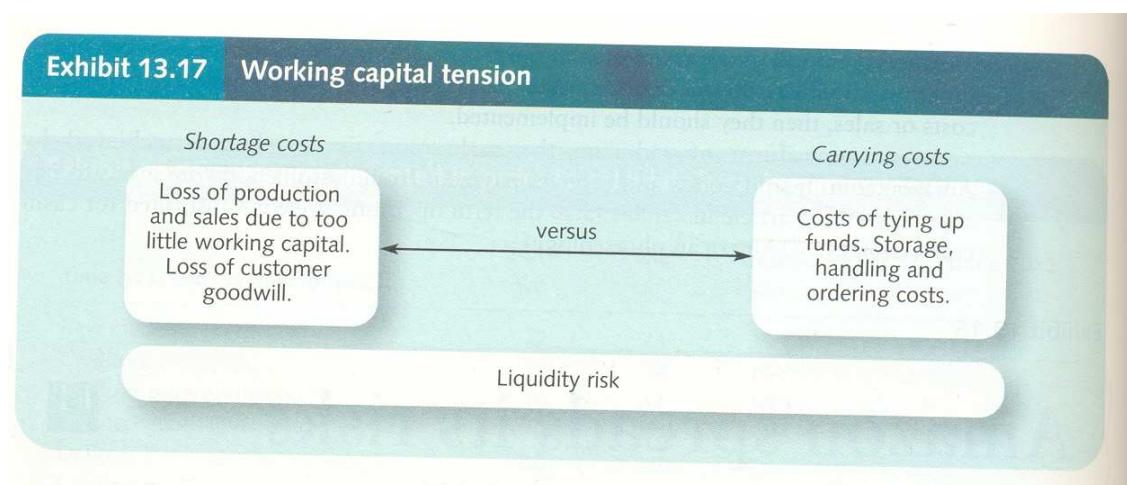
This is simplified to the creditor period on a single input, raw materials - there will be other inputs and creditors in most firms.

After observing the length of time money is invested in working capital the management of the firm are likely to try to think of ways of shortening the cash-conversion cycle - so long as such shortening does not excessively damage operations. A number of actions could be taken: debtor levels could be cut by changing the conditions of sale or

being more forceful in the collection of old debts; inventory levels can be examined to see if overstocking is occurring and whether the production methods can be altered to process and sell goods more quickly; perhaps creditors could be pushed into granting more credit. If these actions can be carried out without any adverse impact on costs or sales, then they should be implemented.

The difficult decisions come when reducing the cash-conversion cycle entails costs as well as benefits - then a careful evaluation and balancing of cost and benefits is needed. These will be considered later.

Exhibit 13.17 provides a brief overview of the tension with which managers have to cope. If there is too little working capital, it results in inventories, finished goods and customer credit not being available in sufficient quantity. On the other hand, if there are excessive levels of working capital, the firm has unnecessary additional costs: the cost of tying up funds, plus the storage, ordering and handling costs of being overburdened with stock. Running throughout is the risk of being temporarily short of that vital lifeblood of a business - cash (that is, suffering a liquidity risk).



The dynamics of working capital

The level of activity of an organisation is likely to have an impact on the investment needed in working capital. Take a company with annual sales of £10m and the working capital periods set out in Exhibit 13.18

Exhibit 13.18 Working capital periods

Stock-conversion period (raw material + work-in-progress + finished goods periods)	2 months
Debtor-conversion period	1.5 months
Creditor period	1 month

Assuming that the input costs are 60 per cent of sales the working capital investment will be £1,750,000:

Stock	$60\% \times £10m \times 2/12$	1,000,000
Debtors	$£10m \times 1.5/12$	1,250,000
Creditors	$60\% \times £10m \times 1/12$	-500,000
		<u>£1,750,000</u>

As the level of sales increases there are three possible types of impact on the level of working capital (if we exclude the theoretical fourth possibility of a decline):

- 1 The investment in working capital increases in proportion to the increase in sales because the conversion periods remain constant.
- 2 A disproportionate rise in working capital is experienced. The conversion periods may be lengthened because of longer credit granted to customers to increase sales or higher raw materials, WIP and finished goods inventory to support the increased activity. These moves may make logical business sense in order to generate more sales and avoid stock-out costs, or they may be a result of poor working capital management. Much depends on the environment and the economics of the business concerned.
- 3 Working capital increases at a slower rate than the sales volume.

These three possibilities are shown in **Exhibit 13.19**. What emerges from Exhibit 13.19 is that even though remarkable strides are made in limiting the rise in working capital as a proportion of sales in the third scenario, the firm will still have to find additional finance to invest in this area. If it fails to do so the firm may cease production due to an inability to pay for day-to-day expenses.

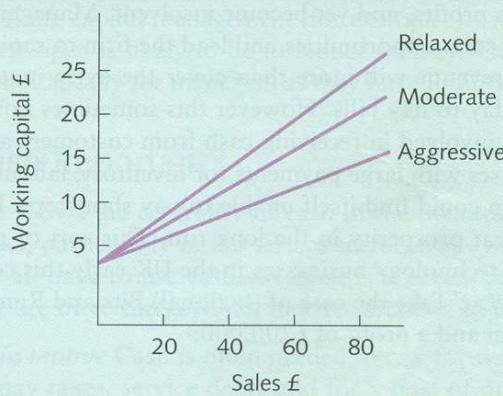
Exhibit 13.19 Working capital changes when sales rise by 50 per cent

Conversion periods	Possibility 1	Possibility 2	Possibility 3
Stock	Constant @ 2 months	Increase to 3 months	Decrease to 1½ months
Debtors	Constant @ 1½ months	Increase to 2 months	Decrease to 1 month
Creditor	Constant @ 1 month	Increase to 1½ months	Decrease to ½ month
	£m	£m	£m
Stock	$60\% \times £15m \times 2/12 = 1.5$	$60\% \times £15m \times 3/12 = 2.25$	$60\% \times £15m \times 1\frac{1}{2}/12 = 1.125$
Debtors	$£15m \times 1\frac{1}{2}/12 = 1.875$	$£15m \times 2/12 = 2.50$	$£15m \times 1/12 = 1.250$
Creditors	$60\% \times £15m \times 1/12 = -0.750$	$60\% \times £15m \times 1\frac{1}{2}/12 = -1.125$	$60\% \times £15m \times \frac{1}{2}/12 = -0.375$
Working capital investment	<u>2.625</u>	<u>3.625</u>	<u>2.0</u>
Absolute increase	0.875	1.875	0.25
Percentage increase over £1.75m	50%	107%	14%

Working capital policies

Exhibit 13.20 shows three alternative policies for working capital as sales rise. The top line represents a relatively relaxed approach with large cash or near-cash balances, more generous customer credit and/or higher inventories. This may be a suitable policy for a firm operating in a relatively uncertain environment where safety (or buffer) stocks of raw materials, work in progress and finished goods are needed to avoid production stoppages and lost sales due to stock-outs. Customers may demand longer to pay and suppliers are less generous with credit. The aggressive stance is more likely to be taken in an environment of greater certainty over future flows, which permits working capital to be kept to relatively low levels. Here the firm would hold minimal safety stocks of cash and inventories and/or would be able to press customers for relatively early settlement while pushing trade creditors to increase the time interval between receipt and payment for inputs. The aggressive policy approach will exhibit a shorter cycle for cash conversion.

Exhibit 13.20 Policies for working capital



Note: The numbers are illustrative and do not imply a 'normal' relationship between sales and current assets.

Overtrading

A firm operating in a particular business environment and with a given level of activity will have certain levels of working capital needs. For example, a manufacturing firm with a stable level of annual sales will aim to invest an optimum amount in stocks and trade debtors. If sales should rise, by, say, 50 per cent, then it is likely that stocks of raw materials, WIP and finished goods will rise and the money devoted to support additional debtors will also increase. Perhaps the rise in investment in working capital will need to be more than 50 per cent, or perhaps the economics of the firm means that a lower proportionate rise in working capital is needed for each increase in total activity. Whatever the particular circumstance of each firm it is likely that additional working capital resources will be needed to permit judicious expansion without the fear of overtrading.

Overtrading occurs when a business has insufficient finance for working capital to sustain its level of trading.

A business is said to be overtrading when it tries to engage in more business than its working capital will allow. It could be that too much money is tied up in stocks and trade debtors, and cash is not coming in quickly enough to meet debts as they fall due. It could be that the firm failed to obtain sufficient equity finance when it was established to support its trading level or it could be that the managers are particularly bad at managing the working capital resources that they have. The most common cause of overtrading (or under-capitalisation) is a failure to match increases in turnover with appropriate increases in finance for working capital.

It may seem odd that a firm could suffer from an increase in the demand for its products, but in the harsh world of business it is perfectly possible for a firm to double its sales, and its profits, and yet become insolvent. Managers can be sorely tempted by the lure of new sales opportunities and lead the firm to rapid expansion, believing that the additional revenue will more than cover the extra investment needed in working capital to pay day-to-day bills. However this sometimes does not work out because of the time delays involved in receiving cash from customers and the necessity to precede turnover increases with large payments for inventory, labour and other costs.

Thus the firm could find itself unable to pay short-term bills while at the same time anticipating great prosperity in the long run. This sort of problem arose in a number of information technology businesses in the UK early this century as turnover doubled or tripled in a year.

Why is cash important?

Exhibit 13.11 shows the centrality of cash in the operations of firms. Many firms do not have stocks, particularly in the service sector, while others do not have debtors or creditors, but all have to use cash. So what is it about cash which causes all firms to need it? There are three categories of motives ascribed to the holding of cash:

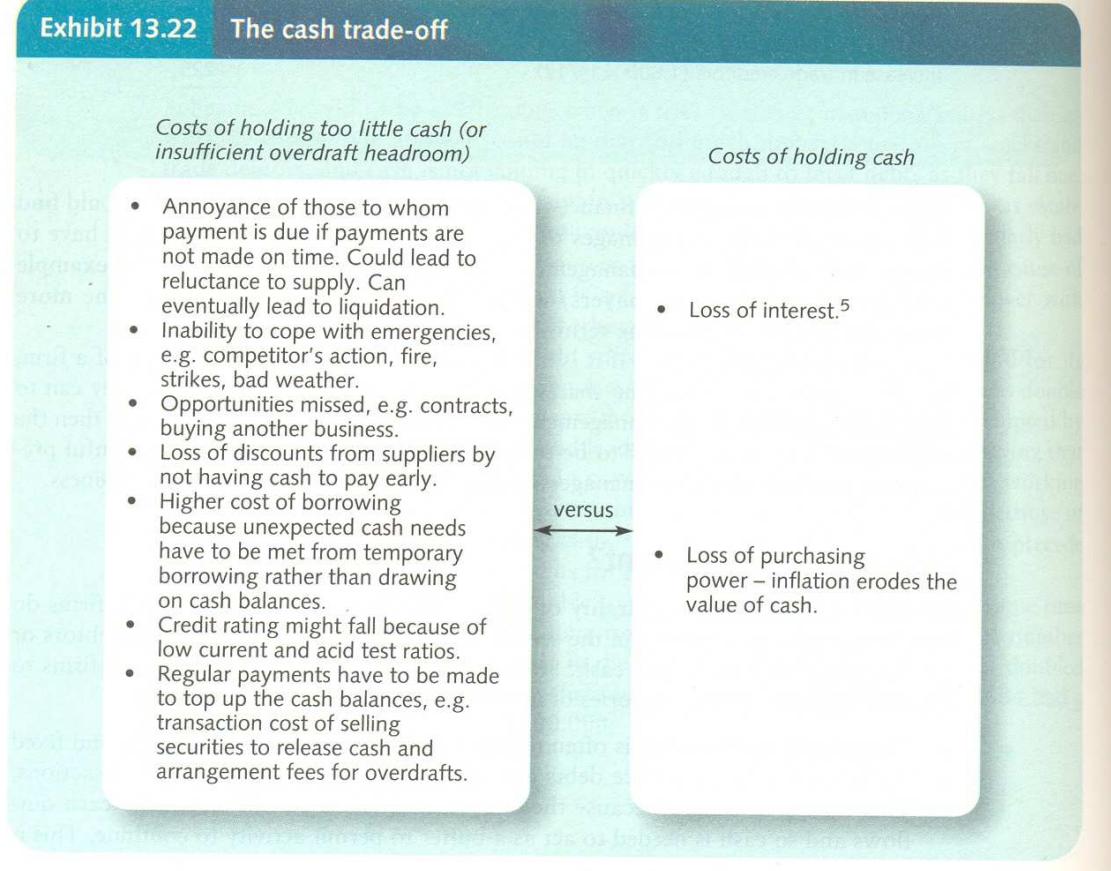
1. **Transaction motive:** Cash is often needed to pay for wages, buy materials and fixed assets, to pay taxes, service debts and for a host of other day-to-day transactions. This cash is necessary because the daily cash inflows do not match the cash outflows and so cash is needed to act as a buffer to permit activity to continue. This is particularly important in seasonal businesses or where long credit periods are granted to customers.
2. **Precautionary motive:** The forecasting of future cash flows is subject to error. The more vulnerable cash flows are to unpredictable shocks the greater the cash

- balance needed to act as a safety stock. Future cash flows can vary from those originally anticipated for a wide variety of reasons, for example a sales shortfall, a strike or the failure of a supplier.
3. **Speculative motive:** This simply means that any unexpected profitable opportunities can be taken immediately, for example, to purchase a competitor firm quickly when a fleeting opportunity presents itself.

Operating cash is money held for operating purposes which is earning below-market interest rates because the firm needs quick access to it on a regular basis. So money held in cheque accounts is considered cash even if it is not in the form of the 'foldable stuff', because the interest earned on it is low due to the convenience of account withdrawals. Thus the firm deliberately makes an interest rate sacrifice to hold cash either in currency or in an easily accessible account.

Exhibit 13.22 shows the trade-off management to take into account when considering the levels of cash to maintain. Note that in many firms it is the fluctuations in the overdraft that provide the cash.

Exhibit 13.22 The cash trade-off



Cash management models

Models have been developed which attempt to set cash levels at a point, or within a range, which strikes the best balance between the costs outlined in Exhibit 13.22. All these models suffer from being over-simplistic and are heavily dependent on the accuracy of the inputs. There is also a danger of managers using them in a mechanical fashion, and neglecting to apply the heavy dose of inference needed to allow for the less easily quantified variables ignored by the models.

Baumol's cash model

Baumol's model assumes that the firm operates in a steady state environment where it uses cash at a constant rate which is entirely predictable. Take the case of Cypressa pic which pays out N100,000 per week and receives a steady inflow of N80,000. The firm will have a need for additional cash of N20,000 per week. (This may sound like a disastrous pattern at first glance. However, it could be that Cypressa is highly profitable but has these cash flow shortages for the forthcoming months because of large capital expenditure. Eventually there will be a large cash inflow.) If it has a beginning cash balance of N80,000 then the pattern of cash balances over time will be as shown in Exhibit 13.23. It takes four weeks for the initial balance to be reduced to zero. At the end of Week 4 the cash balance is topped up to N80,000 by the firm, say, borrowing or selling some of its holdings of securities such as Treasury bills. Both of these actions involve costs. Let us say that the arrangement fees on N80,000 of borrowing or the transaction costs of selling N80,000 of Treasury bills are N500.

In Baumol's cash model the average amount of cash on hand and therefore earning no interest (an opportunity cost) is half of the maximum cash balance. If we denote the maximum cash balance as Q , the average cash balance is $Q/2 = N40,000$. The firm has the task of deciding on the most appropriate level of Q . For example instead of N80,000 it could raise the level of the maximum cash balance to N120,000, in which case the average cash balance incurring an opportunity cost of forgoing interest would be N60,000. However this would also mean a saving on the transaction costs of arranging for a loan or selling securities because this would happen less frequently. Instead of every four weeks new finance would be drawn upon every six weeks. The forgone interest opportunity cost of having large cash holdings has to be compared with the lower transaction costs. This is shown in Exhibit 13.24, where, as the amount of cash held is increased, the frequency (and therefore the transaction cost) of selling securities or borrowing declines while the cost of interest forgone rises.

Exhibit 13.23 Cash balances for Cypressa plc with Baumol's model assumptions

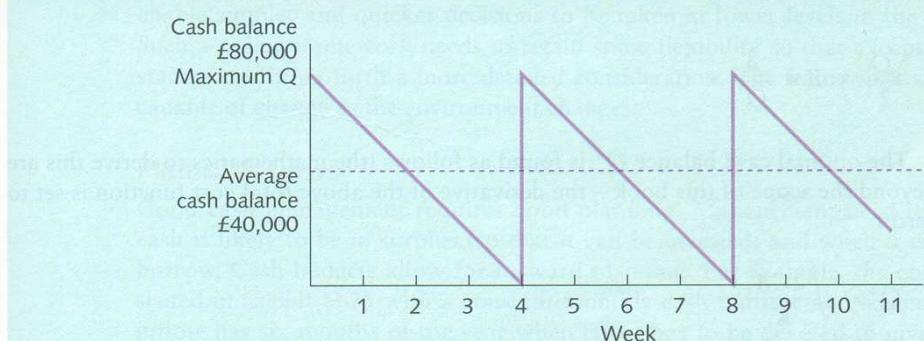
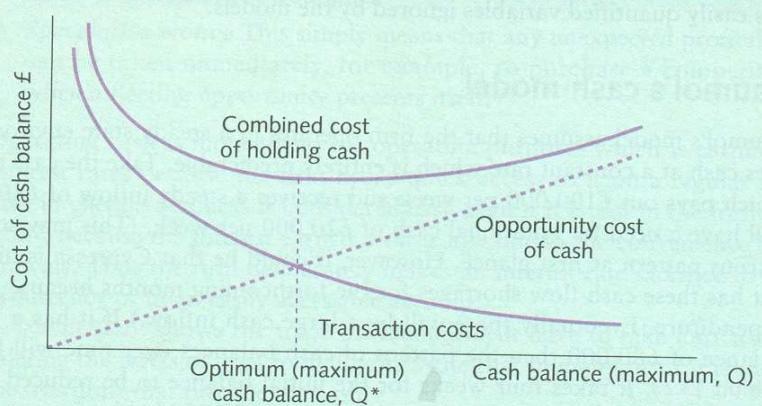


Exhibit 13.24 Finding the optimum cash balance



We have the following factors to help establish the position of Q^* mathematically:

- Q = maximum cash balance
- $Q/2$ = average cash balance
- C = transaction costs for selling securities or arranging a loan
- A = total amount of new cash needed for the period under consideration; this is usually one year
- K = the holding cost of cash (the opportunity cost equal to the rate of return For-gone)

The total cost line consists of the following:

Average amount tied up x Opportunity cost - Number of transactions x Cost of each transaction

$$= \frac{Q}{2} x K + \frac{A}{Q} x C$$

The optimal cash balance Q^* is found as follows (the mathematics to derive this are beyond the scope of this book - the derivative of the above total cost function is set to zero):

$$Q^* = \frac{2CA}{K}$$

If we assume the interest rate forgone, K , is 7 per cent then, given that the annual need for cash is $(N20,000 \times 52) = N1,040,000$ for Cypressa, the optimal amount to transfer into cash on each occasion is:

$$Q^* = \frac{2 \times N500 \times N1,040,000}{0.07} = N121,890$$

Given the assumptions of the model Cypress a should replenish its cash balances when they reach zero to the extent of N121,890.

We can also calculate the number of times replenishment will take place each year:

$$A/Q^* = N1,040,000 / N121,890$$

that is, between eight and nine times per year.

Larger firms often find it worthwhile to buy and sell securities to adjust cash balances almost every day of the year. Take the case of a firm with an annual turnover of N2bn which pays N600 transaction costs every time it deals in the money market to, say, purchase Treasury bills. If the annual rate of return on money market instruments is 7 per cent, or 0.0185 per cent per day, then the daily interest on N5.5m (approximately one day's turnover) is N1,018 and it makes sense to lend for one day as the interest received outweighs the transaction costs. Sticking strictly to Baumol's model the firm should deal in N5.86m quantities or 342 times per year -let's say, every day:

$$Q^* = \frac{2 \times N600 \times N2,000,000,000}{0.07} = N5.86m$$

The basic model demonstrated here could be modified to cope with the need for a safety stock of cash to reduce the probability of cash shortages in a less than certain world. One

drawback of the model is its inapplicability when finance is provided by way of an overdraft. If the drawdown of additional cash from an overdraft has no transaction cost, the whole issue boils down to ensuring that the overdraft limit is not exceeded.

3.4 Investment of temporary surplus funds

Most companies generate occasional cash surpluses which need to be kept within the business to be used at a later date. In the meantime opportunities should be taken to generate a return on these funds by following the treasurer's maxim 'never let cash lie idle'.

Short-term cash surpluses arise for a number of reasons and for varying periods of time. If a business is seasonal or cyclical there may be a build-up of cash in certain periods. For example Chrysler, Ford and General Motors, the US car producers, were heavily criticised for their multibillion-dollar portfolio of near-cash financial instruments during 1997. Chrysler had \$6bn, Ford \$9bn and General Motors \$12bn. Some of the shareholding critics would have preferred the companies to payout this money to them. The management however argued that the car industry is a cyclical one and they need large cash or near-cash balances in good times in order to maintain product development and capital spending through a downturn in profits - which eventually arrived as a price war, which wiped out profits in 2001-4.

Firms also build up cash reserves to be able to meet large outflow events such as major asset purchases, dividends, tax bills or bond redemptions. In addition, some firms may have sold an asset or raised fresh borrowing but have yet to direct that money to its final use. Alternatively, cash could be in surplus due to surprisingly good control of working capital. Sometimes cash builds up because the business is highly profitable and the management choose to hold on to it. In 2004 Microsoft was generating cash at a rate of around \$3bn per quarter, totalling \$50bn.

Senior management, in partnership with the treasurer, need to consider carefully what proportion of surplus cash is permanent and therefore available for dividends or to repay debt and what proportion is really temporary.

Exhibit 13.34 The credit trade-off

Costs of not taking trade credit

- If trade credit is not taken alternative sources of finance may have to be used, which may be costly.
- Paying all bills on delivery may involve more administration expense than paying through a delayed account system.

Costs of accepting trade credit

- Passing up of lower prices/discounts.
- Loss of reputation/goodwill if late payment is pushed too far.
- Administration costs of managing of trade creditor records and making payments.

versus

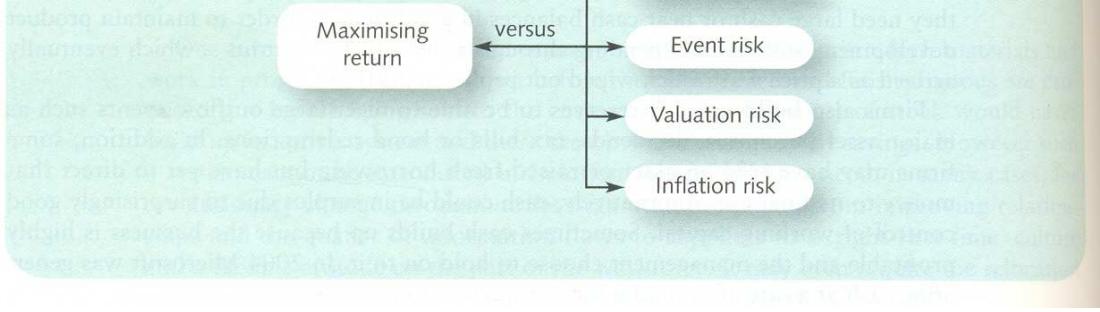
The objective

A treasurer will set as an objective the maximisation of return from temporarily surplus cash, but this is subject to the constraints imposed by risk. One of those risk elements is the possibility of not having cash available at the right time to fund working capital - this is liquidity risk, i.e. not being able to sell the investment and raise cash quickly. There is a requirement to ensure that investments are sufficiently liquid to match anticipated cash flow needs and that there is a reserve (a safety margin) to provide a buffer against unpredictable events. Funds invested in a commercial bill may not be available for a three-month period whereas money placed in a 'sight' bank account can be withdrawn at very short notice. There is a price to pay for this degree of flexibility: keeping other factors constant, the rate of return on a more liquid financial asset is less than that on a less liquid one.

Another consideration for the treasurer is the risk of default (credit risk). This is the risk that the borrower will be unable to meet the interest and principal payments. Lending to the UK government (for example, buying Treasury bills) carries a minute default risk whereas investment in shares or corporate bonds can carry significant risk of non-payment.

Another risk factor is event risk. This is the probability that some events such as a change in capital structure (leverage) of the borrower will occur which will increase the risk of default. Valuation risk (or price risk) occurs because of the possibility that when the instrument matures or is sold in the market the amount received is less than anticipated. It could be that interest rates have risen unexpectedly, which will depress bond prices, or the investing firm may have to pay a penalty for early redemption. Inflation risk is the probability of a reduction in purchasing power of a sum of money.

The treasurer has the task of balancing return and acceptable risk when investing temporarily surplus funds, as shown in Exhibit 13.35.



Investment policy

There are three crucial areas in which senior management need to set policy guidelines for treasurers:

1. Defining the investable funds Just how much of the firm's cash is to be available to invest is often a difficult decision. Subsidiaries will require minimum working capital and so cash has to be allocated to the units by the centre. But subsidiaries often lack the specialised personnel and economies of scale to carry out effective surplus cash investment so this is best done from the centre. It is therefore necessary to have policies and mechanisms for transferring cash between the central treasury and the operating units. The centre will need to provide sufficient cash to the subsidiaries to avoid liquidity risk, that is, a shortage of cash to pay day-to-day bills. This is likely to be uppermost in the minds of subsidiary managers whereas the treasurer will want to keep a tight rein to ensure cash is not being kept idle. This tension needs clever resolution.
2. Acceptable investment In this case the treasurer may be permitted a wide range of investments, from bank deposits to futures and options. Alternatively there may be limits placed on the type of investment. For example, foreign shares may be excluded because of the valuation risk and the risk of exchange rates moving adversely. Perhaps all derivative instruments are banned except for the purpose of hedging.
3. Limits on holdings: This is within the acceptable range of instruments it may be necessary to set maximum acceptable holdings. This may be in terms of total monetary amount or as a proportion of the total investable funds. For example, the treasurer may not be permitted to invest more than 30 per cent of funds in the Euromarkets.

EXERCISES: 1. Why do firms hold cash?

2. Why do firms need to make short-term financial investments.

4.0 CONCLUSION

Considering the complexity of modern finance it is not surprising that treasury management has become a profession in its own right. The efficient management of short-term assets and liabilities gives the competitive edge needed for a firm to survive and thrive.

This unit has highlighted the core issues in treasury and working capital management but, in all truth, it has only skimmed the surface. One major question left untouched is whether to centralise the treasury function. The oil group, Shell, has chosen to centralise its treasury functions, so that today, despite Shell businesses operating in 145 countries, its cash and foreign exchange needs are handled by treasury operations in only three centres: London, Houston and Singapore. They handle 70,000 internal and external transactions worth over \$3,000bn per annum. The operating companies that make up Shell are able to use the central treasury for foreign exchange and money market deals. In this way the best rates can be achieved on the market due to economies of scale and netting (combining subsidiary balances and simply dealing with the net amounts), control over risk levels can be exercised, skills can be concentrated and advantage can be taken

of the sophisticated computerised treasury management systems. The argument against centralisation is that this can be bureaucratic, inflexible and slow to respond to the immediate needs of the operating managers in far-flung places.

5.0 SUMMARY

Another fundamental question is whether the treasury should act as a risk minimiser or a profit maximiser. Many companies make use of the derivative markets both to hedge (reduce risk) foreign exchange and interest rates, and for 'trading' purposes to try to make gains. Most firms, are adamant that their treasury should not speculate: 'The treasury department is not a profit centre. The danger with instructing the treasury to act as a profit centre is that the managers may be tempted to take excessive risks. There have been some spectacular and well-publicised losses made by members of treasury teams. The embarrassment to ostensibly staid and low-risk firms such as Procter & Gamble (US\$100m+ lost) can be considerable.

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9.0 TUTOR MARKED ASSIGNMENT

Tollhouse plc has a large overdraft which is expected to continue. Its annual sales are £10m, spread evenly through the year - the same amount in each week. The interest rate on the overdraft is 11 per cent. The present policy is to pay into the bank the weekly receipts from customers each Friday. However a new director has raised the question of whether it would be better to pay in on Mondays as well as Fridays especially in the light of the fact that Monday mornings' receipts are three times the level of the other days of the working week. No cash is received on Saturdays or Sun, costs £35 each time money is paid into the bank account and all daily cash inflows arrive before the regular paying-in time of 3 p.m. Ignore taxation and consider which of the following four policies is the best for Tollhouse:

- a. Continue to pay in on Fridays.
- b. Pay in on Mondays and Fridays.
- c. Pay in every day of the week.
- d. Pay in on Mondays and another selected day.

Also discuss ways of reducing the 'float' of a company

UNIT 11

VALUE MANAGEMENT

1.0 INTRODUCTION

The first few units of this book linked together the objective of shareholder wealth maximisation and acceptance or otherwise of proposed projects. This required knowledge of the concepts of the time value of money and the opportunity cost of investors' funds placed into new investments. If managers are unable to achieve returns at least as high as those available elsewhere for the same level of risk then, as agents for Investors, they are failing in their duty. If a group of investors place Nlm in the hands of managers who subsequently generate annual returns of 10 per cent those managers would in effect be destroying value for those investors if, for the same level of risk, a 14 per cent return is available elsewhere. With a future project the extent of this value destruction is summarised in the projected negative NPV figure.

This technique, and the underlying concepts, are well entrenched throughout modern corporations. However, the full potential of their application is only now dawning on a few particularly progressive organisations. Applying the notion of opportunity cost of capital and focusing on the cash flow of new projects rather than profit figures is merely skimming the surface. Since the mid-1980s a growing band of corporations, ranging from Pepsi in the USA to Lloyds TSB bank in the UK, have examined their businesses, or parts of their businesses, in terms of the following questions:

- How much money has been (or will be) placed in this business by investors?
- What rate of return is being (or will be) generated for those investors?
- Is this sufficient given the opportunity cost of capital?

These questions can be asked about past performance or about future plans. They may be asked about the entire organisation or about a particular division, strategic business unit or product line. If a line of business does not create value on the capital invested by generating a return greater than the minimum required then managerial attention can be directed to remedying the situation. Ultimately every unit should be contributing to the well-being of shareholders.

The examination of an organisation to identify the sources of value may not seem particularly remarkable to someone who has absorbed the concepts, but to many managers steeped in the traditions of accounting-based performance measures such as profits, return on investment and earnings per share, they have revolutionary consequences.

The ideas themselves are not revolutionary or even particularly new. It is the far reaching application of them to create a true shareholder-value-oriented company that can revolutionise almost everything managers do.

Instead of working with *plans* drawn up in terms of accounting budgets, with their associated distorted and manipulated view of 'profit' and 'capital investment', managers are encouraged to think through the extent to which their new strategies or operational initiatives will produce what shareholders are interested in: a discounted inflow of cash greater than the cash injected.

Instead of being *rewarded* for meeting objectives set in terms of accounting rates of return (and other 'non-value' performance measures, such as earnings per share and turnover) achieved in the short term, they are rewarded by the extent to which they contribute to shareholder value over a long time horizon. This can radically alter the incentive systems in most firms.

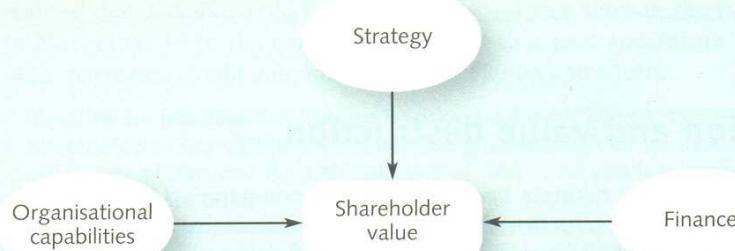
Instead of directors accepting a low *cash flow return on the value of assets tied up* in a poorly performing subsidiary because the accounting profits look satisfactory, they are forced to consider whether greater wealth would be generated by either closure and selling off the subsidiary's assets or selling the operation to another firm which can make a more satisfactory return.

There then follows a second decision: should the cash released be invested in other activities or be given back to shareholders to invest elsewhere in the stock market? The answers, when genuinely sought, can sometimes be uncomfortable for executives who prefer to expand rather than contract the organisation.

Dealing with such matters is only the beginning once an organisation becomes value based. Mergers must be motivated and evaluated on the criterion of the extent to which a margin above the cost of capital can be achieved given the purchase price. Strategic analysis does not stop at the point of often vague and woolly qualitative analysis, it goes on to a second phase of valuation of the strategies and quantitative sensitivity analysis. The decisions on the most appropriate debt levels and the dividend payout ratios have as their core consideration the impact on shareholder wealth. In the field of human resources, it is accepted that all organisations need a committed workforce. But committed to what? Shareholder value-based management provides an answer but also places an onus on managers to communicate, educate and convert everyone else to the process of value creation. This may require a shift in culture, in systems and procedures as well as a major teaching and learning effort.

Value-based management brings together the way in which shares are valued by investors with the strategy of the firm, its organisational capabilities and the finance function - see **Exhibit 15.1**.

Exhibit 15.1 Components of shareholder value-based management



Value-based management is much more than a technique employed by a few individuals 'good with numbers'. The principles behind it must pervade the organisation; it touches almost all aspects of organisational life.

Value-based management is a managerial approach in which the primary purpose is long-run shareholder wealth maximisation. The objective of the firm, its systems, strategy,

processes, analytical techniques, performance measurements and culture have as their guiding objective shareholder wealth maximisation.

2.0 OBJECTIVES

At the end of this unit you should be able to:

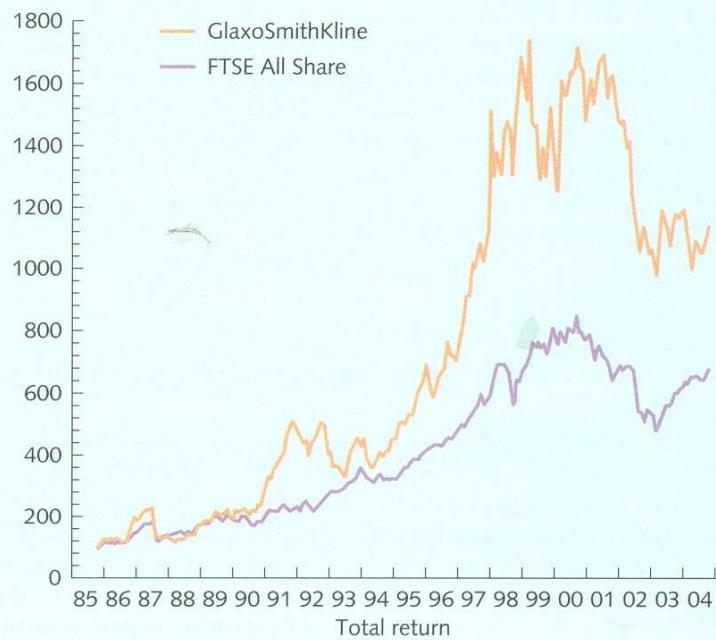
- Explain the failure of accounts – based management (e.g. profits, balance sheet assets, earning per share and accounting rate of returns to guide value – maximising decisions in many circumstances).
- Describe the four key drivers of value and the five actions to increasing value

3.0 Value creation and value destruction

We will start by taking a brief look at three companies. One has successfully created vast amounts of value for shareholders, one has destroyed shareholder value over a long period and one is trying to convert itself from a value destroyer to a value creator.

GlaxoSmithKline has been a terrific share over ten, twenty and thirty years. If you had bought N1,000 of shares in Glaxo in 1965 your holding would have grown to be over N1.8m by 2005. Ian White, pharmaceutical analyst at Robert Fleming, says of Glaxo, 'It had the combination of good commercial management, vibrancy and the drive to succeed, and the right products. You often get two of the three, but rarely the whole package.'¹ The return on Glaxo shares relative to the FTSE All-Share Index is shown in **Exhibit 15.3**.

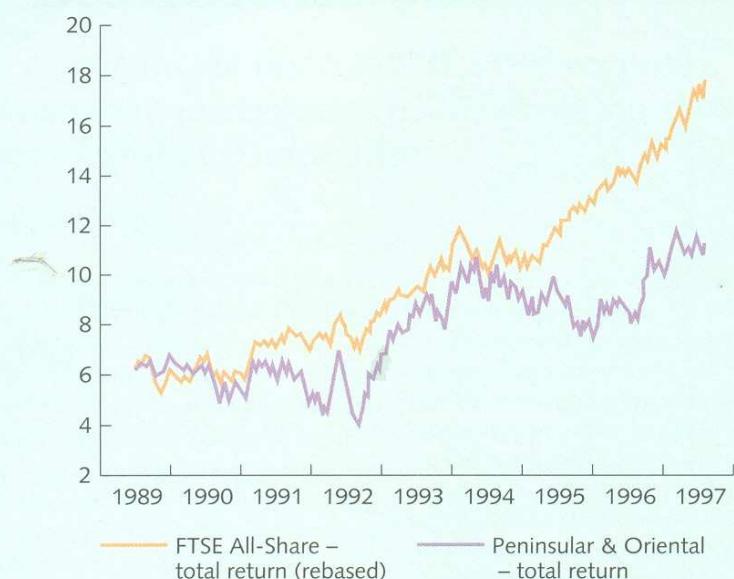
Exhibit 15.3 GlaxoSmithKline total share return performance (dividends plus capital gains)



Take another company, the UK-based industrial firm T & N. In 1982 investors realised that T & N would suffer as a result of asbestos-related litigation. During August of that year the market value of its shares fell to N37m as the shareholders realised that T & N would be forced to payout vast sums to the victims of asbestos. In November 1996 the company estimated that past and future compensation and other payments would amount to between N800m and N1.6bn.

In 1998 what was left of T & N was taken over by the US company Federal Mogul. Perhaps we can gain a glimpse of what shareholder value is by considering the mid1990s crisis at the transport property conglomerate P&O. Lord Sterling, the chairman, was facing a shareholder revolt and was battling to keep his job. As Exhibit 15.4 makes clear P&O had underperformed the FTSE All-Share Index for ten years.

Exhibit 15.4 P&O total return relative to the FTSE All-Share Index



The management is judged to have destroyed shareholder value by putting resources into activities which 'have not produced enough return to cover the cost of using the money'.³ When they began to shake themselves up the change was noticeable to outside observers such as David Court, a fund manager at Scottish Amicable: 'When we met P&O in early 1996 it was regarded by its management as a national institution holding the flag for UK plc. When we met again six months later there were some interesting changes. Much to our surprise, management recognised that there were shareholders out there.' The company announced a target rate of return on capital of 15 per cent for each of its operating divisions by 1998 and outlined plans to reduce its exposure to bulk shipping and sell off N500m worth of property and dispose of Bovis. Its container shipping business was merged with Nedlloyd to gain the necessary critical mass (112 container ships and a turnover of N4bn) in a highly competitive market and to gain cost savings estimated at between N120m and N400m. The English Channel ferry business was merged with Stena in 1998. These two shipping deals took P&O closer to making satisfactory returns. Many analysts were not convinced that these moves could save P&O, mainly because of the unattractiveness of many of the industries in which it operates; for example, in the container shipping market, freight rates were falling because there are too many ships chasing too little work.

P&O formed a joint venture with a Chinese company for its bulk shipping unit. In 1999 Bovis Homes was given a stock market flotation and Bovis Construction was sold to Australian owners in 1999. By 2000 P&O was achieving returns of nearly 15 per cent, but the share price had not risen very much over the three years of managerial effort (total shareholder returns on shares had averaged 2.6 per cent per year). The company pushed on with its search for shareholder value. This included investing in new capital items as well as disposals. For example it ordered nine ships for delivery during 2000-4 at a total cost of N2.3bn. The directors judged that more shareholder value could be achieved if the company split itself into two. In October 2000 it de-merged the cruise business from the ports, ferries and logistics business - a radical move as most of the company's value was in cruising. Over the next five years P&O (rather than P&O Princess Cruises) focused increasingly on the highly profitable business of container ports: selling its logistics business, its 50 per cent stake in the bulk shipping operations and retiring one-quarter of its ferries.

All these actions were designed to create value in each of its strategic business units. Sometimes it reduced costs by gaining sufficient scale through joint ventures, sometimes it sold an asset for more than what it was worth to P&O to a company that valued it more highly, sometimes it spent a tremendous amount of money buying new equipment to expand an operation.

3.1 The shareholder wealth-maximising goal

It is clear that many commercial companies put shareholder value in second or third place behind other objectives. So why should we feel justified in holding up shareholder wealth maximisation as the banner to follow? Isn't growth in sales or market share more worthy? What about the return to the labour force and to society generally?

There follows a brief recap and extension of some of the comments made in Unit 1 about the objectives of the firm that has responsibilities to shareholders in a competitive market environment.

There are several reasons why shareholder value is gaining momentum. One of these is the increasing threat of takeover by teams of managers searching for poorly managed businesses. Perhaps these individuals are at present running a competitor firm or are wide-ranging 'corporate raiders' ready to swoop on under-managed firms in any industry

which, through radical strategic change, divestiture and shifting of executive incentives, can create more value for shareholders.

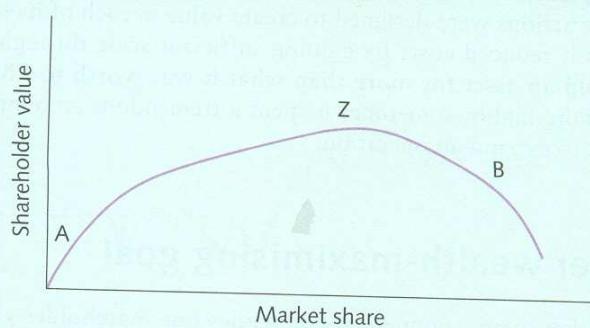
The owners of businesses have a right to demand that directors act in their best interests, and are increasingly using their powers to remove the stewards of their savings if they fail to do their utmost. To feel truly safe in their jobs managers should aim to create as much wealth as possible.

Arguably society as a whole will benefit if shareholder-owned firms concentrate on value creation. In this way scarce resources can be directed to their most valuable uses. Maximising the productivity of resources enables high economic growth and higher standards of living.

Confusing objectives

Some managers claim that they are measures of performance that are synonymous with, or good proxies for, shareholder wealth - such as customer satisfaction, market share leadership or lowest-cost producer. These proxies are then set as 'strategic objectives'. In many cases achieving these goals does go hand in hand with shareholder returns but, as Exhibit 15.5 shows, the pursuit of these objectives can be taken too far. There is frequently a trade-off between shareholder value and these proxy goals. Taking market share as an example: it is apparent that for many firms increasing market share will bring greater economies of scale, create barriers to entry for potential competitors and help establish brand loyalty, amongst other benefits. This sort of situation is demonstrated by moving from A to Z in Exhibit 15.5. High market share is clearly an important factor in many industries but some firms seem to become trapped in an obsessive quest for market share.

Exhibit 15.5 Market share as a strategic objective can be taken too far



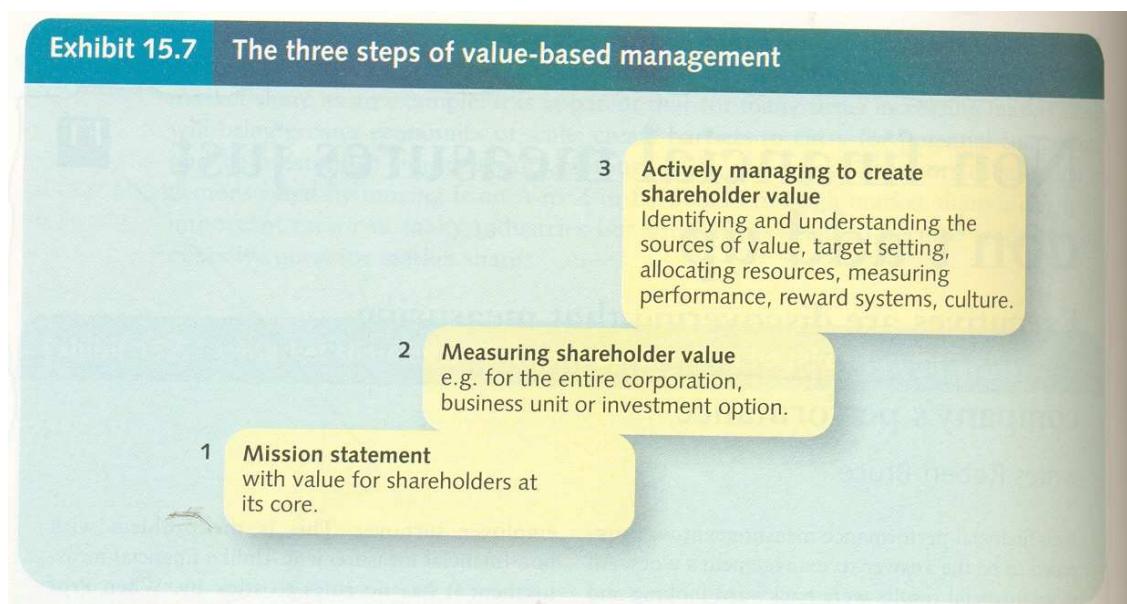
The car industry is notorious for its very poor returns to shareholders combined with addiction to market share data. For example the Detroit car makers averaged returns on capital of 3 per cent per year in the 1990s (*The Economist*, 23 February 2002, p. 100). Perhaps some in the industry have taken matters too far and ended up at point B in Exhibit 15.5. Enormous investment in plant capacity, marketing and price promotions has created a situation where the risk-adjusted returns on the investment are lower than the optimum.

3.2 Three steps of value

There are three steps to creating shareholder value - see Exhibit 15.7. First, create awareness of, and a genuine commitment to, a shareholder wealth-enhancing mission throughout the organisation. Secondly, put in place techniques for measuring whether value is being created at various organisational levels. And make sure everyone understands and respects the measures adopted. Thirdly, ensure that every aspect of management is suffused with the shareholder value objective, from human resource management to research and development.

It is clearly important to have a management team that both understand and are fully committed to shareholder value. To implement true shareholder wealth maximisation managers need to know how to measure the wealth-creating potential of their actions. Before turning to appropriate methods of evaluating value creation we will examine some of the more popular and increasingly dated measurement techniques used to guide (or misguide) a business.

Exhibit 15.7 The three steps of value-based management



3.3 Earnings-based management

The Financial Times's Lex column expressed a view on the traditional accounting-based performance measure of earnings (profits) per share:

How do you know a company is doing well? When earnings per share (eps) are growing rapidly, would be the standard reply. Eps is the main valuation yardstick used by investors; it has also become something of a fixation within companies. Rentokil, most famously among UK companies, has a target of boosting eps by at least 20 per cent a year. . . . But eps is not a holy grail in determining how well a company is performing. This is not merely because management still have latitude in deciding what earnings to report; it is because eps growth says little about whether a company is investing shrewdly and managing its assets effectively. It may, for example, be possible to boost eps by stepping up the rate of investment. But unless the return on investment exceeds the cost of capital, a company will be destroying value.

There are many reasons why earnings can mislead in the measurement of value creation, some of which are:

- accounting is subject to distortions and manipulations;
- the investment made is often inadequately represented;
- the time value of money is excluded from the calculation:

Accounting numbers

In drawing up profit and loss accounts and balance sheets accountants have to make inference and choose a basis for their calculations. They try to match costs and revenues. Unfortunately for the users of the resulting 'bottom line' figures, there can be many alternative approaches, which give completely different results and yet all follow accounting body guidelines.

Take the example of the identical companies X and Y. These have just started up and in the first three years annual profits before deducting depreciation of £3m are expected. Both companies invested their entire initial capital of £10m in plant and machinery. The accountant at X takes the view that the machinery has a useful life of ten years and that a 25 per cent declining balance depreciation is appropriate. The accountant at Y, after reviewing the information on the plant and machinery, is more pessimistic and judges that a seven-year life with straight-line depreciation more truly reflects the future reality. The first three years' profits are shown in Exhibit 15.8.

Exhibit 15.8 Companies X and Y: Profits for the first three years

	Years (£000s)		
	1	2	3
Company X			
Pre-depreciation profit	3,000	3,000	3,000
Depreciation	2,500	1,875	1,406
Earnings	500	1,125	1,594
Company Y			
Pre-depreciation profit	3,000	3,000	3,000
Depreciation	1,429	1,429	1,429
Earnings	1,571	1,571	1,571

The underlying economic position is the same for both company X and company Y, but in the first two years company X appears to be less profitable. Outside observers and management comparing the two companies may gain a distorted view of quality of stewardship and the potential of the firm. Investment decisions and incentive schemes based on profit figures can lead to sub-optimal decisions and behaviour. They may also lead to deliberate manipulation. There are several arbitrary accounting allocations that make comparisons and decisions difficult. These concern, for example, goodwill and provisions, extraordinary and exceptional items and the treatment of research and development expenditure.

Ignoring the investment money sacrificed

Examining earnings per share growth as an indicator of success fails to take account of the investment needed to generate that growth. Take the case of companies A and B (*see Exhibit 15.9*), both of which have growth in earnings of 10 per cent per year and are therefore equally attractive to an earnings-based analyst or manager.

To a value-oriented analyst A is much more interesting than B if we allow for the possibility that less additional investment is needed for A to create this improving profits pattern. For example, both firms need to offer credit terms to their customers: however B has to offer much more generous terms than A to gain sales; therefore it has to invest cash in supporting higher debtor balances. B is also less efficient in its production process and has to invest larger amounts in inventory for every unit increase in sales.

Exhibit 15.9 Companies A and B: Earnings

	Year (£000s)		
	1	2	3
Earnings of A	1,000	1,100	1,210
Earnings of B	1,000	1,100	1,210

When B's accounts are drawn up the additional debtors and inventory are included as an

asset in the balance sheet and do not appear as a cost element in the profit and loss account. This results in the costs shown in the profit and loss account understating the cash outflow during a period.

If we examine the cash flow associated with A and B (Exhibit 15.10) we can see immediately that A is generating more shareholder value (assuming the pattern continues and all other factors are the same).

Exhibit 15.10 illustrates the conversion from earnings to cash flow figures.

Exhibit 15.10 Companies A and B: Earnings and cash flow

Year	Company A £000s			Company B £000s		
	1	2	3	1	2	3
Profit (earnings)	1,000	1,100	1,210	1,000	1,100	1,210
Increase in debtors	0	20	42	0	60	126
Increase in inventory	0	30	63	0	50	105
Cash flow before tax	1,000	1,050	1,105	1,000	990	979
Percentage change		+5%	+5.2%		-1%	-1.1%

If B also has to invest larger amounts than A in vehicles, plant, machinery and property for each unit increase in sales and profit, the difference in the relative quality of the earnings growth will be even more marked.

Time value

It is possible for growth in earnings to destroy value if the rate of return earned on the additional investment is less than the required rate. Take the case of a team of managers trying to decide whether to make a dividend payment of N10m. If they retained the money within the business both earnings and cash flow would rise by N1,113,288 for each of the next ten years. Managers motivated by earnings growth might be tempted to omit the dividend payment. Future earnings would rise and therefore the share price would also rise on the announcement that the dividend would not be paid. Right or Wrong! Investors in this firm are likely to have a higher annual required rate of return on their N10m than the 2 per cent offered by this plan. The share price will fall and shareholder value will be destroyed. What the managers forgot was that money has a time value and investor's value shares on the basis of *discounted* future cash flows.

It seems so obvious that a 2 per cent rate of return on invested money is serving shareholders badly. Yet how many companies do you know holding tens or hundreds of millions of pounds in cash rather than giving it back to shareholders to invest elsewhere? Certainly, it gives managers a greater sense of security to have all that cash around - how can the company be liquidated and they lose their jobs? - but shareholders would rather this money was used more effectively and any money that cannot be used to generate good returns should be handed back to shareholders. If earnings per share are rising what have the shareholders got to complain about, retort the managers? The thundering reply is: it is easy to increase earnings per share just by holding on to ever-larger quantities of money; what shareholders want is a return greater than the opportunity cost of capital (the time value of money) - the return available elsewhere for the same level of risk.

Ignoring risk

Focusing purely on the growth in earnings fails to take account of another aspect of the quality of earnings: risk. Increased profits that are also subject to higher levels of risk require a higher discount rate. Imagine a firm is contemplating two alternative growth options with the same expected earnings, of N100,000 per year to infinity. Each strategy is subject to risk but S has a wider dispersion of possible outcomes than T (see Exhibit 15.12).

Investors are likely to value strategy T more highly than strategy S. Examining crude profit figures, either historic or projected, often means a failure to allow adequately for risk. In a value-based approach it is possible to raise the discount rate in circumstances of greater uncertainty.

Exhibit 15.10 Companies A and B: Earnings and cash flow

Year	Company A £000s			Company B £000s		
	1	2	3	1	2	3
Profit (earnings)	1,000	1,100	1,210	1,000	1,100	1,210
Increase in debtors	0	20	42	0	60	126
Increase in inventory	0	30	63	0	50	105
Cash flow before tax	1,000	1,050	1,105	1,000	990	979
Percentage change		+5%	+5.2%		-1%	-1.1%

Return on Capital Employed (ROCE) has failings

It is becoming clear that simply examining profit figures is not enough for good decision making and performance evaluation. Obviously the amount of capital invested has to be considered alongside the income earned. This was recognised long before the development of value-based management, as signified by the widespread use of a ratio of profits to assets employed. There are many variations on this theme: return on capital employed (RaCE), return on investment (ROI), return on equity (ROE) and accounting rate of return (ARR), but they all have the same root. They provide a measure of return as a percentage of resources devoted. The major problem with using these metrics of performance is that they are still based on accounting data. The profit figure calculations are difficult enough, but when they are combined with balance sheet asset figures we have a recipe for unacceptable distortion.

Added to the list of problems is the issue of capitalisation. That is the extent to which an item of expenditure is written off against profits as an expense or taken on to the balance sheet and capitalised as an asset. For example, firms differ in their treatment of research and development; companies that spend significant sums on R&D and then have a policy of writing it off immediately are likely to have lower asset value than those that do not write it off against profits in the year of expenditure. Cross-company comparisons of profits/assets can therefore be very misleading.

Focusing on accounting rates of return can lead to short-term. Managers who are judged on this basis may be reluctant to invest in new equipment, as this will raise the denominator in the ratio, producing a poor ARR in the short term. This can destroy value in the long run. Fast-growing companies needing extensive investment in the near term with the expectation of reaping rich rewards in the long term should not be compared with slow-growth and low-investing firms on the basis of ARR

The superficial highlighting of EPS and ARR

One of the most pervasive myths of our time is: 'But our shareholders do focus on EPS and ARR, don't they? -it is easy to see why. Senior executives when talking with institutional shareholders and analysts often find the conversation reverting to a discussion of short-term earnings forecasts. If a merger is announced directors feel the need to point out in press releases that the result will not be 'earnings dilutive' in the forthcoming year.

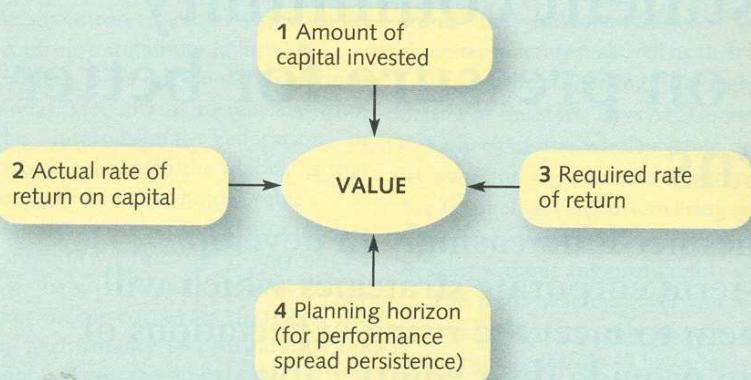
This surface noise is deceiving. Intelligent shareholders and analysts are primarily interested in the long-term cash flow returns on shares. The earnings attributable to the next couple of years are usually an insignificant part of the value of a share. Over two-thirds of the value of a typical share is determined by income to be received five or more years hence. Knowledge of this or next year's earnings is not particularly interesting in itself. It is sought because it sheds light on the medium- and long-term cash flows.

There are hundreds of quoted companies that do not expect to produce any positive earnings at all in the next two to five years and yet these shares are frequently amongst the most highly valued in the market. There are dozens of biotechnology companies that have tapped shareholders for funds through rights issues and the like for years. Some have become massive concerns and yet have never made a profit or paid a dividend. The same applies to Internet companies, and, in the past it was true of satellite television operators (i6r-exampl~) which have now reached the phase of high cash generation.

3.4 How a business creates value

Value is created when investment produces a rate of return greater than that required for the risk class of the investment. Shareholder value is driven by the four factors shown in Exhibit 15.16.

Exhibit 15.16 The four key elements of value creation



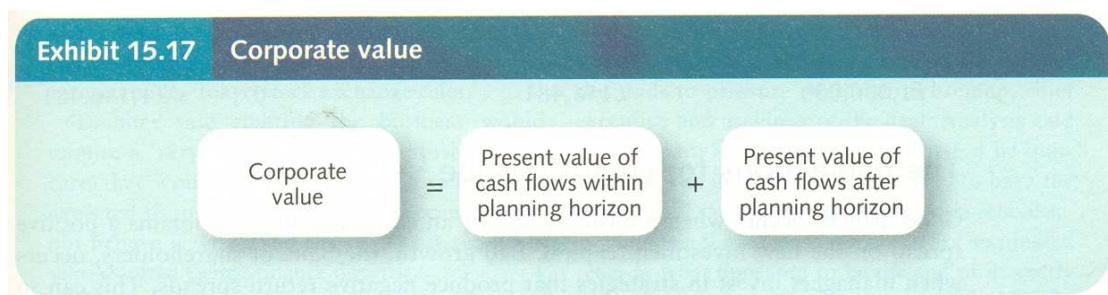
The difference between the second and third elements in Exhibit 15.16 creates the *performance spread*. The performance spread is measured as a percentage spread above or below the required rate of return, given the finance provider's opportunity cost of capital. Value is destroyed if 3 is greater than 2, and is created when 2 is greater than 3. The absolute amount of value generated is determined by the quantity of capital invested multiplied by the performance spread. So, for example, if Black plc has a required rate of return of 14 per cent per annum and actually produces 17 per cent on an investment base of N1,000,000 it will create N30,000 of value per year:

$$\begin{aligned}
 \text{Annual value creation} &= \text{Investment} \times (\text{Actual return} - \text{Required return}) \\
 &= I(r - k) \\
 &= N1,000,000 \times (0.17 - 0.14) = N30,000
 \end{aligned}$$

The fourth element in Exhibit 15.16 needs more explanation. It would be unreasonable to assume that positive or negative return spreads will be maintained forever. If return spreads are negative, presumably managers will (eventually) take the necessary action to prevent continued losses. If they fail to respond then shareholders will take the required steps through, say, sackings or the acceptance of a merger offer. Positive spreads arise as a result of a combination of the attractiveness of the industry and the competitive strength of a firm within that industry. High returns can be earned because of market

imperfections. For example, a firm may be able to prevent competitors entering its market segment because of economies of scale, brand strength or legal exclusion through patents. However most firms will sooner or later experience increased competition and reduced margins. The higher the initial performance spread the more attractive market entry seems to potential competitors (or substitute product developers). Examples of industries that were at one time extremely profitable and which were penetrated to the point where they have become highly competitive include personal computers and mobile phone manufacture.

In shareholder value analysis it is usually assumed that returns will, over time, be driven towards the required rate of return. Beyond some point in the future (the planning horizon) any new investment will, on average, earn only the minimum acceptable rate of return. Having said this, I do acknowledge that there are some remarkable businesses that seem to be able to maintain positive performance spreads for decades. Their economic franchises are protected by powerful barriers preventing serious competitive attack, e.g. Coca-Cola, Gillette. Warren Buffett calls such companies 'Inevitables' because there is every reason to believe they will be dominating their industries decades from now. If we leave Inevitables to one side, we see that for the majority of businesses their value consists of two components, as shown in Exhibit 15.17.



In the second period (after the planning horizon), even if investment levels are doubled, corporate value will remain constant, as the discounted cash inflows (to time zero) associated with that investment exactly equal the discounted cash outflows (to time zero). If it is assumed that Black plc can maintain its 3 per cent return spread for ten years and pays out all income as dividends then its future cash flows will look like this:

Years: 1 --- 10	11-- infinity
Cash flow: N170,000	N140,000

The value of the firm is the discounted value of these cash flows. The discounted cash flow within the planning horizon is:

$$N170,000 \times \text{Annuity factor (10 years, 14 per cent)} = N170,000 \times 5.2161 = N886,737$$

plus the discounted cash flow after the planning horizon:

$$\text{First discounted to time 10: } N140,000 / 0.14 = N1,000,000.$$

This is then discounted back 10 years to time zero:

$$\frac{1,000,000}{(1 + 0.14)^{10}} = \underline{\underline{N269,744}}$$

Value of the firm <i>Less</i> initial investment Value created	N1,156,481 <u>(N1,000,000)</u> <u>N156,481</u>
--	--

$$\begin{aligned}\text{The value of the firm} &= \text{Capital (N1,000,000)} + \text{Value created (N156,481)} \\ &= \text{N1,156,481}\end{aligned}$$

An alternative approach: The value of the firm is equal to the initial investment in the firm (N1,000,000) plus the present value of all the values created annually.

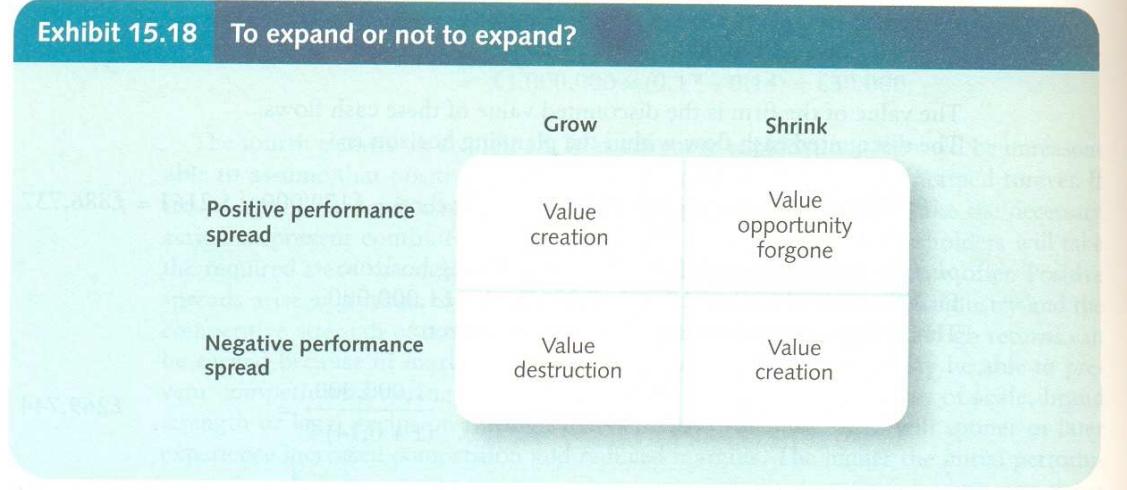
$$\begin{array}{ccccccc} & & \text{Value created within} & & \text{Value created after} & & \\ \text{Investment} & + & \text{planning horizon} & + & \text{planning horizon} & & \\ \text{N1,000,000} & + & \text{N30,000} \times 5.2161 & + & \text{N1,000,000} (0.14 - & & \\ & & \text{N30,000} \times \text{Annuity factor} & & 0.14) & & \\ & & (10 \text{ years, } 14\%) & & & & \\ \text{N1,000,000} & + & \text{N156,481} & + & 0 & = & \text{N1,156,481} \end{array}$$

The five actions for creating value

Good growth occurs when a business unit or an entire corporation obtains a positive spread on the new investment capital. Bad growth, the bane of shareholders, occurs when managers invest in strategies that produce negative return spreads. This can so easily happen if the focus of attention is on sales and earnings growth. To managers encouraged to believe that their job is to expand the business and improve the bottom line, acceptance of the notion of bad growth in profits is a problem. But, as we have seen, it is perfectly possible to show growing profits on a larger investment base producing an incremental return less than the incremental cost of capital.

Exhibit 15.18 shows the options open to managers. This model can be applied at the corporate, business unit or product line level.

Exhibit 15.18 To expand or not to expand?



It has already been demonstrated that overall Black plc produces a more than satisfactory return on investment. Now assume that the firm consists of two divisions: a clothing factory and a toy import business. Each business is making use of N500,000 of assets (at market value). The clothing division is expected to produce an 11 per cent return per annum over the next ten years whereas the toy division will produce a 23 per cent per annum return over the same period. After the ten-year planning horizon both divisions will produce returns equal to their risk-adjusted required return: for the clothing division this is 13 per cent and for the more risky toy division this is 15 per cent.

The cash flows are:

Year	1 -- 10	11 -- infinity
Clothing	N55,000	N65,000
Toys	N115,000	N75,000

The annual value creation within the planning horizon is:

I x (r - k)	
Clothing	N500,000 x (0.11 - 0.13) = -N10,000
Toys	N500,000 x (0.23 - 0.15) = +N40,000

Thus, despite the higher return required in the toy division, it creates value. For the next ten years a 15 per cent return is achieved plus a shareholder bonus of N40,000. This division could fit into the top left box of Exhibit 15.18. The management team may want to consider further investment in this unit so long as the marginal investment can generate a return greater than 15 per cent. To pass up positive return spread investments would be to sacrifice valuable opportunities and enter the top right box of Exhibit 15.18.

The clothing operation does not produce returns sufficient to justify its present level of investment. Growth in this unit would only be recommended if such a strategy would enable the division to somehow transform itself so as to achieve a positive spread. If this seems unlikely then the best option is probably retrenchment, a scaling down or withdrawal from the market. This will release resources to be more productively employed elsewhere, either within or outside the firm. Such shrinkage would create value by reducing the drag this activity has on the rest of the firm.

This line of thought can assist managers at all levels to allocate resources. At the corporate level knowledge of potential good-growth and bad-growth investments will help the selection of a portfolio of businesses. At the business unit level, product and customer groups can be analysed to assess the potential for value contribution. Lower down, particular products and customers can be ranked in terms of value.

Increase the return on existing capital

The value of Black of N1,000,000 + N156,481 could be increased if the management implemented a plan to improve the efficiency of their existing operations. If the rate of return on investment for the firm as a whole over the next ten years is raised to 18 per cent then the firm's value rises to N1,208,644, viz:

Annual value creation	= I x (r - k)
	= N1,000,000 x (0.18 - 0.14)
	= N40,000
Present value over ten years	= N40,000 x Annuity factor (10 years, 14%)
	= N40,000 x 5.2161 = N208,644

<i>plus</i> initial investment	<u>N1,000,000</u>
Corporate value	N1,208,644

An increase of N52,163 (N1,208,644 - N1,156,481) in value is available for every 1 per cent improvement in return spread.

Raise investment in positive spread units

If Black could obtain a further N500,000 from investors with a required rate of return of 15 per cent to invest in the toy division to produce a 23 per cent return the value of the firm would rise to N1,847,242 (of this N500,000 is the new capital invested).

Annual value creation on clothing	N10,000
Annual value creation on toys = N40,000 x 2	<u>N'60,000</u>
	N70,000
Over ten years	
Clothing: -N10,000 x Annuity factor (10 years, 13%)	
Toys: N80,000 x Annuity factor (10 years, 15%)	
Clothing: -N10,000 x 5.4262	= -N54,262
Toys: N80,000 x 5.0188	= <u>N401,504</u>
	N347,242
<i>plus</i> the initial investment	<u>N1,500,000</u>
Corporate value	N1,847,242

Divest assets

If Black could close its clothing division, release N500,000 to expand the toy division and achieve returns of 23 per cent on the transferred investment then value increases dramatically:

Annual value creation	= $I \times (r - k)$
	= N1,000,000 x (0.23 - 0.15)
	= N80,000
Present value over ten years 15%)	= N80,000 x Annuity factor (10 years, 15%)
	= N80,000 x 5.0188 = N401,504
<i>plus</i> initial investment	<u>N1,000,000</u>
Corporate value	N1,401,504

Extend the planning horizon

Sometimes there are steps that can be taken to exploit a competitive advantage over a longer period than originally expected. For example, perhaps the toy division could negotiate a long-term exclusive import licence with the supplier of an established premium-priced product, thus closing the door on the entry of competitors. If we suppose that the toy division will now produce a return spread of 23 per cent for a 15-year period rather than ten years the value of the company rises to N1,179,634, viz:

Annual value creation on clothing	= -N10,000
Annual value creation on toys	= N40,000
Present value over 10 years (clothing) = - N10,000 x Annuity factor (10 years, 13%)	

	= -N10,000 x 5.4262
	= -N54,262
Present value over 15 years (toys)	= N40,000 x Annuity factor (15 years, 15%)
	= N40,000 x 5.8474 = N233,896
Total value creation <i>plus</i>	= N233,896 - N54,262 = N179,634
Initial investment	<u>N1,000,000</u>
Corporate value	N1,179,634

Lower the required rate of return

It may be possible to lower the required rate of return by adjusting the proportion of debt to equity in the capital structure or by reducing business risk. Suppose that Black can lower its required rate of return by shifting to a higher proportion of debt, so that the overall rate falls to 12 per cent. Then the value of the firm rises to N1,282,510.

Annual value creation	= I x (r - k)
	= 1,000,000 x (0.17 - 0.12)
	= N50,000
Present value over ten years	= N50,000 x Annuity factor (10 years, 12%)
Total value creation	= N50,000 x 5.6502 = N282,510
<i>Plus</i> initial investment	<u>N1,000,000</u>
Corporate value	N1,282,510

Exercise: 1. Define value-based management.

4.0 CONCLUSION

Many companies tend to borrow little. They finance their businesses almost entirely through equity (shareholders') money. The motivation is often to reduce the risk of financial distress. This may be due to a desire to serve the interests of shareholders, but more often it is because managers want to avoid financial distress for their own safety. They can become too cautious and forgo the opportunity of reducing the overall cost of capital (discount rate) by not using a higher proportion of cheaper debt finance.)

5.0 SUMMARY

The switch from management by accounting numbers to management using financial concepts such as value, the time value of money and opportunity cost is only just beginning. Some highly successful firms are leading the way in insisting that each department, business unit and project add value to shareholders' investment. This has required a re-examination of virtually all aspects of management, ranging from performance measurement systems and strategic planning to motivational schemes and training programmes.

6.0 REFERENCES

G. C. Arnold

The financial Time Guide to Investing (2004)

Glen Arnold

Corporate Financial Management (2005)

Blake D.

Financial Market Analysis (2000)

10.0 TUTOR MARKED ASSIGNMENT

Ready plc is financed entirely by equity capital with a required return of 13 per cent. Ready's business is such that as sales increase, working capital does not change. Ready currently has N10m in cash not needed for business operations that could be used to pay a dividend immediately. Under current policy, post-tax earnings (and free cash flow) of N10m per year are expected to continue indefinitely. All earnings in future years are expected to be paid out as dividends in the year of occurrence.

Calculate

- a. The value of the company before the current dividend is paid from the N10m of cash.
- b. The value of the company if the current dividend (time 0) is missed and the retained earnings are put into investments (with the same risk as current set of project yielding an extra N2m per year to infinity in addition to the current policy's earnings. What happens to earnings and cash flow? Is this good or bad investment?
- c. The value of the company if half of the current dividend is missed and the retained earnings are put into investment yielding N0.5m per year to infinity. What happens to earnings and cash flows? Is this good or bad investment?

UNIT 12

STRATEGY AND VALUE

5.0 INTRODUCTION

The transforming of a corporation from one that is earnings based to one which is focused on value has profound effects on almost all aspects of organizational life. New light is cast on the most appropriate portfolio of businesses making up the firm, and on the strategic thrust of individual business units. Acquisition and divestment strategies may be modified to put shareholder wealth creation at centre stage. Capital structure (proportion of debt relative to equity capital) and dividend payout policy are predicated on the optimal approach from the shareholders' point of view, not by 'safety first' or earnings growth considerations. Performance measures, target setting and managerial compensation become linked to the extent that wealth is created rather than the vagaries of accounting numbers.

To unite the organisation in pursuit of wealth creation an enormous educational and motivational challenge has to be met. A culture of change is often required to ensure that everyone's goal, at all levels, are to ensure that value is created. Retraining and new reward systems are needed to help lift eyes from the short-term to long-term achievements. This unit gives a taste of the pervading nature of value-based managerial thinking.

2.0 OBJECTIVES

By the end of this unit, you are expected to be able to:

- Explain the extent of the ramification of value-based Management
- Discuss the main elements to examine when evaluating alternative strategies for the business from a value perspective, map business activities in term of industry attractiveness, competitive advantage within the industry and life-cycle stage and make capital allocation choices.
- Describe a system for making strategic choices that requires both qualitative thinking and quantitative analysis.
- Describe the four main tasks for the corporate centre (head office)

3.0 The firm's objective

The firm has first to decide what it is that is to be maximised and what will merely be satisfied. In value management the maximisation of sales, market share, employee satisfaction, customer service excellence, and so on, are rejected as the objective of the firm. All of these are important and there are levels of achievement for each which are desirable in so far as they help the achievement of maximising shareholder wealth, but they are not the objective. It is important that there is clarity over the purpose of the firm and crystal-clear guiding principles for managers making strategic and operational decisions. Objectives stated in terms of a vague balance of interests are not appropriate for a commercial organisation in a competitive environment. The goal of maximising discounted cash flows to shareholders brings simplicity and direction to decision making.

3.1 Strategic business unit management

A strategic business unit (SBU) is a business unit within the overall corporate entity which is distinguishable from other business units because it serves a defined external market in which management can conduct strategic planning in relation to products and markets.

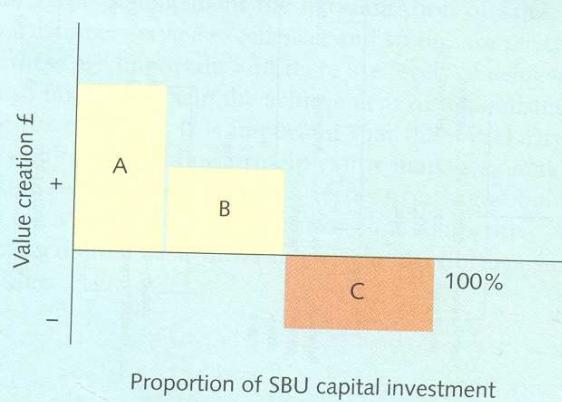
Large corporations often have a number of SBU which each require strategic thought and planning. Strategy means selecting which product or market areas to enter/exit and how to ensure a good competitive position in those markets/products. Establishing a good competitive position requires a consideration of issues such as price, service level, quality, product features, methods of distribution, etc., but these issues are secondary to deciding which products to produce and which markets to enter or exit.

It is the managers of an SBU that are the individuals who come into regular contact with customers in the competitive market environment and it is important that SBU strategy be developed largely by those managers who will be responsible for its execution. By doing this, by harnessing these managers' knowledge and encouraging their commitment through a sense of 'ownership' of a strategy, the firm is more likely to prosper.

Before the creation of new strategic options it is advisable to carry out a review of the value creation of the present strategy. This can be a complex task, but an example will demonstrate one approach. Imagine that the plastic products division of Red plc is a defined strategic business unit with a separable strategic planning ability servicing markets distinct from Red's other SBU. This division sells three categories of product, A, B and C to five types of customer, (a) NG consumers, (b) NG industrial users, (c) NG government, (d) European Union consumers and (e) other overseas consumers. Information has been provided showing the value expected to be created from each of the product/market categories based on current strategy. These are shown in Exhibits 16.2

Product line C is expected to destroy shareholder value while absorbing a substantial share of the SBU resources. Likewise this analysis has identified sales to NG

Exhibit 16.2 Red plc's plastics SBU value creation profile – Product line breakdown



industry and government as detrimental to the firm's wealth. This sort of finding is not unusual: many businesses have acceptable returns at the aggregate level but hidden behind these figures are value-destructive areas of activity. The analysis could be made even more revealing by showing the returns available for each product and market category; for example, product A in the NG consumer market can be compared with product A in the European market.

Warren Buffett, the financier, has made some pithy comments on the tendency for firms to fail to identify and root out value-destructive activities:

Many corporations that consistently show good returns both on equity and on overall incremental capital have, indeed, employed a large portion of their retained earnings on an economically unattractive, even disastrous, basis. Their core businesses, however, whose earnings grow year after year, camouflage repeated failures in capital allocation elsewhere (usually involving high-priced acquisitions of businesses that have inherently mediocre economics). The managers at fault periodically report on the lessons they have learned from the latest disappointment. They then usually seek out future lessons. (Failure seems to go to their heads.)

To get a clear line of sight from the customer to the shareholder many businesses need to build an entirely new fact base showing the full economic cost and cash flows associated with customers and product markets. Recognising that some activities are far more valuable than others prepares the ground for a shift of strategic resources. Attention can be directed at restructuring or eliminating value-destructive operations, while building up value-creative aspects of the business.

Furthermore, project appraisal, budgeting systems and the organisational structure of each SBU must be in harmony with the principle of value-based management. Project appraisal will be carried out using discounted cash flow techniques. Budgeting will not rely solely on accounting considerations, but will have value-based metrics (methods of measurement) as guides - some of which are described in the next unit. The lines of decision-making authority and communication will be the most appropriate given the market environment in order to achieve greatest returns. For example in a dynamic unpredictable market setting it is unwise to have a bureaucratic, hierarchical type structure with decision making concentrated at the top of long chains of command. Devolved power and responsibility are likely to produce a more flexible response to change in the marketplace, and initiative to be highly prized and rewarded. In less dynamic environments low-cost, close command and control management, with an emphasis on continuous improvement, is likely to be most appropriate.

Strategic analysis can be seen as having three parts.

- i. Strategic assessment - in which the external environment and the internal resources and capability are analysed to form a view on the key influences on the value-creating potential of the organisation.
- ii. Strategic choice - in which strategic options are developed and evaluated.
- iii. Strategic implementation - action will be needed in areas such as changes in organisational structure and systems as well as resource planning, motivation and commitment.

Strategic assessment

There are three primary strategic determinants of value creation.

Industry attractiveness

The economics of the market for the product(s) has an enormous influence on the profitability of a firm. In some industries firms have few competitors, and there is low customer buying power, low supplier bargaining power and little threat from new entrants

or the introduction of substitute products. Here the industry is likely to be attractive in terms of the returns accruing to the existing players, which will on average exhibit a positive performance spread. Other product markets are plagued with over-capacity, combined with reluctance on the part of the participants to quit and apply resources in another product market. Prices are kept low by the ability of customers and suppliers to 'put the squeeze on' and by the availability of very many close-substitute products. Markets of this kind tend to produce negative performance spreads.

Many of the companies in this industry have lost money on every car they have sold for most of the years of the past decade. Some have survived by owning profitable finance subsidiaries, others have survived with the help of government props or indulgent and over-optimistic shareholders: the directors seem to be able to persuade them that the next round of investment will bring revolutionary new models that will sweep the board and restore returns to greater than the cost of capital. However, year after year the returns on capital for most major US and European car-makers are pathetic. It is difficult to see how, using Michael Porter's five forces analysis, this state of affairs is going to change. There is massive overcapacity as each country saves its car industry in any way it can. Contrary to popular belief barriers to entry are really quite small if you take a global perspective (look at the new car producers in China and India, or, in the 1980s, in South Korea and Brazil) which exacerbates the overcapacity problem. Customers have high bargaining power, especially the fleet buyers who can play one manufacturer off against another. Unions are usually strong in this industry, a factor which imposes heavy costs, not just on wages, but also on pensions and health care costs. Because the firms are competing fiercely, a boost to profit through an (expensively developed) innovation is short lived, as competitors quickly emulate. All-in-all the automobile industry has bad economics. You can employ the best in the world, but if they are trying to move a sinking boat they will fail - the boat that managers get into is more important to shareholder returns than their skills as navigators.

The strength of resources

Identifying a good industry is only the first step. Value-based companies aim to beat the average rates of return on capital employed within their industries. To beat the averages, companies need something special. That something special comes from the bundle of resources that the firm possesses. Most of the resources are ordinary. That is, they give the firm competitive parity. However, the firm may be able to exploit one or two extraordinary resources - those that give a competitive edge. An extraordinary resource is one which, when combined with other (ordinary) resources, enables the firm to outperform competitors and create new value-generating opportunities, critical extraordinary resources determine what a firm can do successfully.

It is the ability to generate value for customers that is crucial for superior returns. High shareholder returns are determined by the firm either being able to offer the same benefits to customers as competitors, but at a lower price; or being able to offer unique benefits that more than outweigh the associated higher price.

Ordinary resources provide a threshold competence. They are vital to ensure a company's survival. In the food retail business, for example, most firms have a threshold competence in basic activities, such as purchasing, human resource management, accounting control and store layout. However, the large chains have resources that set them apart from the small stores: they are able to obtain lower-cost supplies because of their enormous buying power; they can exploit economies of scale in advertising and in the range of produce offered.

Despite the large retailers having these advantages it is clear that small stores have survived, and some produce very high returns on capital invested. These superior firms provide value to the customer significantly above cost. Some corner stores have

a different set of extraordinary resources compared with the large groups: personal friendly service could be valued highly; opening at times convenient to customers could lead to acceptance of a premium price; the location may make shopping less hassle than traipsing to an out-of-town hypermarket. The large chains find emulation of these qualities expensive. If they were to try and imitate the small store they could end up using their main competitive advantages, the most significant of which is low cost.

The extraordinary resources possessed by the supermarket chains as a group when compared with small shops are not necessarily extraordinary resources in the competitive rivalry between the chains. If the focus is shifted to the 'industry' of supermarket chains factors like economies of scale may merely give competitive parity - scale is needed for survival. Competitive advantage is achieved through the development of other extraordinary resources, such as the quality of the relationship with suppliers, a very sophisticated system for collecting data on customers combined with target marketing, ownership of the best sites. However, even these extraordinary resources will not give superior competitive position forever. Many of these can be imitated. Long-term competitive advantage may depend on the capabilities of the management team continually to innovate and thereby shift the ground from under the feet of competitors. The extraordinary resource is then the coherence, attitude, intelligence, knowledge and drive of the managers in the organisational setting.

Many successful companies have stopped seeing themselves as bundles of product lines and businesses. Instead they look at the firm as a collection of resources. This helps to explain the logic behind some companies going into apparently unconnected product areas. The connection is the exploitation of extraordinary resources. So, for example, Honda has many different product areas: motor boat engines, cars, motor cycles, lawn mowers and electric generators. These are sold through different distribution channels in completely different ways to different customers. The common root for all these products is Honda's extraordinary resource that led to a superior ability to produce engines. Likewise, photocopiers, cameras and image scanners at completely different product sectors and sold in different ways. Yet, they are all made by Canon - which has extraordinary capabilities and knowledge of optics, imaging and microprocessor controls. The analyst should not be looking for a long list of extraordinary resources in an one firm. If one can be found, that is good - it only takes one to leap ahead of competitors and produce super-normal returns. If two are found then that is excellent. It is very unusual to come across a company that has three or more extraordinary resources. Coca-Cola is an exception with an extraordinary brand, a distribution system with connected relationships and managers highly knowledgeable about ant competitive regulations and how to deal with them.

The TRRACK system

To assist the thorough analysis of a company's extraordinary resource I have developed the TRRACK system. This classifies extraordinary resources into six categories see **Exhibit 16.5.**

Exhibit16.5 . The TRRACK system

- T Tangible
- R Relationships
- R Reputation
- A Attitude
- C Capabilities
- K Knowledge

Notice that the vast majority of extraordinary resources are intangible. They are qualities that are carried within the individuals that make up organisations, or are connected with the interaction between individuals. They are usually developed over a long time rather than bought. These qualities cannot be scientifically evaluated to provide objective quantification. Despite our inability to be precise, these people embodied factors are usually the most important drivers of value creation and we must pay most attention to them. Tangible Occasionally physical resources provide a sustainable competitive advantage. These are assets that can be physically observed and are often valued (or under-valued) in a balance sheet. They include real estate, materials, production facilities and patents. They can be purchased, but if they were easily purchased they would cease to be extraordinary because all competitors would go out and buy. There must be some barrier preventing other firms from acquiring the same or similar assets for them to be truly valuable in the long run. Microsoft's ownership of its operating system and other standards within the software industry gives it a competitive edge. McDonald's makes sure that it takes the best locations on the busiest highways, rather than settle for obscure secondary roads. Many smaller businesses have found themselves, or have made smart moves to ensure they are, I the owners of valuable real estate adjacent to popular tourist sites. Pharmaceutical companies, such as Merck, own valuable patents giving some protection against rivalry - at least temporarily.

Relationships: Over time companies can form valuable relationships with individuals and organisations that are difficult or impossible for a potential competitor to emulate. Relationships in business can be of many kinds. The least important are the contractual ones. The most important are informal or implicit. These relationships are usually based on a trust that has grown over many years. The terms of the implicit contract are enforced by the parties themselves rather than through the court - a loss of trust can be immensely damaging. It is in all the parties' interests to cooperate with integrity because there is the expectation of reiteration leading to the sharing of collective value created over a long period. South African Breweries (SAB) has 98 per cent of the beer market in South Africa. It has kept out foreign and domestic competitors because of its special relationships with suppliers and customers. It is highly profitable, and yet, for the last two decades it has reduced prices every year - the price of beer has halved in real terms. Most of South Africa's roads are poor and electricity supplies are intermittent. To distribute its beer it has formed some strong relationships. The truck drivers, many of whom are former employees, are helped to set up their small trucking businesses by SAB. Shebeens sell most of the beer. These are unlicensed pubs. Often, they are tiny - SAB cannot sell directly to the illegal shebeens. Instead it maintains an informal relationship via a system of wholesalers. SAB makes sure that distributors have refrigerators and, if necessary, generators. A new entrant to the market would have to develop its own special relationship with truck drivers, wholesalers and retailers. In all likelihood it would have to establish a completely separate and parallel system of distribution. Even then it would lack the legitimacy that comes with a long-standing relationship. Relationships between employees, and between employees and the firm, can give a competitive edge. Some firms seem to possess a culture that creates wealth through the co-operation and dynamism of the employees. Information is shared, knowledge is developed, innovative activity flows, rapid response to market change is natural and respect for all pervades. The quality of the relationships with government can be astonishingly important to a company. Defence contractors cultivate a special

relationship with various organs of government. The biggest firms often attract the best ex-government people to take up directorships or to head liaison with government. Their contacts and knowledge of the inside workings of purchasing decisions, with the political complications, can be very valuable. A similar logic often applies to pharmaceutical companies, airlines and regulated companies.

Reputation: Reputations are normally made over a long period. Once a good reputation is established it can be a source of very high returns (assuming that all the necessary ordinary resources are in place to support it). With car hire in a foreign country the consumer is unable to assess quality in advance. Hertz provides certification for local traders under a franchise arrangement. These local car hirers would see no benefit to providing an above-average service without the certification of Hertz because they would not be able to charge a premium price. It is surprising how much more consumers are willing to pay for the assurance of reliable and efficient car hire when they travel abroad compared with the cost of hiring a car from an un-franchised local company. Companies pay a large premium to hire Goldman Sachs when contemplating an issue of securities or a merger. They are willing to pay for 'emotional reassurance'.³ The CEO cannot be sure of the outcome of the transaction. If it were to fail the penalty would be high - executives may lose bonuses, and, perhaps their jobs, shareholders lose money. The CEO therefore hires the best that is available for such once-in-a-lifetime moves. The cost of this hand-holding is secondary. Once an adviser has a history of flawless handling of large and complex transactions it can offer a much more effective 'emotional comfort-blanket'⁴ to CEOs than smaller rivals. This principle may apply to pension fund advisers, management consultants and advertising agencies as well as top investment bankers. Perhaps the most important manifestation of the importance of reputation is branding. Branded products live or die by reputation. A strong brand can be incredibly valuable.

Attitude: Attitude refers to the mentality of the organisation. It is the prevalent outlook. It is the way in which the organisation views and relates to the world. Terms such as disposition, will and culture are closely connected with attitude. Every sports coach is aware of the importance of attitude. The team may consist of players with the best technique in the business or with a superb knowledge of the game, they may be the fastest and the most skilful, but without a winning attitude they will not succeed. There must be a will to win. Attitude can become entrenched within an organisation. It is difficult to shake off a negative attitude. A positive attitude can provide a significant competitive edge. Some firms develop a winning mentality based on a culture of innovation and others are determinedly oriented towards customer satisfaction while some companies are quality driven. 3M has a pervasive attitude of 'having a go'. Testing out wild ideas is encouraged. Employees are given time to follow up a dreamed-up innovation and they are not criticised for failing. Innovations such as 'Post-it' notes have flowed from this attitude. Canon has the attitude of Tsushin - 'heart-to-heart and mind-to-mind communication' between the firm and its customers. In this way trust is developed.

Capabilities: Capabilities are derived from the company's ability to undertake a set of tasks. The term skill can be used to refer to a narrow activity or a single task. Capability is used for the combination of a number of skills. For example, a company's capability base could include abilities in narrow areas such as market research, innovative design and efficient manufacturing that, when combined, result in a superior capability in new product development. A capability is more than the sum of the individual processes - the combination and co-ordination of individual processes may provide an extraordinary resource. Sony developed a capability in miniaturisation. This enabled it to produce a

string of products from the Walkman to the Play-station.

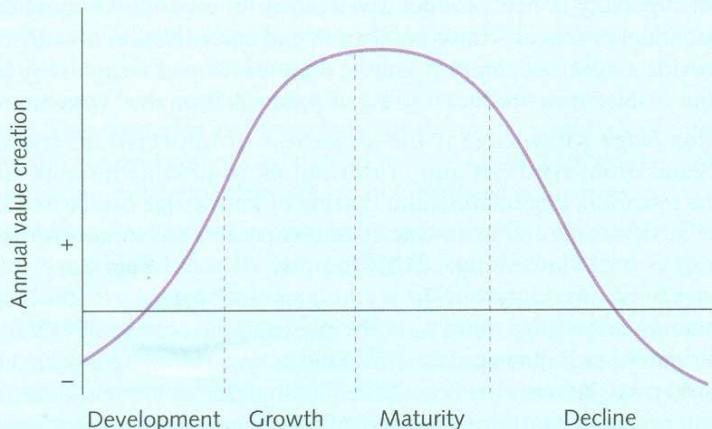
Knowledge: Knowledge is the awareness of information, and its interpretation, organisation, synthesis and prioritisation, to provide insights and understanding. The retention, exploitation and sharing of knowledge can be extremely important in the achievement and maintenance of competitive advantage. All firms in an industry possess basic knowledge. For example, all publishers have some knowledge of market trends, distribution techniques and printing technology. It is not this common knowledge that I am referring to in the context of extraordinary resources. If a publisher builds up data and skills in understanding a particular segment of the market, say investments books, then its superior awareness, interpretation, organisation, synthesis, and prioritisation of information can create competitive advantage through extraordinary knowledge. The company will have greater insight than rivals into this segment of the market. There are two types of organisational knowledge. The first, explicit knowledge, can be formalised and passed on in codified form. This is objective knowledge that can be defined and documented. The second, tacit knowledge, is ill-defined or undefined. It is subjective, personal and context specific. It is fuzzy and complex. It is hard to formalise and communicate. Examples of explicit knowledge include costing procedures written in company accounting manuals, formal assessment of market demand, customer complaint data and classification. Explicit knowledge is unlikely to provide competitive advantage: if it is easily defined and codified it is likely to be available to rivals. Tacit knowledge, on the other hand, is very difficult for rivals to obtain. Consider the analogy of a football player: explicit knowledge of tactics is generally available; what separates the excellent from the ordinary player is the application of tacit knowledge, e.g. what becomes an instinctive ability to recognise types of play and the appropriate response to them. Tacit knowledge is transmitted by doing, the main means of transferring knowledge from one individual to another is through close interaction to build understanding, as in the master-apprentice relationship.

Life-cycle stage of value potential

A competitive advantage in an attractive industry will not lead to superior long-term performance unless it provides a sustainable competitive advantage and the economics of the industry remains favourable. Rival firms will be attracted to an industry in which the participants enjoy high returns and sooner or later competitive advantage is usually whittled away. The longevity of the competitive advantage can be represented in terms of a life cycle with four stages: development, growth, maturity and decline (see **Exhibit 16.6**). In the development phase during which competitive advantage (and often the industry) is established, perhaps through technological or service innovation, the sales base will be small. As demand increases a growth phase is entered in which competitive strength is enhanced by factors such as industry leadership, brand strength and patent right. A lengthy period of competitive advantage and high return can be expected. Eventually the sources of advantage are removed; perhaps by competitor or by customers and suppliers gaining in bargaining power. Other possibilities pushing towards the maturity stage are technological breakthroughs by competitors able to offer a superior product, or poor management leading to a loss of grip on cost control. Whatever the reason for the reduction in the performance spread, the firm now faces a choice of three routes, two of which can lead to a repositioning on the life cycle; the third is to enter a period of negative performance spreads. The two positive actions are to erect barriers and deterrents to the entry of firms to the industry. Barriers put in the path of the outsiders make it difficult for those insects to advance on your honey pot. Also, a clear message could go out to the aspiring entrant that if they did dare to cross the threshold they will be

subject to a massive retaliatory attack until they are driven out again, and b continually to innovate and improve the SBU's product offering so as to stay one step ahead of the competitors. An example of the simultaneous use of those two actions is provided by Microsoft. It is able to dominate the operating software market and the application market because of the network effect of its Office system being a standard system used throughout the world and because of its close working relationships with hardware producers; thus making life very difficult for any potential new entrant. It is also pumping billions into new products - it has thousands of software engineers. But even Microsoft will find its business units eventually fall into a terminal decline phase of value creation because of a loss of competitive advantage. When it does, even though it will be extremely difficult for it to do so, the company must withdraw from value-destructive activities and plough the capital retrieved into positive performance-spread SBUs.

Exhibit 16.6 The life-cycle stages of value creation



Strategy planes

The three elements of strategic assessment can be summarised on a strategy planes chart like the one shown in Exhibit 16.7 for Red plc which, besides the plastics SBU, also has a young Internet games division, a coal-mining subsidiary, a publishing group with valuable long-term copyrights on dozens of best sellers, a supermarket chain subject to increasingly intense competition in an over-supplied market and a small airline company with an insignificant market share. The strategy planes framework can be used at the SBU level or can be redrawn for product/customer segments within SBUs.

Strategic choice

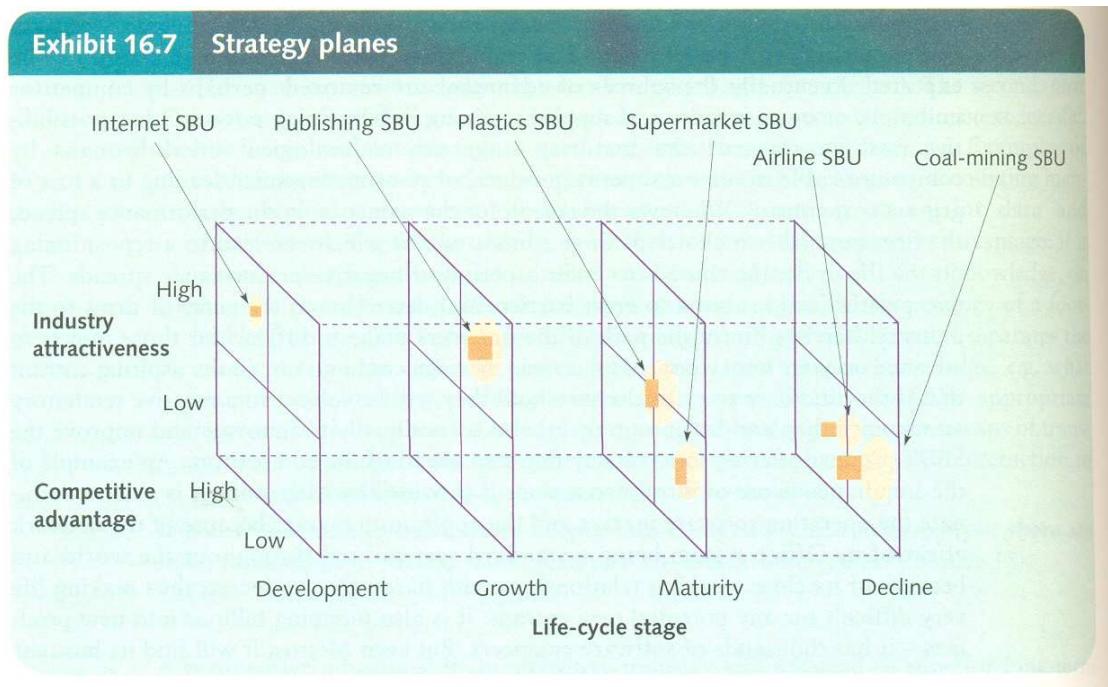
Managers need to consider a wide array of potential strategic options. The process of systematic search for alternative market product entry/exit and competitive approaches within markets is a vital one. The objective of such a search is to find competitive advantage in attractive markets sustainable over an extended period of time yielding positive performance spreads.

There are two proven types of strategies to achieve sustainable competitive advantage:

- A cost leadership strategy** - a standard no-frills product. The emphasis here is on scale economies or other cost advantages.
- A differentiation strategy** - the uniqueness of the product/service offering allows for a premium price to be charged.

To fall between these two stools can be disastrous.

Exhibit 16.7 Strategy planes

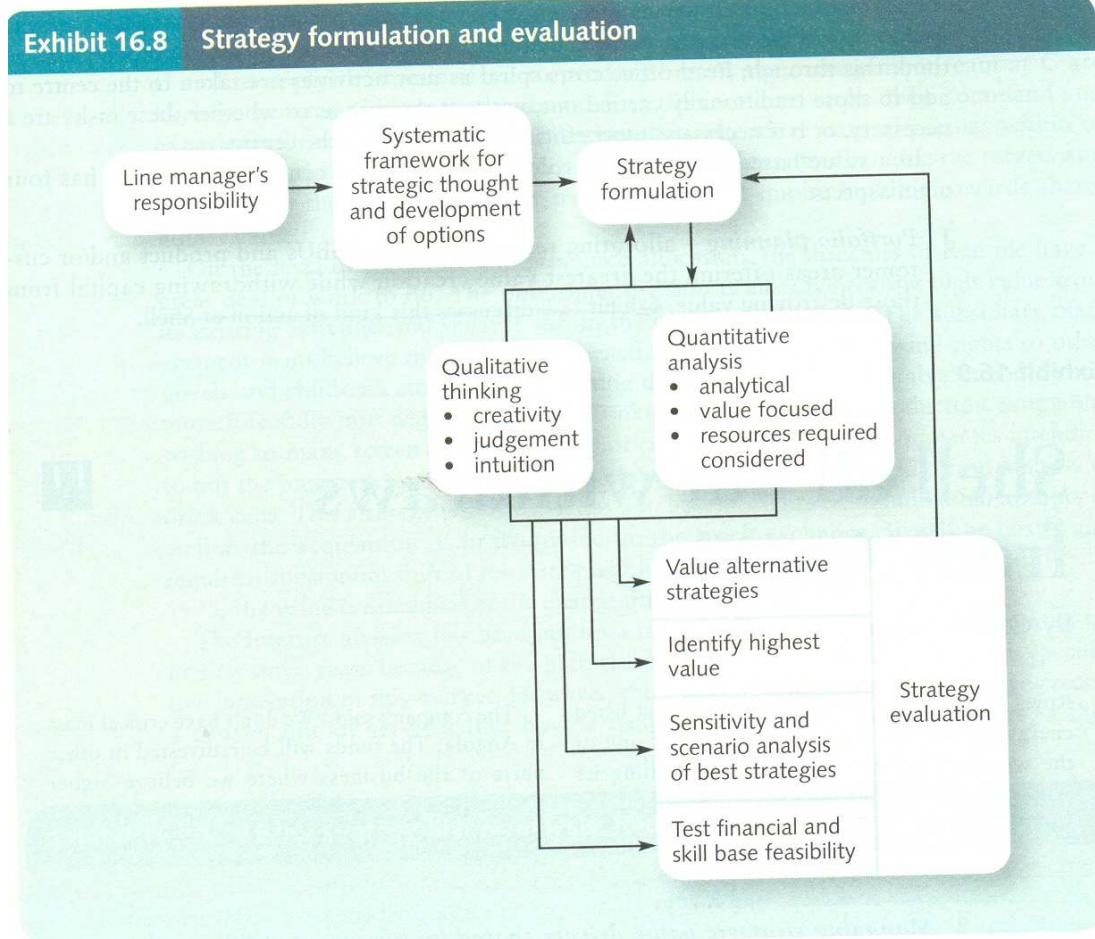


Note: The size of the circle represents the proportion of the firm's assets devoted to this SBU. The size of the rectangle represents the current performance spread. If the spread is negative it is shown outside the circle.

Once a sufficiently wide-ranging search for possible strategic direction has been conducted the options that come to the fore need to be evaluated. They are usually considered in broad descriptive terms using qualitative analysis with written reports and reflective thought. This qualitative thinking has valuable attributes such as creativity, intuition and in the original formulation of strategic options, the assessment of their merits and in the subsequent reiterations of the process. The qualitative strategy evaluation is complemented by a quantitative examination for which accounting terms such as profit, earnings per share (EPS), return on capital employed (ROCE) and balance sheet impact are traditionally used. This has the advantage of presenting the strategic plans in the same format that the directors use to present annual results to shareholders. However these metrics do not accurately reflect the shareholder value to be generated from alternative strategic plans. The value-based metrics such as economic

profit and discounted cash flow described in the next unit are more appropriate.

Exhibit 16.8 shows the combination of qualitative assessment and quantitative analysis of strategic options. When a shortlist of high-value-creating strategies has been identified, sensitivity and scenario analysis can be applied to discover the vulnerability of the 'most likely' outcome to changes in the input factors such as level of sales or cost of materials. The company also needs to consider whether it has the financial resources necessary to fund the strategy. The issues of finance raising, debt levels and dividend policy come into the equation at this point. Other aspects of feasibility include whether the organisation has the skill base necessary to provide the required quality of product or service, whether it is able to gain access to the required technology, materials, service and so on.



Strategy implementation

Making the chosen strategy work requires the planned allocation of resources and the re-organisation and motivation of people. The firm's switch to value-based principles has an impact on these implementation issues. Resources are to be allocated to units or functions if it can be shown that they will contribute to value creation after taking into account the quantity of resources used. Managers are given responsibilities and targets are set in accordance with value creation.

3.2 Corporate strategy

So far the firm has been described as consisting of a group of strategic business units. So where does the head office fit into this picture if each of these units has a separately identifiable market and is capable of independent strategic action?

We know that companies need to apply value-based principles to all their activities and so this must include the centre. Everything the head office does must create value for shareholders. This means there must be awareness of the quantity of assets used in each task and the return generated by those assets in that task. Many companies fail to think this through; head office costs spiral as new activities are taken to the centre to add to those traditionally carried out, without thought as to whether these tasks are a necessary, or b if necessary, most efficiently executed by the centre.

In a value-based company the role of the corporate centre (head office) has four main aspects:

Portfolio planning - allocating resources to those SBUs and product and/or customer areas offering the greatest value creation while withdrawing capital from those destroying value.

Managing strategic value drivers shared by two or more SBUs - these crucial extraordinary resources, giving the firm competitive advantage, may need to be centrally managed or at least co-ordinated by the centre to achieve the maximum benefit. An example here could be strong brand management or technology. The head office needs to ensure adequate funding of these and to achieve full exploitation.

Provide the pervading philosophy and governing objective - training, goal setting, employee rewards and the engendering of commitment are all focused on shareholder value. A strong lead from the centre is needed to avoid conflict, drift and vagueness.

The overall structure of the organisation needs to be appropriate for the market environment and designed to build value. Roles and responsibilities are clearly defined with clear accountability for value creation.

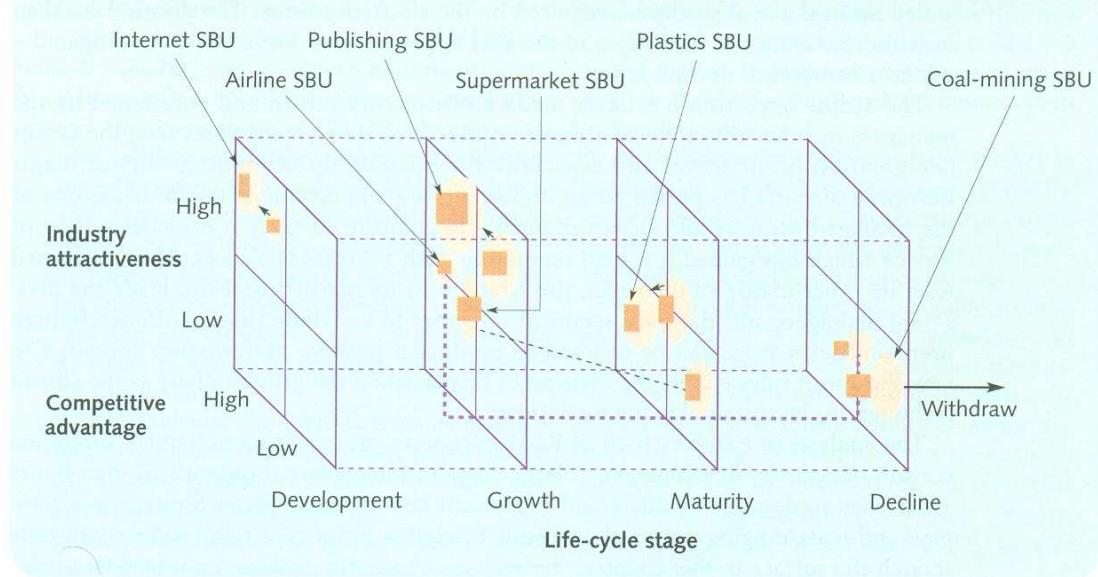
We can apply the principles of portfolio planning to Red plc. The corporate centre could encourage and work with the plastics division in developing ideas for reducing or eliminating the value losses being made on some of its products and markets that it is destroying value in product line C and in sales to NG industrial customers and the NG government. Once these have been fully evaluated head office could ensure that resources and other services are provided effectively to implement the chosen strategy. For example, if the highest value-creating option is gradually to withdraw capital from product line C and to apply the funds saved to product line A, the management team at Care likely to become de-motivated as they reduce the resources under their command and experience lower sales (and profit) rather than, the more natural predisposition of

managers, a rising trend. The centre can help this process by changing the targets and incentives of these managers away from growth and empire building towards shareholder value.

On the level of corporate-wide resource allocation, the directors of Red plc have a great deal of work to do. The publishing division is already creating high value from its existing activities and yet it is still in the early growth phase. The subsidiary management team believes that significant benefits would flow from buying rights to other novels and children's stories. By combining these with its present 'stable' it could enter more forcefully into negotiations with book retailers, television production companies wishing to make screen versions of its stories and merchandising companies intending to put the image of some of the famous characters on articles ranging from T-shirts to drink cans. This strategy will involve the purchase of rights from individual authors as well as the acquisition of firms quoted on the stock exchange. It will be costly and require a substantial shift of resources within the firm. But, as can be seen from **Exhibit 16.10**, the value created makes the change attractive.

The Internet division has been put on a tight rein in terms of financial resources for its first three years because of the high risk attached to businesses involved in speculative innovation in this market. However, the energetic and able managers have created a proven line of services that have a technological lead over competitors, a high

Exhibit 16.10 Using strategy plane analysis. Red plc's shifting strategic plan



market share and substantial barriers to entry in the form of copyrights and patents. The directors decide to expand this area.

The plastics division as a whole is in a mature market with positive but gradually

declining performance spreads. Here the strategic approach is to reduce the number of product lines competing on cost and transfer resources to those niche markets where product differentiation allows a premium price to be charged. The intention is to move gradually to a higher competitive advantage overall but accept that industry attractiveness will decline. Overall resources dedicated to this division will remain approximately constant, but the directors will be watching for deterioration greater than that anticipated in the current plan.

The supermarket division is currently producing a positive performance spread but a prolonged price war is forecast for the industry, to be followed by a shake-out, leading to a withdrawal of many of the current firms. Some directors are in favour of supporting this division vigorously through the troublesome times ahead in the expectation that when many of the weaker players have left the field, margins will rise to abnormally high levels - producing large performance spreads and high value in the long run. In terms of the value-creating life cycle this SBU would be shifted from the maturity strategy plane to the growth plane (shown in Exhibit 16.10). Other directors are not willing to take the risk that their firm will not be one of the survivors from the battle for market share. Furthermore, they argue that even if they do win, the enormous resources required, over the next five years, will produce a value return less than that on the publishing or Internet SBUs. Therefore, if financial resources are to be constrained, they should put money into these 'star' divisions.

The coal-mining division is 'haemorrhaging' money. The industry is in terminal decline because of the high cost of coal extraction and the increasing tendency for the electricity-generating companies to source their coal needs from abroad. Moreover Red is a relatively small player in this market and lacks the economies of scale to compete effectively. To add insult to injury a large proportion of the corporation's capital is tied up in the coal stockpiles required by the electricity firms. The decision is taken to withdraw from this industry and the best approach to achieve this is investigated sale to a competitor or liquidation.

The airline operation has never made a satisfactory return and is resented by the managers in other divisions as a drain on the value they create. However, the recent deregulation of air travel and especially the opening up of landing slots at major European airports has presented an important new opportunity. Despite being one of the smallest operators and therefore unable to compete on price it provides a level of service which has gained it a high reputation with business travellers. This, combined with its other major value driver, the strength of its marketing team, leads the divisional managers and the once sceptical directors to conclude that a sufficiently high premium ticket price can be charged to produce a positive performance spread. The new European rules enable the division to be placed on the growth plane as the spread is thought to be sustainable for some time.

The analysis in Exhibit 16.10 of Red's corporate strategy is an extremely simplified version of strategy development in large corporations where thousands of man-hours are needed to develop, evaluate and implement new strategic plans. Strategy is a complex and wide-ranging practical academic discipline in its own right and we can only scratch the surface in this unit.

3.3 Targets and motivation

The remaining aspects of management affected by a switch from an earnings-based approach to a value-based approach showR-in.~hrbit-'1-6~ have already been

touched on and, given the scope of this book, will not be explained any further here. The interested reader can consult some of the leading writers in this area (see References and further reading).

One final point to note is the importance of having different types of value-creating targets at different levels within the organisation. At the board room and senior executive level it seems reasonable that there should be a concern with overall performance of the firm as seen from the shareholders' perspective and so Total Shareholder Return, Wealth Added Index, Market Value Added and Market to Book Ratio would be important guides to performance, and incentive schemes would be (at least partially) based upon them. Economic Profit, Economic Value Added, Discounted Cash Flow and Shareholder Value Analysis are also useful guides for senior managers. These metrics are described and critically assessed in the next unit. Moving down the organisation, target setting and rewards need to be linked to the level of control and responsibility over outcomes. Strategic business unit performance needs to be expressed in terms of value metrics such as Discounted Cash Flow, Economic Profit and Economic Value Added. Outcomes here are usually under the control of divisional and other middle-ranking managers and so the reward system might be expressed in terms of achieving targets expressed in these metrics. At the operating level where a particular function contributes to value creation but the managers in that function have no control over the larger value centre itself, perhaps the emphasis should shift to rewarding high performance in particular operational value drivers such as throughput of customers, reduced staff turnover, cost of production, faster debtor turnover, etc.

- Exercise:**
1. List the main areas in which value principles have an impact on the managerial process. Write a sentence explaining each one.
 2. What is an SBU and how can a value-creation profile chart be used to improve on an SBU's performance?

4.0 CONCLUSION

Key rule: All managers should agree to both short- and long-term targets. This counters the natural tendency in all of us to focus on short-term goals that might not be optimal in the long run.

5.0 SUMMARY

A commercial organisation that adopts value principles is one that has an important additional source of strength. The rigorous thought process involved in the robust application of these principles will force managers to review existing systems and product and market strategies and to bring an insistence on a contribution to shareholder value from all parts of the company. A firm that has failed to ask the right questions of its operating units or to use the correct metrics in measuring performance will find its position deteriorating vis-a-vis its competitors.

6.0 REFERENCES

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Blake D.

11.0 TUTOR MARKED ASSIGNMENT

1. Invent a company and show how the strategy planes diagram can be used to enhance shareholder wealth. Explain each dimension of the planes as you do so.

UNIT 13

VALUING SHARES

1.0 INTRODUCTION

Knowledge of the main influences on share prices is important from the perspective of two groups. The first group is managers, who, if they are to be given the responsibility of maximising the wealth of shareholders, need to know the factors influencing that wealth, as reflected in the share price of their own company. Without this understanding they will be unable to determine the most important consequence of their actions the impact on share value. Managers need to appreciate share price derivation because their company's share price is one of the key factors by which they are judged. It is also useful for them to know how share prices are set if the firm plans to gain a flotation on a stock exchange, or when it is selling a division to another firm. In mergers an acquirer needs good valuation skills so as not to pay more than necessary, and a seller needs to ensure that the price is fair.

The second constituency for whom the ideas and models presented in this unit will be of practical use is investors, who risk their savings by buying shares.

This unit describes the main methods of valuing shares: net asset value, dividend valuation models, price-earnings ratio models and cash flow models. There is an important subsection in the unit which shows that the valuation of shares which give managerial control over the firm is somewhat different from the valuation of shares which provide only a small minority stake.

Two skills are needed to be able to value shares. The first is analytical ability, to be able to understand and use mathematical valuation models. Secondly, and most importantly, good inference is needed, because most of the inputs to the mathematical calculations are factors, the precise nature of which cannot be defined with absolute certainty, so great skill is required to produce reasonably accurate results. The main problem is that the determinants of value occur in the future, for example future cash flows, dividends or earnings.

The monetary value of an asset is what someone is prepared to pay for it. Assets such as cars and houses are difficult enough to value with any degree of accuracy. At least corporate bonds generally have a regular cash flow (coupon) and an anticipated capital repayment. This contrasts with the uncertainties associated with shares, for which there is no guaranteed annual payment and no promise of capital repayment.

2.0 OBJECTIVES

By the end of this unit, you should be able to:

- Describe the principal determinants of share prices and be able to estimate share value of using variety of approaches.
- Demonstrate awareness of the most important input factors and appreciate that they are difficult to quantify.
- Use valuation models to estimate the value of share when managerial control is achieved.

3.0 Valuation using net asset value (NAV)

The balance sheet seems an obvious place to start when faced with the task of valuation. In this method 'the company is viewed as being worth the sum of the value of its net assets. The balance sheet is regarded as providing objective facts concerning the company's ownership of assets and obligations to creditors. Here fixed assets are

recorded along with stocks, debtors, cash and other liquid assets. With the deduction of long-term and short-term creditors from the total asset figure we arrive at the net asset value (NAV).

An example of this type of calculation is shown in Exhibit 20.1 for the publisher Pearson.

Exhibit 20.1 Pearson plc abridged balance sheet as at 31 December 2003

	£m
Fixed assets	3,872
Current assets	2,523
Creditors: Amounts falling due within one year	(1,704)
Creditors: Amounts falling due after more than one year	(1,392)
Provisions for liabilities and charges	<u>(152)</u>
Net assets	<u>3,147</u>
Equity shareholders' funds	2,952
Equity minority interests	<u>195</u>
	<u>3,147</u>

Source: Pearson plc, Annual Review 2003.

The NAV of N3,147m of Pearson compares with a market value placed on all the shares when total of N5,000m (market capitalisation figures are available in Monday editions of the Financial Times). This great difference makes it clear that the shareholders of Pearson are not rating the firm on the basis of balance sheet net asset figures. This point is emphasised by an examination of Exhibit 20.2.

Exhibit 20.2 Net asset values and total capitalisation of some firms

Company (Accounts year)	NAV £m	Total capitalisation (market value of company's shares) £m
AstraZeneca (2003)	\$13,257	38,391
Bloomsbury (2003)	59	183
Cadbury Schweppes (2003)	3,193	9,536
Unilever (2003)	5,920	14,135
Vodafone (2003)	131,534	93,732

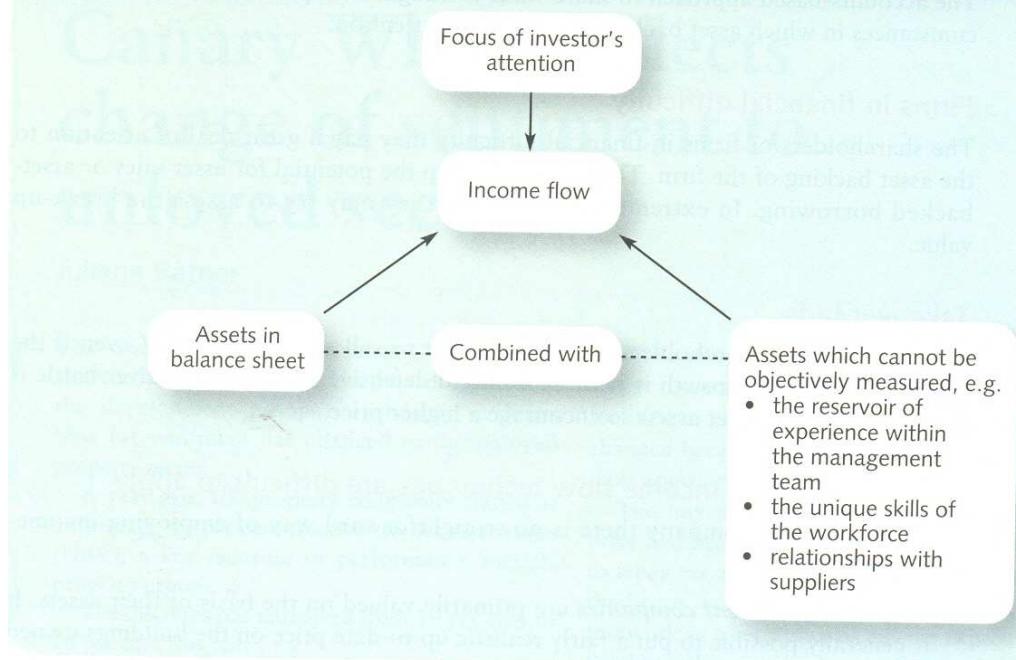
Source: Annual reports and accounts; *Financial Times*, 15 November 2004.

Some of the firms listed in Exhibit 20.2 have a very small balance sheet value in comparison with their total market capitalisation. Vodafone, the exception, boosted its

balance sheet by including a lot of intangible assets in the form of goodwill following acquisitions. For most companies, investors look to the income flow to be derived from a holding. This flow is generated when the balance sheet assets are combined with assets impossible to quantify: these include the unique skills of the workforce, the relationships with customers and suppliers, the value of brands, the reservoir of experience within the management team, and the competitive positioning of the firms' products. Thus assets, in the crude sense of balance sheet values, are only one dimension of overall value - see Exhibit 20.3. Investors in the market generally value intangible, un-measurable assets more highly than those which can be identified and recorded by accountants.

Criticising accountants for not producing balance sheets which reflect the true value of a business is unfair. Accounts are not usually designed to record up-to-date market values. Land and buildings are frequently shown at cost rather than market value; thus the balance sheet can provide a significant over- or under-valuation of the assets' current value. Plant and machinery is shown at the purchase price less a depreciation amount. Stock is valued at the lower of cost or net realisable value - this can lead to a significant underestimate, as the market value can appreciate to a figure far higher than either of these. The list of balance sheet entries vulnerable to subjective estimation, arbitrary method and even cynical manipulation is a long one: goodwill, provisions, merger accounting, debtors, intangible brand values and so on.

Exhibit 20.3 What creates value for shareholders?



When asset values are particularly useful

The accounts-based approach to share value is fraught with problems but there are circumstances in which asset backing is given more attention.

Firms in financial difficulty

The shareholders of firms in financial difficulty may pay a great deal of attention to the

asset backing of the firm. They may weigh up the potential for asset sales or asset-backed borrowing. In extreme circumstances they may try to assess the break-up value.

Takeover bids

In a takeover bid shareholders will be reluctant to sell at less than NAV even if the prospect for income growth is poor. A standard defensive tactic in a takeover battle is to revalue balance sheet assets to encourage a higher price.

When discounted income flow techniques are difficult to apply

For some types of company there is no straightforward way of employing income-flow-based methods:

1 Property investment companies are primarily valued on the basis of their assets. It is generally possible to put a fairly realistic up-to-date price on the buildings owned by such a company. These market values have a close link to future cash flows. That is, the future rents payable by tenants, when discounted, determine the value of property assets and thus the company. If higher rent levels are expected than were previously anticipated, chartered surveyors will place a higher value on the asset, and the NAV in the balance sheet will rise, forcing up the share price. For such companies, future income, asset values and share values are all closely linked. However the value of a property investment company may be less than its NAV.

Two reasons for a discount to NAV: the capital gains tax the company would incur on the sale of its assets; and the cost of paying off high interest rate debt. Analysts also deduct the costs of remaining as a going concern (the present value of management costs and general overheads).

2 Investment trusts: The future income of investment trusts comes from the individual shareholdings. The shareholder in a trust would find it extremely difficult to calculate the future income to be received from each of the dozens or hundreds of shares held. An easier approach is simply to take the current share price of each holding as representing the future discounted income. The share values are aggregated to derive the trusts' NAV and this has a strong bearing on the price at which the trust shares are traded.

3 Resource-based companies: For oil companies, mineral extractors, mining houses and so on, the proven or probable reserves have a significant influence on the share price.

3.1 Valuation using income-flow methods

The value of a share is usually determined by the income flows that investors expect to receive in the future from its ownership. Information about the past is only of relevance to the extent that it contributes to an understanding of expected future performance. Income flows will occur at different points in the future and so they have to be discounted. There are three classes of income valuation model:

- dividend-based models;
- earnings-based models;
- cash-flow-based models.

3.2 The dividend valuation models

The dividend valuation models (DVMs) are based on the premise that the market value of ordinary shares represents the sum of the expected future dividend flows, to infinity,

discounted to present value.

The only cash flows that investors ever receive from a company are dividends. This holds true if we include a 'liquidation dividend' upon the sale of the firm or on formal liquidation, and any share repurchases can be treated as dividends. Of course, an individual shareholder is not planning to hold a share forever to gain the dividend returns to an infinite horizon. An individual holder of shares will expect two types of return:

- income from dividends, and
- a capital gain resulting from the appreciation of the share and its sale to another investor.

The fact that the individual investor is looking for capital gains as well as dividends to give a return does not invalidate the model. The reason for this is that when a share is sold, the purchaser is buying a future stream of dividends, therefore the price paid is determined by future dividend expectations.

To illustrate this, consider the following: A shareholder intends to hold a share for one year. A single dividend will be paid at the end of the holding period, d_1 and the share will be sold at price P_1 in one year.

To derive the value of a share at time $t=0$ to this investor (P_0), the future cash flows, d_1 and P_1 , need to be discounted at a rate which includes an allowance for the risk class of the share, k_E .

$$P_0 = \frac{d_1}{1 + k_E} + \frac{P_1}{1 + k_E}$$

Worked example 20.1

An investor is considering the purchase of some shares in Willow plc. At the end of one year a dividend of 22p will be paid and the shares are expected to be sold for £2.43. How much should be paid if the investor judges that the rate of return required on a financial security of this risk class is 20 per cent?

Answer

$$P_0 = \frac{d_1}{1 + k_E} + \frac{P_1}{1 + k_E}$$

$$P_0 = \frac{22}{1 + 0.2} + \frac{243}{1 + 0.2} = 221p$$

The dividend valuation model to infinity

The relevant question to ask in order to understand DVMs is: Where does P_1 come from? The buyer at time 1 estimates the value of the share based on the present value of future income given the required rate of return for the risk class. So if the second investor expects to hold the share for a further year and sell at time 2 for P_2 , the price P_1 will be:

$$P_1 = \frac{d_2}{1 + k_E} + \frac{P_2}{1 + k_E}$$

Returning to the P_0 equation we are able to substitute discounted d_2 and P_2 for P_1 . Thus:

$$P_0 = \frac{d_1}{1 + k_E} + \frac{P_1}{1 + k_E}$$

$$P_0 = \frac{d_1}{1 + k_E} + \frac{(d_2)^2}{(1 + k_E)^2} + \frac{(P_2)^2}{(1 + k_E)^2}$$

If a series of one-year investors bought this share, and we in turn solved for P_2, P_3, P_4 , etc., we would find:

$$\frac{d_1}{1 + k_E} + \frac{d_2}{(1 + k_E)^2} + \frac{d_3}{(1 + k_E)^3} + \dots + \frac{d_n}{(1 + k_E)^n}$$

Even a short-term investor has to consider events beyond his or her time horizon because the selling price is determined by the willingness of a buyer to purchase a future dividend stream. If this year's dividends are boosted by short-term policies such as cutting out R&D and brand-support marketing the investor may well lose more on capital value changes (as other investors push down the share price when their forecasts for future dividends are lowered) than the gains in dividend income.

Worked example 20.2

If a firm is expected to pay dividends of 20p per year to infinity and the rate of return required on a share of this risk class is 12 per cent then:

$$P_0 = \frac{20}{1 + 0.12} + \frac{20}{(1 + 0.12)^2} + \frac{20}{(1 + 0.12)^3} + \dots + \frac{20}{(1 + 0.12)^n}$$

$$P_0 = 17.86 + 15.94 + 14.24 + \dots +$$

Given this is a perpetuity there is a simpler approach:

$$P_0 = \frac{d_1}{k_E} = \frac{20}{0.12} = 166.67\text{p}$$

The dividend growth model

In contrast to the situation in the above example, for most companies dividends are expected to grow from one year to the next. To make DVM analysis manageable simplifying assumptions are usually made about the patterns of growth in dividends. Most managers attempt to make dividends grow more or less in line with the firm's longterm earnings growth rate. They often bend over backwards to smooth out fluctuations, maintaining a high dividend even in years of poor profits or losses. In years of very high profits they are often reluctant to increase the dividend by a large percentage for fear that it might have to be cut back in a downturn. So, given management propensity to make dividend payments grow in an incremental or stepped fashion it seems that a reasonable model could be based on the assumption of a constant growth rate. (Year to year deviations around this expected growth path will not materially alter the analysis.) See worked examples 20.3 and 20.4 for the use of the constant dividend growth model.

Worked example 20.3 A constant dividend growth valuation: Shhh plc

If the last dividend paid was d_0 and the next is due in one year, d_1 , then this will amount to $d_0 (1 + g)$ where g is the growth rate of dividends.

For example, if Shhh plc has just paid a dividend of 10p and the growth rate is 7 per cent then:

$$d_1 \text{ will equal } d_0 (1 + g) = 10 (1 + 0.07) = 10.7p$$

and

$$d_2 \text{ will be } d_0 (1 + g)^2 = 10 (1 + 0.07)^2 = 11.45p$$

The value of a share in Shhh will be all the future dividends discounted at the risk-adjusted discount rate of 11 per cent:

$$P_0 = \frac{d_0 (1 + g)}{(1 + k_E)} + \frac{d_0 (1 + g)^2}{(1 + k_E)^2} + \frac{d_0 (1 + g)^3}{(1 + k_E)^3} + \dots + \frac{d_0 (1 + g)^n}{(1 + k_E)^n}$$

$$P_0 = \frac{10 (1 + 0.07)}{1 + 0.11} + \frac{10 (1 + 0.07)^2}{(1 + 0.11)^2} + \frac{10 (1 + 0.07)^3}{(1 + 0.11)^3} + \dots + \frac{10 (1 + 0.07)^n}{(1 + 0.11)^n}$$

Using the above formula could require a lot of time. Fortunately it is mathematically equivalent to the following formula² which is much easier to employ. (This is called the Gordon growth model.)

$$P_0 = \frac{d_1}{k_E - g} = \frac{d_0 (1 + g)}{k_E - g} = \frac{10.7}{0.11 - 0.07} = 267.50p$$

Note that, even though the shortened formula only includes next year's dividend all the future dividends are represented.

A further illustration is provided by the example of Pearson plc.

Non-constant growth

Firms tend to go through different phases of growth. If they have a strong competitive advantage in an attractive market they might enjoy super-normal growth. Eventually, however, most firms come under competitive pressure and growth becomes normal.

Worked example 20.4 Pearson plc

Pearson plc, the publishing, media and education group, has the following dividend history.

Year	Net dividend per share (p)
1996	16.1
1997	17.4
1998	18.8
1999	20.1
2000	21.4
2001	22.3
2002	23.4
2003	24.2

The average annual growth rate, g , over this period has been:

$$g = \sqrt[7]{\frac{24.2}{16.1}} - 1 = 0.06 \text{ or } 6\%$$

If it is assumed that this historic growth rate will continue into the future (a big *if*) and 10 per cent is taken as the required rate of return, the value of a share can be calculated.

$$P_0 = \frac{d_1}{k_E - g} = \frac{24.2 (1 + 0.06)}{0.10 - 0.06} = 641p$$

Over 2004 Pearson's shares ranged as high as 697p and as low as 579p. So there were times when investors were more optimistic than we have been in the above analysis: perhaps they were anticipating a faster rate of growth in future than in the past or judged the risk to be less, thus lowering k_E . On other occasions investors were more pessimistic, perhaps seeing Pearson's shares as sufficiently risky to require a rate of return higher than 10 per cent per year or anticipating lower future profits and dividend growth.

Ultimately, many firms fail to keep pace with the market environmental change in which they operate and growth falls to below that for the average company.

To analyses companies which will go through different phases of growth a two-, three- or four-stage model may be used. In the simplest case of two-stage growth the share price calculation requires the following:

- 1 Calculate each of the forecast annual dividends in the first period
- 2 Estimate the share price at the point at which the dividend growth shifts to the new permanent rate.

3 Discount each of the dividends in the first period and the share price given in 2.

Add all the discounted numbers to obtain the current value.

Worked example 20.5 Noruce plc

You are given the following information about Noruce plc.

The company has just paid an annual dividend of 15p per share and the next is due in one year. For the next three years dividends are expected to grow at 12 per cent per year. This rapid rate is caused by a number of favourable factors: for example an economic upturn, the fast acceleration stage of newly developed products and a large contract with a government department.

After the third year the dividend will grow at only 7 per cent per annum, because the main boosts to growth will, by then, be absent.

Shares in other companies with a similar level of systematic risk to Noruce produce an expected return of 16 per cent per annum.

What is the value of one share in Noruce plc?

Answer

Stage 1 Calculate dividends for the super-normal growth phase.

$$d_1 = 15 (1 + 0.12) = 16.8$$

$$d_2 = 15 (1 + 0.12)^2 = 18.8$$

$$d_3 = 15 (1 + 0.12)^3 = 21.1$$

Stage 2 Calculate share price at time 3 when the dividend growth rate shifts to the new permanent rate.

$$P_3 = \frac{d_4}{k_E - g} = \frac{d_3 (1 + g)}{k_E - g} = \frac{21.1 (1 + 0.07)}{0.16 - 0.07} = 250.9$$

Stage 3 Discount and sum the amounts calculated in Stages 1 and 2.

$$\frac{d_1}{1 + k_E} = \frac{16.8}{1 + 0.16} = 14.5$$

$$+ \frac{d_2}{(1 + k_E)^2} = \frac{18.8}{(1 + 0.16)^2} = 14.0$$

$$+ \frac{d_3}{(1 + k_E)^3} = \frac{21.1}{(1 + 0.16)^3} = 13.5$$

$$+ \frac{P_3}{(1 + k_E)^3} = \frac{250.9}{(1 + 0.16)^3} = \frac{160.7}{202.7p}$$

What is a normal growth rate?

Growth rates will be different for each company but for corporations taken as a whole dividend growth will not be significantly different from the growth in nominal gross national product (real GNP plus inflation) over the long run. If dividends did grow in a long-term trend above this rate then they would take an increasing proportion of national income - ultimately squeezing out the consumption and government sectors.

This is, of course, ridiculous. Thus in an economy with inflation of 2 per cent per annum

and growth of 2.5 per cent we might expect the long-term growth in dividends to be about 4.5 per cent. Also, it is unreasonable to suppose that a firm can grow its earnings and dividends forever at a rate significantly greater than that for the economy as a whole. To do so is to assume that the firm eventually becomes larger than the economy. There will be years, even decades, when average corporate dividends do grow faster than the economy as a whole and there will always be companies with much higher projected growth rates than the average for periods of time. Nevertheless the real GNP + inflation growth relationship provides a useful benchmark.

Companies that do not pay dividends

Some companies, for example Warren Buffett's Berkshire Hathaway, do not pay dividends. This is a deliberate policy as there is often a well-founded belief that the funds are better used within the firms than they would be if the money was given to shareholders. This presents an apparent problem for the DVM but the formulae can still be applied because it is reasonable to suppose that one day these companies will start to pay dividends. Perhaps this will take the form of a final break-up payment, or perhaps when the founder is approaching retirement he/she will start to distribute the accumulated resources. At some point dividends must be paid, otherwise there would be no attraction in holding the shares. Microsoft is an example of a company that did not pay a dividend for 28 years. However, in 2003 it decided it would start the process of paying out some of its enormous cash pile and paid a dividend. In 2004 it decided to pay a 'special dividend' on top of its now regular dividend amounting to a massive N32bn. Furthermore it made a commitment to share at least \$43bn with shareholders over the next four years in the form of share repurchases and its regular dividend.

Some companies do not pay dividends for many years due to regular losses. Often what gives value to this type of share is the optimism that the company will recover and that dividends will be paid in the distant future.

Problems with dividend valuation models

Dividend valuation models present the following problems.

- 1 They are highly sensitive to the assumptions. Take the case of Pearson above. If the growth assumption is changed to 8 per cent and reduce the required rate of return to 9.5 per cent, the value of the share leaps to 1,742p.

$$P_0 = \frac{d_0 (1 + g)}{k_E - g} = \frac{24.2 (1 + 0.08)}{0.095 - 0.08} = 1,742k$$

As the growth rate converges on the required rate of return the value goes to infinity.

- 2 The quality of input data is often poor. The problems of calculating an appropriate required rate of return on equity were discussed in the previous unit. Added to this is great uncertainty about the future growth rate.
- 3 If g exceeds k_E a nonsensical result occurs. This problem is dealt with if the short-term super-normal growth rate plus the lower rate after the super-normal period is replaced with a g which is weighted average growth rate reflecting the return expected over the long run. However, this is unlikely to result in a g more than one or two percentage points greater than the growth rate for the economy as a whole (because the largest weight will be given to the near term non-supernormal growth period, we may allow a growth rate slightly higher than the economy.) Alternatively, for those periods when g

is greater than k , one may calculate the specific dividend amounts and discount them as in the non-constant growth model. For the years after the super-normal growth occurs, the usual growth formula may be used.

The difficulties of using the DVMs are real and yet they are to be favoured, less for the derivation of a single number than for the understanding of the principles behind the value of financial assets that the exercise provides. They demand a disciplined thought process that makes the analyst's assumptions about key variables explicit.

Forecasting dividend growth rates - g

The most influential variable, and the one subject to most uncertainty, on the value of shares is the growth rate expected in dividends. Accuracy here is a much sought-after virtue. While this book cannot provide readers with perfect crystal balls for seeing future dividend growth rates, it can provide a few pointers.

Determinants of growth

There are three factors which influence the rate of dividend growth.

- 1 **The quantity of resources retained and reinvested within the business:** This relates to the percentage of earnings not paid out as dividends. The more a firm invests the greater its potential for growth.
- 2 **The rate of return earned on those retained resources:** The efficiency with which retained earnings are used will influence value.
- 3 **Rate of return earned on existing assets:** This concerns the amount earned on the existing baseline set of assets, that is, those assets available before reinvestment of profits. This category may be affected by a sudden increase or decrease in profitability. If the firm, for example, is engaged in oil exploration and production, and there is a worldwide increase in the price of oil, profitability will rise on existing assets. Another example would be if a major competitor is liquidated, enabling increased returns on the same asset base due to higher margins because of an improved market position.

There is a vast range of influences on the future return from shares. One way of dealing with the myriad variables is to group them into two categories: at the firm and the economy level.

Focus on the firm

A dedicated analyst would want to examine numerous aspects of the firm, and its management, to help develop an informed estimate of its growth potential. These will include the following.

- 1 **Strategic analysis:** The most important factor in assessing the value of a firm is its strategic position. The analyst needs to consider the attractiveness of the industry, the competitive position of the firm within the industry and the firm's position on the life cycle of value creation to appreciate the potential for increased dividends (see Unit 19 and for a fuller discussion in Arnold (2002) or Arnold (2004)).
- 2 **Evaluation of management:** Running a close second in importance for the determination of a firm's value is the quality of its management. A starting point for analysis might be to collect factual information such as the age of the key managers and their level of experience and of education. But this has to be combined with far more important evaluating variables which are unquantifiable, such as inference, and even gut feeling about issues such as competence, integrity, intelligence and so on. Having

honest managers with a focus on increasing the wealth of shareholders is at least as important for valuing shares as the factor of managerial competence. Investors downgrade the shares of companies run by the most brilliant managers if there is any doubt about their integrity - highly competent crooks can destroy shareholder wealth far more quickly than any competitive action: just ask the shareholders in WorldCom, Enron and Parmalat. (For a fuller discussion of the impact of managerial competence and integrity on share values see Arnold (2002).)

- 3 **Using the historical growth rate of dividends:** For some firms past growth may be extrapolated to estimate future dividends. If a company demonstrated a growth rate of 6 per cent over the past ten years it might be reasonable to use this as a starting point for evaluating its future potential. This figure may have to be adjusted for new information such as new strategies, management or products that is the tricky part.
- 4 Financial statement evaluation and ratio analysis An assessment of the firm's profitability, efficiency and risk through an analysis of accounting data can be enlightening. However, adjustments to the published figures are likely to be necessary to view the past clearly, let alone provide a guide to the future. Warren Buffett comments:

'When managers want to get across the facts of the business to you, it can be done within the rules of accounting. Unfortunately when they want to play games, at least in some industries, it can also be done within the rules of accounting. If you can't recognise the differences, you shouldn't be in the equity-picking business.'

Accounts are valuable sources of information but they have three drawbacks: a they are based in the past when it is the future which is of interest, b the fundamental value-creating processes within the firm are not identified and measured in conventional accounts, and c they are frequently based on guesses, estimates and inferences, and are open to arbitrary method and manipulation.

Armed with a questioning frame of mind the analyst can adjust accounts to provide a truer and fairer view of a company. The analyst may wish to calculate three groups of ratios to enable comparisons:

- a. Internal liquidity ratios permit some inference about the ability of the firm to cope with short-term financial obligations - quick ratios, current ratios, etc.
- b. Operating performance ratios may indicate the efficiency of the management in the operations of the business - asset turnover ratio, profit margins, debtor turnover, etc.
- c. Risk analysis concerns the uncertainty of income flows - sales variability over the economic cycle, operational gearing (fixed costs as a proportion of total), financial gearing (ratio of debt to equity), cash flow ratios, etc.

Ratios examined in isolation are meaningless. It is usually necessary to compare with the industry, or the industry sub-group comprising the firm's competitors. Knowledge of changes in ratios over time can also be useful.

Focus on the economy

All firms, to a greater or lesser extent, are influenced by macro-economic change. The prospects for a particular firm can be greatly affected by sudden changes in government fiscal policy, the central bank's monetary policy, changes in exchange rates, etc. Forecasts of macroeconomic variables such as GNP are easy to find (for example The Economist publishes a table of forecasts every week). Finding a forecaster who is reliable over the long term is much more difficult. Perhaps the best approach is to obtain a number of projections and through informed inference develop a view of the medium-term. Alternatively, the analyst could recognise that there are many different potential

futures and then develop analyses based on a range of possible scenarios - probabilities could be assigned and sensitivity analysis used to provide a broader picture.

It is notable that the great investors (e.g. Benjamin Graham, Philip Fisher, Warren Buffett and Charles Munger) pay little attention to macroeconomic forecasts when valuing companies. The reason for this is that value is determined by income flows to the shareholder over many economic cycles stretching over decades, so the economists' projection (even if accurate) for this or that economic number for the next year is of little significance.

3.3 THE PRICE-EARNINGS RATIO (PER) MODEL

The most popular approach to valuing a share is to use the price-to-earnings (PER) ratio. The historic PER compares a firm's share price with its latest earnings (profits) per share. Investors estimate a share's value as the amount they are willing to pay for each unit of earnings. If a company produced earnings per share of 10k in its latest accounts and investors are prepared to pay 20 times historic earnings for this type of share it will be valued at N2.00. The historic PER is calculated as follows:

$$\text{Historic PER} = \frac{\text{Current market price of share}}{\text{Last year's earnings per share}} = \frac{200k}{10k}$$

So, the retailer Kingfisher which reported earnings per share of 23p for the year to July 2004 with a share price of 303p in November 2004 had a PER of about 13 (303/23). PERs of other retailers are shown in Exhibit 20.6.

Investors are willing to buy Next shares at 17.6 times last year's earnings compared with only 9.5 times last year's earnings for JJB Sports. One explanation for the difference in PERs is that companies with higher PERs are expected to show faster growth in earnings in the future. Next may appear expensive relative to JJB Sports based on historical profit figures but the differential may be justified when forecasts of earnings are made. If a PER is high investors expect profits to rise. This does not necessarily mean that all companies with high PERs are expected to perform to a high standard, merely that they are expected to do significantly better than in the past. Few people would argue that Marks and Spencer has performed, or will perform, well in comparison with Next and yet it stands at a higher historic PER, reflecting the market's belief that Marks and Spencer has more growth potential from its low base than Next.

So, using the historic PER can be confusing because a company can have a high PER because it is usually a high-growth company or because it has recently had a reduction of profits from which it is expected soon to recover.

PERs are also influenced by the uncertainty of the future earnings growth. So, perhaps, Dixons and Kingfisher might have the same expected growth rate but the growth at Kingfisher is subject to more risk and therefore the market assigns a lower earnings multiple.

Exhibit 20.6 PERs for retailers

Retailer	PER	FT
Blacks	14.9	
Body Shop	17.0	
Boots	14.7	
Burberry	18.4	
Dixons	16.8	
JJB Sports	9.5	
Kingfisher	13.0	
Marks and Spencer	18.0	
Ottakar's	18.9	
Next	17.6	

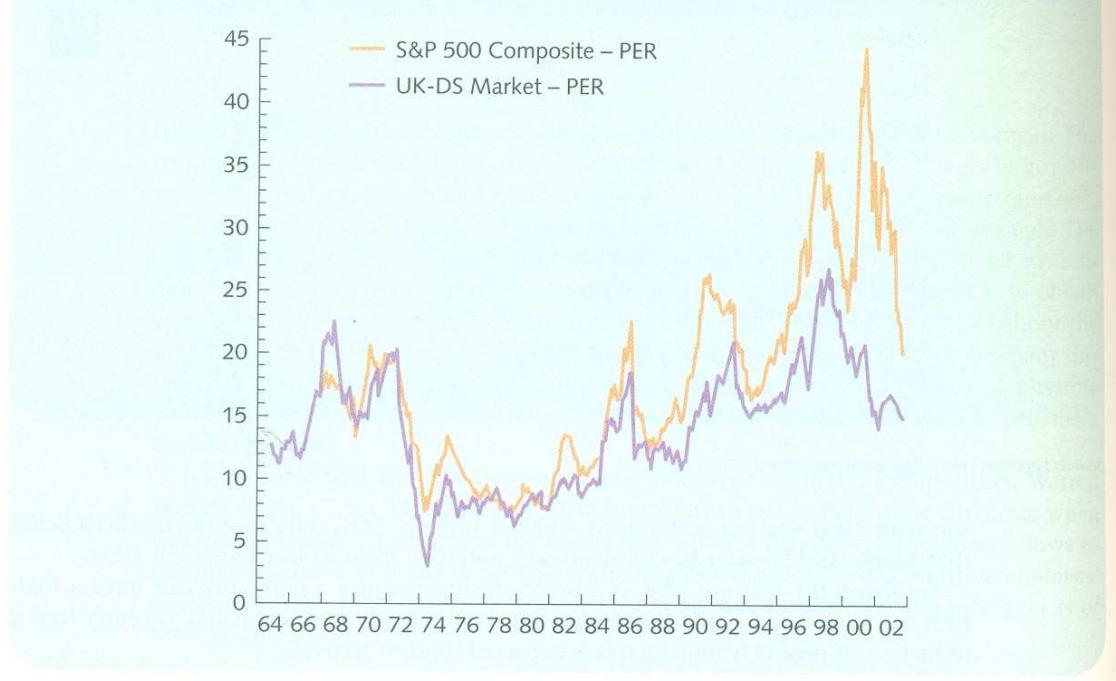
PERs over time

There have been great changes over the years in the market's view of what is a reasonable multiple of earnings to place on share prices. What is excessive in one year is acceptable in another. This is illustrated in Exhibit 20.7.

The crude and the sophisticated use of the PER model

Some analysts use the historic PER (Po/Eo), to make comparisons between firms without making explicit the considerations hidden in the analysis. They have a view of an appropriate PER based on current prevailing PERs for other firms in the "same industry". So, for example, in 2004 Tesco with a PER of 18.2 may be judged to be priced correctly relative to similar firms - Sainsbury had a PER of 12.7, Morrison 35.1 and Somerfield 24.4. Analysing through comparisons lacks intellectual rigour. First, the assumption that the 'comparable' companies are correctly priced is a bold one. It is easy to see how the market could be pulled up (or down) by its own bootstraps and lose touch with fundamental considerations by this kind of thinking. A good example of this is the rise of telecommunication shares in the 1998-2000 bubble. Secondly, it fails to provide a framework for the analyst to test the important implicit input assumptions - for example, the growth rate expected in earnings in each of the companies, or the difference in required rate of return given the different risk level of each. These elements are probably in the mind of the analyst, but there are benefits in making these more explicit. This can be done with the more complete PER model which is forward looking and recognises both risk levels and growth projections.

Exhibit 20.7 PERs for the UK and US (S&P 500) stock markets, 1964–2004



The infinite dividend growth model can be used to develop the more complete PER model because they are both dependent on the key variables of growth, g (in dividends or earnings), and the required rate of return, k_E . The dividend growth model is:

$$P_0 = \frac{d_1}{k_E - g}$$

If both sides of the dividend growth model are divided by the expected earnings for the next year, E_1 , then:

$$\frac{P_0}{E_1} = \frac{d_1/E_1}{k_E - g}$$

Note this is a prospective PER because it uses next year's earnings, rather than a historic PER, which uses E_0 .

In this more complete model the appropriate multiple of earnings for a share rises as the growth rate, g , goes up; and falls as the required rate of return, k_E , increases. The relationship with the ratio d/E_1 is more complicated. If this payout ratio is raised it will not necessarily increase the PER because of the impact on g - if more of the earnings are paid out less financial resource is being invested in projects within the business, and therefore future growth may decline.

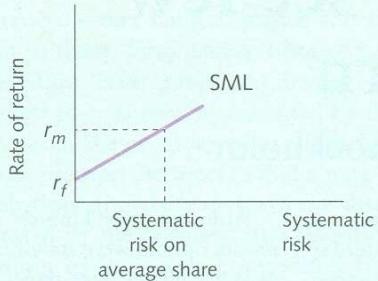
Prospective PER varies with g and kE

If an assumption is made concerning the payout ratio, then a table can be drawn up to show how PERs vary with k_E and g - see **Exhibit 20.8.**

- influences on a firm's future growth of earnings and dividends, e.g.:
- proportion of profit retained;
 - efficient use of resources;
 - market opportunities;
 - quality of management;
 - strategy.

Exhibit 20.9 Continued

Required return for risk class, k_E , related to risk class of share



Note the influences on k_E : e.g. if prospective inflation rises, interest rates (probably) rise and SML shifts upwards thus increasing k_E (it will probably also rise). Also the risk profile of the firm may change with a new strategy, therefore altering k_E .

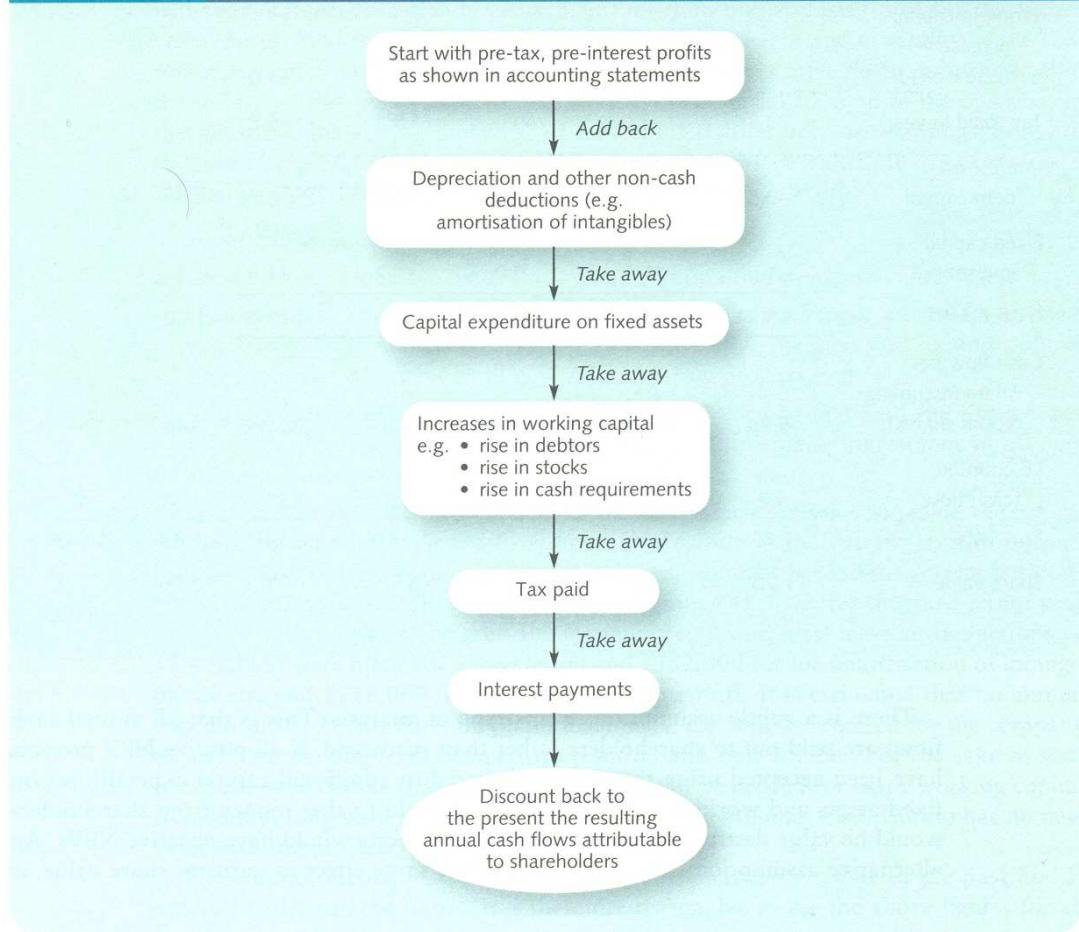
With the market propensity to focus on the future it can appear to provide strange valuations if historic relationships are examined. Take the case of Jefferson Smurfit, the Irish paper and packaging company which announced a fivefold jump in interim profits in August 1995 to IRN200.6m. The company was optimistic about its prospects, yet the consensus view on the stock exchange was that Jefferson Smurfit should be valued at a PER which was one-third of that for the average quoted firm, six compared with 18. The market was concerned about future earnings and was far less sanguine than the company. The more complete model can help explain the apparently perverse behaviour of stock markets. If there is 'good' economic news such as a rise in industrial output or a fall in unemployment the stock market often falls. The market likes the increase in earnings that such news implies, but this effect is often outweighed by the effects of the next stage. An economy growing at a fast pace is vulnerable to rises in inflation and the market will anticipate rises in interest rates to reflect this. Thus the r_f and the rest of the SML are pushed upward. The return required on shares, k_E , will rise, and this will have a depressing effect on share prices

3.4 Valuation using cash flow

The third and most important income-based valuation method is cash flow. In business it is often said that 'cash is king'. From the shareholders' perspective the cash flow relating to a share is crucial - they hand over cash and are interested in the ability of the business to return cash to them. John Allday, head of valuation at Ernst and Young, says that discounted cash flow 'is the purest way. I would prefer to adopt it if the information is there. The interest in cash flow is promoted by the limited usefulness of published accounts. Scepticism about the accuracy of earnings figures, given the flexibility available in their construction, prompts attempts to find a purer valuation method than PER.'

The cash flow approach involves the discounting of future cash flows, that is, the cash generated by the business after investment in fixed assets and working capital to fully maintain its long-term competitive position and its unit volume, and to make investment in all new value-creating projects. To derive the cash flow attributable to shareholders, any interest paid in a particular period is deducted. The process of the derivation of cash flow from profit figures is shown in Exhibit 20.13.

Exhibit 20.13 Cash flow approach: one possibility



An example of a cash flow calculation is shown in Exhibit 20.14. Note that the earnings figures for 2006 are very different from the cash flow because of the large capital investment in fixed assets - earnings are positive because only a small proportion of the cost of the new fixed assets is depreciated in that year.

Exhibit 20.14 Cash flow-based share valuation

£m	2005	2006	2007	2008	2009	Estimated average annual cash flow for period beyond planning horizon 2010–infinity
Forecast pre-tax, pre-interest profits	+11.0	+15.0	+15.0	+16.0	+17.0	
Add depreciation, amortisation, etc.	+1.0	+2.5	+5.5	+4.5	+4.0	
Working capital increase (–) decrease (+)	+1.0	-0.5	0.0	+1.0	+1.0	
Tax (paid in year)	-3.3	-5.0	-5.0	-5.4	-5.8	
Interest on debt capital	-0.5	-0.5	-0.5	-0.6	-0.7	
Fixed capital investment	-1.0	-16.0	0.0	-1.2	-1.8	
Cash flow	+8.2	-4.5	+15.0	+14.3	+13.7	+14.0
Cash flow per share (assuming 100m shares)	8.2p	-4.5p	15p	14.3p	13.7p	14p
Discounted cash flow $k_E = 14\%$	$\frac{8.2}{1.14}$	$-\frac{4.5}{(1.14)^2}$	$+\frac{15}{(1.14)^3}$	$+\frac{14.3}{(1.14)^4}$	$+\frac{13.7}{(1.14)^5}$	$+\frac{14}{0.14} \times \frac{1}{(1.14)^5}$
Share value =	7.20	-3.5	+10.1	+8.5	+7.1	+51.9
						= 81.3p

There is a subtle assumption in this type of analysis. This is that all annual cash flows are paid out to shareholders rather than reinvested. If all positive NPV projects have been accepted using the money allocated to additional capital expenditures on fixed assets and working capital, then to withhold further money from shareholders would be value destructive because any other projects would have negative NPVs. An alternative assumption, which amounts to the same effect in terms of share value, is that any cash flows that are retained and reinvested generate a return that merely equals the required rate of return for that risk class; thus no additional value is created. Of course, if the company knows of other positive-value projects, either at the outset or comes across them in future years, it should take them up. This will alter the numbers in the table and so a new valuation is needed.

The definition of cash flow used here (which includes a deduction of expenditure

on investment in fixed and working capital to maintain long-term competitive position, unit volume, and to make investment all new value-creating projects) is significantly different from many accountants' and analysts' definitions of cash flow. They often neglect to allow for one or more of these factors. Be careful if you are presented with alternative cash flow numbers based on a different definition of cash flow.

3.5 Valuation using owner earnings

A simplified version of cash flow analysis is owner earnings. For shares, intrinsic value is the discounted value of the owner earnings that can be taken out of a business during its remaining life. These correspond with standard cash flow analysis shown in the last section except that we calculate a sustainable level of owner earnings for a typical year (subject to a steady growth) rather than lumpy cash flows for the future years. Future owner earnings are determined by the strength and durability of the economic franchise (attractiveness of the industry plus competitive position of the firm in the industry), the quality of management and the financial strength of the business. In the following analysis we make use of Buffett's definition of owner earnings, but with the additional factor in c and d of 'investment in all new value-creating projects'.⁵ Owner earnings are defined as:

- a. reported earnings after tax; plus
- b. depreciation, depletion, amortisation and certain other non-cash charges; less
- c. the amount of capitalised expenditures for plant and machinery, etc. that a business requires to fully maintain its long-term competitive position and its unit volume and to make investment in all new value-creating projects; less
- d. any extra amount for working capital that is needed to maintain the firm's long -- term competitive position and unit volume and to make investment in all new value-creating projects.

Thus, there are two types of investment:

First, this is the investment which will permit the firm to continue to maintain its existing competitive position at the current level of output.

Secondly, this is the investment in value-creating growth opportunities beyond the current position.

So, for example, Cotillo plc has reported earnings after tax for the most recent year of N16.3 million. In drawing up the income (profit and loss) account deductions of N7.4 million were made for depreciation and N152,000 for the amortisation of intangible assets, and N713,000 of goodwill was written off. It is estimated that an annual expenditure of N8.6 million on plant, machinery, etc. will be required for the company to maintain its long-term competitive position and unit volume. For the sake of simplicity we will assume that no further monies will be needed for extra working capital to maintain long-term competitive position and unit volume. Also, Cotillo has no new value-creating projects.

The trading record of Cotillo plc has been remarkably stable in the past and is unlikely to alter in the future. It is therefore reasonable to use the above figures for all the future years. This would result in estimated annual owner earnings of N15.965 million (see Exhibit 20.15).

Exhibit 20.15 Cotillo plc, owner earnings

	£000s
a Reported earnings after tax	16,300
<i>Plus</i>	
b Depreciation, depletion, amortisation and other non-cash charges (7,400 + 152 + 713)	<u>8,265</u>
	24,565
<i>less</i>	
c and d Expenditure on plant, equipment, working capital, etc. required to maintain long-term competitive position, unit volume and investment in new projects	<u>8,600</u>
	15,965

The discounted value of this perpetuity = N159.65m, if we take the discount rate to be 10 per cent:

$$\text{Intrinsic value} = \frac{\text{N15.965m}}{0.10} = \text{N15.965m}$$

Intrinsic value is determined by the owner earnings that can be taken out of the business during its remaining life. Logically the management of Cotillo should payout the full N15.956m each year to shareholders if the managers do not have investment projects within the firm that will generate returns of 10 per cent or more because shareholders can get 10 per cent return elsewhere for the same level of risk as holding a share in Cotillo. If the managers come across another project that promises a return of exactly 10 per cent shareholder wealth will be unchanged whether the company invests in this or chooses to ignore the project and continues with the payment of all owner earnings each year. If the management discover, in a future year, a value-creating project that will produce, say, a 15 per cent rate of return (for the same level of risk as the existing projects) then shareholders will welcome a reduction in dividends during the years of additional investment. The total value of discounted future owner earnings will rise and intrinsic value will be greater than N159.65m if such a project is undertaken.

Now let us assume that Cotillo has a series of new value-creating projects (i.e. generating returns greater than 10 per cent) in which it can invest. By investing in these projects owner earnings will rise by 5 per cent year on year (on the one hand owner earnings are decreased by the need for additional investment under c and d, but, on the other hand reported earnings are boosted under a, to produce a net 5 per cent growth). The intrinsic

value becomes N335.26m, viz:

$$\text{Next year's owner earnings} = \text{N}15.965\text{m} (1 + g) = \text{N}15.965\text{m} (1 + 0.05) = \text{N}16.763\text{m}$$

$$\text{Intrinsic value} = \frac{\text{next year's owner earnings}}{(k_E - g)} = \frac{16.763}{0.10 - 0.05} - \text{N}335.26\text{m}$$

It is legitimate to discount owner earnings because they amount to that which can be paid out to shareholders after all value-creating projects are financed and payments have been made for the investment to maintain the firm's competitive position and unit volume. It would not be legitimate to discount conventional accounting earnings. These are much larger than dividends because part of these earnings is ploughed back into the business for capital items and working capital. Owner earnings are much smaller than conventional earnings, and are in general closer to the dividend level than the conventional earnings figure, much of which could not be paid out to shareholders without jeopardising the future income flows of the business.

EBITDA is classified by some commentators as a cash flow measure of value. There will be no promoting of EBITDA as a useful measure of valuation in this' book, because it can lead to some very distorted thinking. EBITDA (pronounced e-bit-dah) became a very popular measure of a company's performance in the late 1990s. It was especially popular with managers of firms that failed to make a profit. EBITDA means earnings before interest, taxation, depreciation and amortisation. Managers liked to emphasise this measure in their communications to shareholders because large positive numbers could be shown. Some cynics have renamed it, 'Earnings Before I Tricked the Dumb Auditor'.

If you run an internet company that makes a N100m loss and the future looks pretty dim unless you can persuade investors and bankers to continue their support, perhaps you would want to add back all the interest (say N50m), depreciation on assets that are wearing out or becoming obsolete (say N40m), and the declining value of intangible assets, such as software licences and goodwill amortisation of, say, N6Sm, so that you could show a healthy positive number on EBITDA of NSSm. And if your loss seems to get worse from one year to the next as your acquisition strategy fails to pay off it is wonderfully convenient to report and emphasise a stable or rising EBITDA.

The use of EBITDA by company directors makes political spin doctors look amateurs by comparison. EBITDA is not covered by any accounting standards so companies are entitled to use a variety of methods - whatever shows the company in the best light, I guess.

In the real world directors (and valuers) cannot ignore (however much they would want to) the cost of using up and wearing out equipment and other assets or the fact that interest and tax need to be paid. Warren Buffett made the comment: 'References to EBITDA makes us shudder - does management think the tooth fairy pays for capital expenditures?' (Warren Buffett, a letter to shareholders attached to the Annual Report of Berkshire Hathaway Inc (2000). Reprinted with kind permission of Warren Buffett. @ Warren Buffett.)

3.6 Valuing unquoted shares

The principles of valuation are the same for companies with a quoted share price on an exchange and for unquoted firms. The methods of valuation discussed above in relation to shares quoted on an exchange may be employed, but there may be some additional factors to consider in relation to unquoted firms' shares.

1 There may be a lower quality and quantity of information: The reporting statements tend to be less revealing for unquoted firms. There may also be a managerial reluctance to release information - or managers may release information selectively so as to influence price, for example, in merger discussions.

2 These shares may be subject to more risk: Firms at an early stage in their life cycle

are often more susceptible to failure than are established firms.

- 3 **The absence of a quotation usually means the shares are less liquid**, that is, there is a reduced ability to sell quickly without moving the price. This lack of marketability can be a severe drawback and often investors in unquoted firms, such as venture capitalists, insist on there being a plan to provide an exit route within, say, five years, perhaps through a stock market float. But that still leaves a problem for the investor within the five years should a sale be required.
- 4 **Cost of tying in management:** When a substantial stake is purchased in an unquoted firm, in order for the existing key managers to be encouraged to stay they may be offered financial incentives such as 'golden hand-cuffs' which may influence value. Or the previous owner-managers may agree an 'earn-out' clause in which they receive a return over the years following a sale of their shares (the returns paid to these individuals will be dependent on performance over a specified future period).

Unquoted firms' shares tend to sell at significantly lower prices than those of quoted firms. Philip Marsden, deputy managing director of corporate finance at 3i, discounts the price by anything from one-third to one-half⁶ and the BDO Stay Hayward! Acquisitions Monthly Private Company Price Index (www.bdo.co.uk) shows unquoted firms being sold at an average PER of under two-thirds that for quoted shares.

3.7 Unusual companies

Obtaining information to achieve accuracy with discounted income flow methods is problematic for most shares. But in industries subject to rapid technological innovation it is extraordinarily difficult. While discounted income flow remains the ultimate method of valuation some analysts use more immediate proxies to estimate value. (A less scientific-sounding description is 'rules of thumb'). For example, Gerry Stephens and Justin Funnell, media and telecoms analysts at NatWest Markets, describe the approach often adopted in their sector?

Rather than DCF (discounted cash flow), people are often more comfortable valuing tele-media project companies using benchmarks that have evolved from actual market prices paid for similar assets, being based on a comparative measure or scale such as per line, per subscriber, per home or per pop (member of population). For example, an analyst might draw conclusions from the per-pop price that Vodafone [sic] trades at to put a price on the float of Telecom Italia Mobile. The benchmark prices will actually have originated from DCF analysis and the price paid can give an element of objective validation to the implied subjective DCE.

This sort of logic has been employed in the valuation of internet companies. In their attempt to value future profits that were far from certain 'analysts' became more and more extreme in clutching at straws to value internet companies in the late 1990s.

Other sectors difficult to value directly on the basis of income flow include: advertising agencies, where a percentage of annual billings is often used as a proxy; mobile phone operators, where ARPU (average revenue per user) is used; fund managers, where value of funds under management is used; and hotels, where star ratings may be combined with number of rooms and other factors such as revenue per room.

Valuing and buying shares **in** a well-regulated, stable environment with a flow of factual information is one thing. Buying **in** some emerging markets is another - innovative valuation techniques may be called for.

3.8 Managerial control and valuation

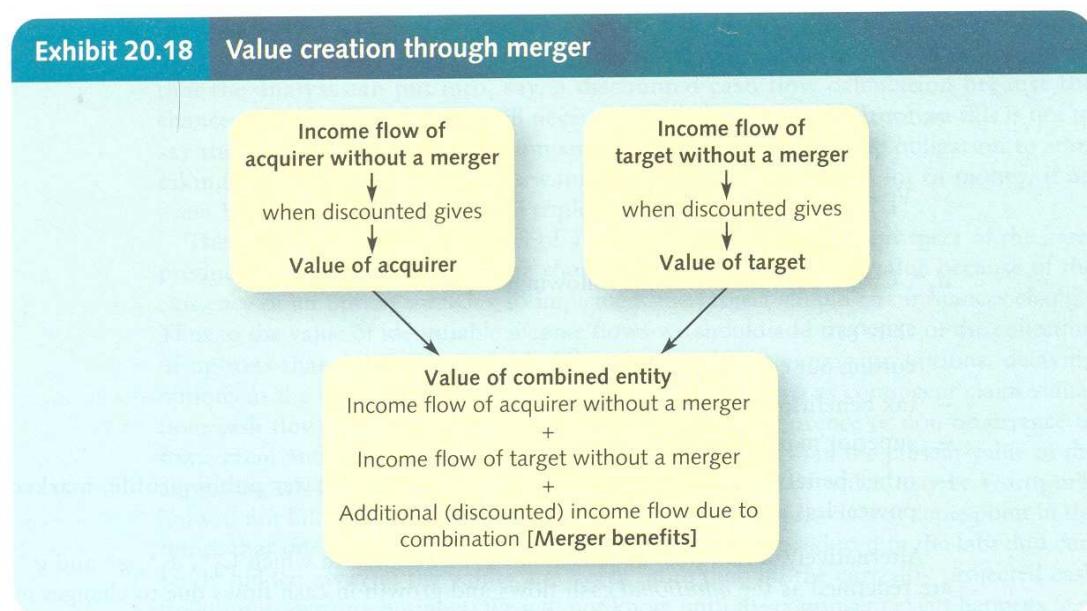
The value of a share can change depending on whether the purchaser gains a controlling interest in the firm. The purchase of a single share brings a stream of future dividends without any real influence over the level of those dividends. However, control of a firm by, say, purchasing 50 per cent or more of the shares, permits the possibility of changing

the future operations of the firm and thus enhancing returns. A merger may allow economies of scale and other synergies, or future earnings may be boosted by the application of superior management skills.

The difference in value between a share without management control and one with it helps to explain why we often witness a share price rise of 30-50 per cent in a takeover bid battle. There are two appraisals of the value of the firm, both of which may be valid depending on the assumption concerning managerial control. Exhibit 20.18 shows that extra value can be created by merging the operations of two firms.

Exhibit 20.18 is not meant to imply that the acquiring firm will pay a bid premium equal to the estimated merger benefits. The price paid is subject to negotiation and bargaining. The acquirer is likely to try to offer significantly less than the combined amount of the target firm's value 'as is' and the merger benefits. This will enable it to retain as much as possible of the increased value for itself rather than pass value on to the target shareholders.

Exhibit 20.18 Value creation through merger



Valuation models and managerial control

The takeover of Abbey National by Santander Central Hispano (SCH) in 2004 will provide a framework for illustrating possible use of the income flow model when managerial control is obtained. SCH claimed that it could reduce costs at Abbey National by N307m per year and add to its revenue by N75m, a total of N382m, largely as a result of the application of new technology.

In the absence of a takeover the value of a share in either company is:

$$P_0 = \frac{d_1}{k_E - g}$$

This is where d_1 and g are generated by the existing structure and strategy.

Alternatively, we could examine the entire cash flow of the company (available to be paid out to shareholders after maintaining the firm's competitive position and unit volume and investing in all volume-generating projects) rather than a single share.

C1

$$VE = kE - gc$$

where:

VE = value of the entire share capital of the firm;

C_1 = total cash flows at time 1 expected to continue growing at a constant rate of g_c in future years.

If there is a new strategy the values in the equations change:

$$Po = \frac{C_1^*}{kE - g^*}$$

or, for the entire cash flow:

$$VE = \frac{C_1}{kE - g_c}$$

d_1^* , C_1^* , g^* , g_c allow for the following:

- synergy;
- cutting out costs;
- tax benefits;
- superior management;
- other benefits (for example, lower finance costs, greater public profile, market power). less any additional costs

Alternatively, a marginal approach could be adopted in which C_1^* , d_1^* , g^* and g_c are redefined as the additional cash flows and growth in cash flows due to changes in ownership. For example, let us assume that the annual earnings gain of N382m is obtained in Year 1 but does not increase thereafter. Therefore $g = 0$. Let us further assume that the required rate of return on an investment of this risk class is 10 per cent. Thus the present value of the efficiency gains is:

$$VE = \frac{C_1^*}{kE - g_c} = \frac{N382m}{0.10 - 0} = N3,820m$$

We could change the assumption to gain insight into the sensitivity of the added value figure. For example, if it is anticipated that the benefits will rise each year by 2 per cent (so they are N390m in Year 2 and N397m in Year 3, etc.) then the maximum bid premium will rise:

$$VE = \frac{C_1^*}{kE - g_c} = \frac{N382m}{0.10 - 0.02} = N4.75m$$

On the other hand, the management of 5CH might have been carried away with the excitement of the bid battle and the N382m quoted might have come from hype or hubris, and, in fact, the difficulties of integration produce negative incremental cash flows. (See Unit 23 for a discussion on the problems of post-merger integration, and hubris as a driver of merger activity.)

3.9 Allowing for real option values

The expected income flows to be received by shareholders are the foundation for share valuation. But what about companies that have no projected income flows? Take an oil company that has fallen on hard times. It has shut down all of its oil wells because the

cost of extraction is greater than the current market price of oil. In fact the oil price would have to double to make it worthwhile reopening the wells. So there is little that the analyst can put into, say, a discounted cash flow calculation because the chances are that the company will never produce income again. However, this is not to say that there is no value. The company has the right but not the obligation to start taking oil from its wells when it wants to. This can be worth a lot of money, if an event happens, e.g. the price of oil triples.

The same logic applies to parts of a firm. There may be little prospect of the asset producing an income flow for the shareholders and yet there is value because of the existence of an option someday to implement the project should circumstances change. Thus to the value of identifiable income flows we should add the value of the collection of options that the firm may be holding, ranging from expansion options, delaying options to the option to quit. This area of finance is known as contingent claim valuation: cash flows are to some extent contingent on the occurrence or non-occurrence of some event and therefore the asset being valued is greater than the present value of the expected cash flows. BT owns thousands of patents some of which may be worth millions, if not billions, when the time is ripe. Indeed, we may discover at some point in the future that one or two of the inventions and innovations produced in the labs and currently hidden away in the vaults are worth more than all the currently projected cash flows on its existing business. We will not know until the contingent event happens (e.g. a complementary technological breakthrough) and the new business is created. Another example: if you were a song writer in the 1970s and you were smart you would have held on to the rights to use your music in any form. Even though you could not at that time value those rights for use in devices you could not even imagine (mobile phone ringtones, MP3 players, etc.) you did figure out that circumstances change and options to do something can suddenly become amazingly valuable.

Knowing that real options are important is one thing, valuing them is quite another. Most are very difficult to value. Be cautious: people can come up with very suspect numbers vulnerable to bias.

fection amongst the good managers, encouraging hostility, departures and a profits collapse, and b Big plc is keen that you provide a commitment to avoid large-scale redundancies.

Big, Little and Thingamees International all have a beta of 1.5, which is representative of the appropriate adjustment to the risk premium on the average share given the systematic risk. The risk-free rate of return is 8 per cent and the historical risk premium of share portfolios over safe securities has been 5 per cent.

The increased market power available to Thingamees International after purchasing Little would improve margins in Thingamees International's existing business to provide an additional £100,000 per annum.

Assume that tax is irrelevant.

Worked example 20.8 Continued

Required

- Calculate the value of Little plc in its present form, assuming a continuation of its historic growth rate.
- Calculate the value of Little plc if you were unable to push for maximum management redundancies and Little continued with its historical growth rate for its profits (that is, the profits before merger benefits). Assume that the annual merger benefits are constant for all future years to an infinite horizon, that is, there is no growth in these.
- Calculate the value of Little plc on the assumption that you are able to push through the rapid management changes and the pre-acquisition earnings continue on their historic growth path. (Again, the annual merger savings are fixed.)
- Discuss the steps you would take to get around the obstacles to profit maximisation.

Answers

- First calculate the required rate of return:

$$k_E = r_f + \beta (r_m - r_f) \\ = 8 + 1.5 (5) = 15.5\%$$

Then calculate growth rate of cash flows:

$$g = \sqrt[6]{\frac{1.86}{1.01}} - 1 = 10.71\%$$

Then calculate the value of Little plc:

$$V_E = \frac{C_1}{k_E - g} = \frac{1.86 (1 + 0.1071)}{0.155 - 0.1071} = £42.990m$$

The value of Little to its shareholders under its present strategy and managers is £42.990m.

- Calculate the present value of the future cash flows. These come in three forms.
 - Those cash flows available immediately from selling assets, etc., less the amount due on a legal claim (taking the most conservative view):

Time 0 cash flows	
Sale of head office	£5m
less legal claim	£3m
	£2m

- Merger benefit cash flow – constant for all future years:

	£m
Transport	0.100
Secretaries	0.028
Head office	0.150
Managerial efficiency	0.300
Market power	0.100
Boost to cash flow	0.678

Worked example 20.8 Continued

This is a perpetuity which has a present value of:

$$\frac{0.678}{0.155} = £4.374m$$

- iii The present value of Little under its existing strategy, £42.990m.

Add these values together:

i	£2.000m
ii	£4.374m
iii	<u>£42.990m</u>
Total value	<u>£49.364m</u>

- c Value of business in existing form £42.990m

plus value of annual savings and benefits

<u>678,000 + 200,000</u>	
<u>0.155</u>	£5.665m
<i>plus</i> Time 0 cash flows	£2.000m
Total value	<u>£50.655m</u>

Thingamees International now has a bargaining range for the purchase of Little. Below £42.99m the existing shareholders will be reluctant to sell. Above £50.655m, Thingamees may destroy value for its own shareholders even if all poor managers can be removed.

- d Some ideas: one possible step to reduce risk is to insist that Big plc accepts all liability relating to the legal claim.

Another issue to be addressed in the negotiation phase is to avoid being hamstrung by redundancy commitments.

Also plan the process of merger integration. In the period before the merger explain your intentions to Little's employees. After the transfer do not alienate the managers and other employees by being capricious and secretive – be straight and honest. If pain is to be inflicted for the good of the firm, be quick, rational and fair, communicate and explain. (See Chapter 23 for more detail.)

- Exercise 1.** What are the problems of relying on NAV as a valuation method? In what circumstances is it particularly useful?
2. Why do analysts obtain historic information on a company for valuation

purposes?

4.0 CONCLUSION

There are two points about valuation worth noting. First going through a rigorous process of valuation is more important than arriving at an answer. It is the understanding of the assumptions and an appreciation of the nature of the inputs to the process which give insight, not a single number at the end. It is the recognition of the qualitative, and even subjective, nature of key variables in a superficially quantitative analysis that leads to knowledge about values.

5.0 SUMMARY

We cannot escape the uncertainty inherent in the valuation of a share - what someone is willing to pay depends on what will happen in the future - and yet this is no excuse for rejecting the models as unrealistic and impractical. They are better than the alternatives: guessing, or merely comparing one share with another with no theoretical base to anchor either valuation. At least the models presented in this unit have the virtue of forcing the analyst to make explicit the fundamental considerations concerning the value of a share. As the sage of finance, Warren Buffett, says, 'Valuing a business is part art and part science'.

The second point leads on from the first. It makes sense to treat the various valuation methods as complementary rather than rivals. Obtain a range of values in full knowledge of the weaknesses of each approach and apply informed inference to provide an idea of the value region.

6.0 REFERENCE

1. G. C. Arnold
The financial Time Guide to Investing (2004)
2. Glen Arnold
Corporate Financial Management (2005)
3. Blake D.
Financial Market Analysis (2000)

7.0 TUTOR MARKED ASSIGNMENT

Green plc is a conglomerate quoted on the main London market. The latest set of accounts has just been published. The balance sheet is summarised below.

Green plc	Balance Sheet	1 June, 2005
		Nm
Fixed asset		
Tangible fixed assets		140
Investments		<u>40</u>
		180
Current assets		
Stocks	180	
Debtors	120	
Cash	<u>30</u>	
		330
Creditors (amounts falling due within one year)		(200)

Creditors (amounts falling due after more than one year)	<u>(100)</u>
Net assets	210

Other information

Dividend history									
1997	1998	1999	2000	2001	2002	2003	2004	2005	
5	5.3	6	6.2	7	7.5	8	8.5	9.2k	

(dividend per share)

Green plc has demonstrated an equity beta of 1.3 over the past five years (and this can be taken as an appropriate adjustment factor to the average risk premium for shares over risk-free securities). The risk-free return is currently 6.5 per cent and the risk premium for equities over risk-free securities has averaged 5 per cent per annum
Shares in issue: 300 million (constant for the last ten years).

Required

- Calculate a net asset value for each of Green's shares after adjusting the balance sheet for the following:
 - ✓ tangible assets are worth N50m more than shown in the balance sheet;
 - ✓ one-half of the debtors figure will never be collected; and
 - ✓ in your judgement Green's directors have overestimated the stock value by N30m
- Comment on some of the problems associated with valuing a share or a corporation using net asset value. For what type of company is net asset value particularly useful?
- Use a dividend valuation model to calculate the value of one share in Green plc. Assume that future dividend growth will be the same as the average rate for recent years.
- Calculate the weighted average cost of capital (WACC) for Green plc on the assumptions that the share price calculated in question c is the market share price and the entry 'Creditors (amounts falling due after more than one year)' consists entirely of a debenture issued at a total par value of N100m five years ago and this is the only liability relevant to the WACC calculation. The debenture will pay a coupon of 8 per cent in one year, followed by a similar coupon in two years from now. A final coupon will be paid in three years upon redemption of the debenture at par value. The debenture is currently trading in the secondary market at N103 per N100 nominal.

For the purpose of calculating the weighted average cost of capital the tax rate may be assumed to be 30 per cent.

UNIT 14

STOCK MARKET EFFICIENCY

1.0 INTRODUCTION

The question of whether the stock market is efficient in pricing shares and other securities has fascinated academics, investors and businessmen for a long time. This is hardly surprising: even academics are attracted by the thought that by studying in this area they might be able to discover a stock market inefficiency which is sufficiently exploitable to make them very rich, or at least, to make their name in the academic community. In an efficient market systematic undervaluing or overvaluing of shares does not occur, and therefore it is not possible to develop trading rules which will 'beat the market' by, say, buying identifiable under-priced shares, except by chance. However, if the market is inefficient it regularly prices shares incorrectly, allowing an investor to identify profitable trading opportunities. This is an area of research where millions have been spent trying to find 'nuggets of gold' in the price movements of securities. A small amount of this money has been allocated to university departments, the vast majority being spent by major securities houses around the world and by people buying investment advice from professional analysts offering to 'pick winners'. Money has also been taken from the computer literati paying for real-time stock market prices and analytical software to be piped into their personal computer, and by the millions of buyers of books which promise riches beyond imagining if the reader follows a few simple stock market trading rules.

They do say that a fool and his money are soon parted - never was this so true as in the world of stock market investment with its fringe of charlatans selling investment potions to cure all financial worries. This unit may help the reader to discern what investment advice is, and is not, worth paying for. But this is too limited an ambition; the reader should also appreciate the significance of the discovery that for most of the people and for most of the time the stock market correctly prices shares given the information available (and it is extremely difficult to make more than normal returns). There are profound implications for businessmen and their interaction with the share markets, for professional fund managers, and for small investors.

2.0 OBJECTIVES

When you complete this unit you should be able to explain/identify:

- The meaning of the random walk hypothesis and provide a balanced inference of the
- Usefulness of past price movement to predict share prices (weak-form efficiency)
- The evidence for the market's ability to take account of all publicly available information
- Including past price movement (semi-strong efficiency)
- Whether stock markets appear to absorb all relevant (public or private) information (strong-form efficiency)
- Some of the behavioural based arguments leading to a belief in inefficiencies.
- The implications of the evidence of efficiency for investors and corporate management.

2.0 What is meant by efficiency?

In an efficient capital market, security (for example shares) prices rationally reflect available information.

The efficient market hypothesis (EMH) implies that, if new information is revealed about a firm, it will be incorporated into the share price rapidly and rationally, with respect to the direction of the share price movement and the size of that movement. In an efficient market no trader will be presented with an opportunity for making a return on a share (or other security) that is greater than a fair return for the riskiness associated with that share, except by chance. The absence of abnormal profit possibilities arises because current and past information is immediately reflected in current prices. It is only new information that causes prices to change. News is by definition un-forecastable and therefore future price changes are un-forecastable. Stock market efficiency does not mean that investors have perfect powers of prediction; all it means is that the current share price level is an unbiased estimate of its true economic value based on the information revealed.

Market efficiency does not mean that share prices are equal to true value at every point in time. It means that the errors that are made in pricing shares are unbiased; price deviations from true value are random. Fifty per cent of efficiently priced shares turn out to perform better than the market as a whole and 50 per cent perform worse; the efficient price is unbiased in the statistical sense. So if Marks and Spencer's shares are currently priced at N3 it could be, over the next five years that we discover they were grossly overpriced at N3, or that events show them to be under-priced at N3. Efficiency merely means that there is an equal chance of our being too pessimistic at N3 as being too optimistic. The same logic applies to shares on high or low price-earnings ratios (PER). That is, shares with low PER should be no more likely to be overvalued or undervalued than shares with high PER. Both groups have an equal chance of being wrongly priced given future economic events on both the upside and the downside.

In the major stock markets of the world prices are set by the forces of supply and demand. There are hundreds of analysts and thousands of traders, with information on a company through electronic and paper media. This may, for example, concern a technological breakthrough, a marketing success or a labour dispute. The individuals who follow the market are interested in making money and it seems reasonable to suppose that they will try to exploit quickly any potentially profitable opportunity. In an efficient market the moment an unexpected, positive piece of information leaks out investors will act and prices will rise rapidly to a level which gives no opportunity to make further profit.

Imagine that BMW announces to the market that it has a prototype electric car which will cost N10,000, has the performance of a petrol-driven car and will run for 500 miles before needing a low-cost recharge. This is something motorists and environmentalists have been demanding for many years. The profit-motivated investor will try to assess the value of a share in BMW to see if it is currently under-priced given the new information. The probability that BMW will be able successfully to turn a prototype into a mass market production model will come into the equation. Also the potential reaction of competitors, the state of overall car market demand and a host of other factors have to be weighed up to judge the potential of the electric car and the future returns on a BMW share. No analyst or shareholder is able to anticipate perfectly the commercial viability of BMW's technological breakthrough but they are required to think in terms of probabilities and attempt to make an inference.

If one assumes that the announcement is made on Monday at 10 a.m. and the overwhelming weight of investor opinion is that the electric car will greatly improve BMW's

returns, in an efficient market the share price will move to a higher level within seconds. The new higher price at 10.01 a.m. is efficient but incorporates a different set of information to that incorporated in the price prevailing at 10 a.m. Investors should not be able to buy BMW shares at 10.01 a.m. and make abnormal profits except by chance.

Most investors are too late

Efficiency requires that new information is rapidly assimilated into share prices. In the sophisticated financial markets of today the speedy dissemination of data and information by cheap electronic communication means that there are large numbers of informed investors and advisers. These individuals are often highly intelligent and capable of fast analysis and quick action, and therefore there is reason to believe many stock markets are efficient at pricing securities. However this belief is far from universal. Thousands of highly paid analysts and advisers maintain that they can analyse better and act more quickly than the rest of the pack and so make abnormally high returns for their clients. There is a well-known story which is used to mock the efficient market theoreticians:

A lecturer was walking along a busy corridor with a student on his way to lecture on the efficient market hypothesis. The student noticed a N20 note lying on the floor and stooped to pick it up. The lecturer stopped him, saying, 'If it was really there, someone would have picked it up by now'.

With such reasoning the arch-advocates of the EMH dismiss any trading system which an investor may believe he has discovered to pick winning shares. If this system truly worked, they say, someone would have exploited it before and the price would have already moved to its efficient level.

This position is opposed by professional analysts: giving investment advice and managing collective funds is a multi-billion Naira industry and those employed in it do not like being told that most of them do not beat the market. However, a few stock pickers do seem to perform extraordinarily well on a consistent basis over a long period of time. There is strong anecdotal evidence that some people are able to exploit inefficiencies - we will examine some performance records later.

What efficiency does not mean

To provide more clarity on what efficiency is, we need to deal with a few misunderstandings held by people with a little knowledge (a dangerous thing):

Efficiency means that prices do not depart from true economic value: This is false. At anyone time we would expect most shares to deviate from true value, largely because value depends on the future, which is very uncertain. However, under the EMH we would expect the deviations to be random.

You will not come across an investor beating the market in any single time period: This is false because you would expect, in an efficient market, with approximately one-half of shares bought subsequently outperform. So, many investors, unless they buy such a broad range of shares that their portfolio tracks the market, would outperform. Note that, under the EMH, this is not due to skill, but simply caused by the randomness of price deviations from true economic value.

No investor following a particular investment strategy will beat the market in the long term: This is false simply because there are millions of investors. In a completely efficient market, with prices deviating in a random fashion from true value, it is likely that you could find a few investors who have out-performed the market over many years. This can happen because of the laws of probability; even if the probability of your investment approach beating the market is very small, the fact that there are millions of

investors means that, purely by chance, a few will beat the market. Unfortunately, it is very difficult to investigate whether a long-term out performance is luck or evidence against the EMH.

Types of efficiency

Efficiency is an ambiguous word and we need to establish some clarity before we go on. There are three types of efficiency:

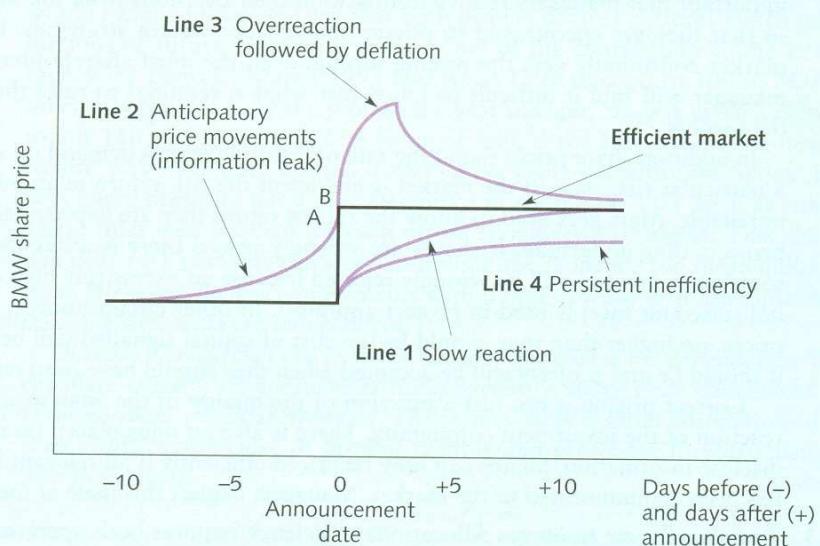
1 Operation efficiency This refers to the cost, speed and reliability of transactions in securities on the exchange. It is desirable that the market carries out its operations at as low cost as possible, speedily and reliably. This may be promoted by creating as much competition between market makers and brokers as possible so that they earn only normal profits and not excessively high profits. It may also be enhanced by competition between exchanges for secondary-market transactions.

2 Allocation efficiency Society has a scarcity of resources (that is, they are not infinite) and it is important that we find mechanisms which allocate those resources to where they can be most productive. Those industrial and commercial firms with the greatest potential to use investment funds effectively need a method to channel funds their way. Stock markets help in the process of allocating society's resources between competing real investments. For example, an efficient market provides vast funds for the growth of the electronics, pharmaceuticals and biotechnology industries (through new issues, rights issues, etc.) but allocates only small amounts for slow-growth industries.

3 Pricing efficiency It is pricing efficiency that is the focus of this unit, and the term efficient market hypothesis applies to this form of efficiency only. In a pricing-efficient market the investor can expect to earn merely a risk-adjusted return from an investment as prices move instantaneously and in an unbiased manner to any news.

The black line in Exhibit 14.1 shows an efficient market response to BMW's (fictional) announcement of an electric car. The share price instantaneously adjusts to the new level.

Exhibit 14.1 New information (an electric car announcement by BMW) and alternative stock market reactions – efficient and inefficient



However, there are four other possibilities if we relax the efficiency assumption. First, the market could take a long time to absorb this information (under-reaction) and it could be only after the tenth day that the share price approaches the new efficient level. This is shown in Line 1. Secondly, the market could anticipate the news announcement - perhaps there have been leaks to the press, or senior BMW management has been dropping hints to analysts for the past two weeks. In this case the share price starts to rise before the announcement (Line 2). It is only the unexpected element of the announcement that causes the price to rise further on the announcement day (from point A to point B). A third possibility is that the market overreacts to the new information (Line 3); the 'bubble' deflates over the next few days. Finally, the market may fail to get the pricing right at all and the shares may continue to be under-priced for a considerable period (Line 4).

The value of an efficient market

It is important that share markets are efficient for at least three reasons.

- 1 To encourage share buying** Accurate pricing is required if individuals are going to be encouraged to invest in private enterprise. If shares are incorrectly priced many savers will refuse to invest because of a fear that when they come to sell the price may be perverse and may not represent the fundamental attractions of the firm. This will seriously reduce the availability of funds to companies and inhibit growth. Investors need to know they are paying a fair price and that they will be able to sell at a fair price - that the market is a 'fair game'.
- 2 To give correct signals to company managers** For the purposes of this unit, that the objective of the firm was the maximisation of shareholder wealth. This can be represented by the share price in an efficient market. Sound financial decision making therefore relies on the correct pricing of the company's shares. In implementing a

shareholder wealth-enhancing decision the manager will need to be assured that the implication of the decision is accurately signaled to shareholders and to management through a rise in the share price. It is important that managers receive feedback on their decisions from the share market so that they are encouraged to pursue shareholder wealth strategies. If the share market continually gets the pricing wrong, even the most shareholder-orientated manager will find it difficult to know just what is required to raise the wealth of the owners.

In addition share prices signal the rate of return investors demand on securities of a particular risk class. If the market is inefficient the risk-return relationship will be unreliable. Managers need to know the rate of return they are expected to obtain on projects they undertake. If shares are wrongly priced it is likely that in some cases projects will be wrongly rejected because an excessively high cost of capital (discount rate) is used in project appraisal. In other circumstances, if the share prices are higher than they should be the cost of capital signaled will be lower than it should be and projects will be accepted when they should have been rejected.

Correct pricing is not just a function of the quality of the analysis and speed of reaction of the investment community. There is also an onus placed on managers to disclose information. Shares can only be priced efficiently if all relevant information has been communicated to the market. Managers neglect this issue at their peril.

3 To help allocate resources: Allocation efficiency requires both operating efficiency and pricing efficiency. If a poorly run company in a declining industry has highly valued shares because the stock market is not pricing correctly then this firm will be able to issue new shares, and thus attract more of society's savings for use within its business. This would be wrong for society as the funds would be better used elsewhere.

3.1 Random walks

Until the early 1950s it was generally believed that investment analysis could be used to beat the market. In 1953 Maurice Kendall presented a paper which examined security and commodity price movements over time. He was looking for regular price cycles, but was unable to identify any. The prices of shares, etc. moved in a random fashion - one day's price change cannot be predicted by looking at the previous day's price change. There are no patterns or trends. An analogy has been drawn between security and commodity price changes and the wanderings of a drunken man placed in the middle of a field. Both follow a random walk, or to put it more technically, there is no systematic correlation between one movement and subsequent ones.

To many people this is just unacceptable. They look at a price chart of shares and see patterns; they may see an upward trend running for months or years, or a share price trapped between upper and lower resistance lines. They also point out that sometimes you get persistent movements in shares; for example a share price continues to rise for many days. The statisticians patiently reply that the same apparent pattern or trends can occur purely by chance. Readers can test this for themselves: try tossing a coin several times and recording the result. You will probably discover that there will be periods when you get a string of heads in a row. The apparent patterns in stock market prices are no more significant for predicting the next price movement than the pattern of heads or tails are for predicting what the next toss will produce. That is, they both follow a random walk.

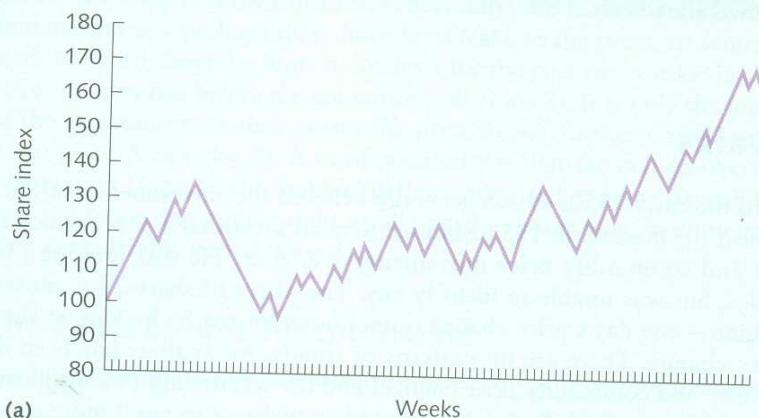
To reinforce this look at Exhibit 14.2: shows two sets of price movements. Many chartists {those who believe future prices can be predicted from past changes} would examine these and say that both display distinct patterns which may enable predictions of future price movements. One of the charts follows the FTSE 100 index each week between March 1995 and April 1997 rebased to 100 in March 1995. The other was generated by the writer's six-year-old son. He was given a coin and asked to toss it 110 times. Starting at a value of 100, if the first toss was a head the 'weekly return' was 4 per

cent, if a tail it was -3 per cent. Therefore the 'index' for this imaginary share portfolio has a 50 : 50 chance of ending the first week at either 104 or 97. These rules were applied for each of the imaginary 110 weeks. This chart has a positive drift of 1 per cent per week to imitate the tendency for share indices to rise over time. However, the price movements within that upward drift are random because successive movements are independent.

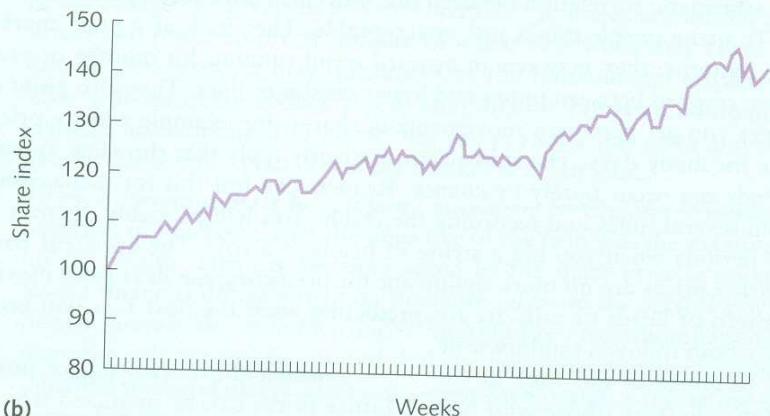
Dozens of researchers have tested security price data for dependence. They generally calculate correlation coefficients for consecutive share price changes or relationships between share prices at intervals. The results show a serial correlation of very close to zero - sufficiently close to prevent reliable and profitable forecasts being made from past movements.

Exhibit 14.2

Charts showing the movements on the FT 100 share index and a randomly generated index of prices. Which is which?



(a)



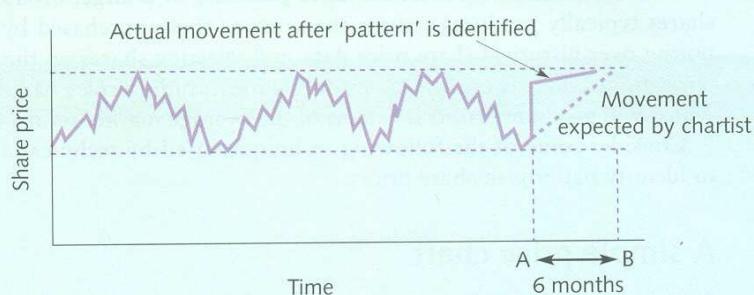
(b)

Why does the random walk occur?

A random walk occurs because "the share price at anyone time reflects all available information and it will only change if new information arises. Successive price changes will be independent and prices follow a random walk because the next piece of news (by definition) will be independent of the last piece of news. Shareholders are never sure whether the next item of relevant information is going to be good or bad - as with the heads and tails on a coin there is no relationship between one outcome and the next. Also, there are so many informed market traders that as soon as news is released the share price moves to its new rational and unbiased level.

Exhibit 14.3

A share price pattern disappears as investors recognise its existence



We can see how an efficient market will not permit abnormal profits by examining Exhibit 14.3. Here a chartist at time A has identified a cyclical pattern. The chartist expects that over the next six months the share price will rise along the dotted line and is therefore a 'buy'. However this chartist is not the only participant in the market and as soon as a pattern is observed it disappears. This happens because investors rush to exploit this marvellous profit opportunity. As a result of the extraordinary buying pressure the price immediately rises to a level which gives only the normal rate of return. The moment a pattern becomes discernible in the market it disappears under the weight of buy or sell orders.

3.2

The three levels of efficiency

Economists have defined different levels of efficiency according to the type of information which is reflected in prices. Fama (1970) produced a three-level grading system to define the extent to which markets were efficient.¹ These were based on different types of investment approaches which were supposedly designed to produce abnormal returns.

- 1 **Weak-form efficiency** Share prices fully reflect all information contained in past price movements. It is pointless basing trading rules on share price history as the future cannot be predicted in this way.
- 2 **Semi-strong form efficiency** Share prices fully reflect all the relevant publicly available information. This includes not only past price movements but also earnings and

dividend announcements, rights issues, technological breakthroughs, resignations of directors, and so on. The semi-strong form of efficiency implies that there is no advantage in analysing publicly available information after it has been released, because the market has already absorbed it into the price.

- 3 **Strong-form efficiency:** This is all relevant information, including that which is privately held, is reflected in the share price. Here the focus is on insider dealing, in which a few privileged individuals (for example directors) are able to trade in shares, as they know more than the normal investor in the market. In a strong-form efficient market even insiders are unable to make abnormal profits - as we shall see the market is acknowledged as being inefficient at this level of definition.

3.3 Weak-form tests

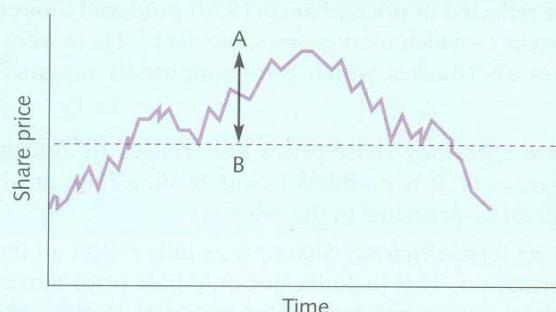
If weak-form efficiency is true a naive purchase of a large, broadly based portfolio of shares typically produces returns the same as those purchased by a 'technical analyst' poring over historical share price data and selecting shares on the basis of trading patterns and trends. There will be no mechanical trading rules based on past movements which will generate profits in excess of the average market return (except by chance).

Consider some of the following techniques used by technical analysts (or chartists) to identify patterns in share prices.

A simple price chart

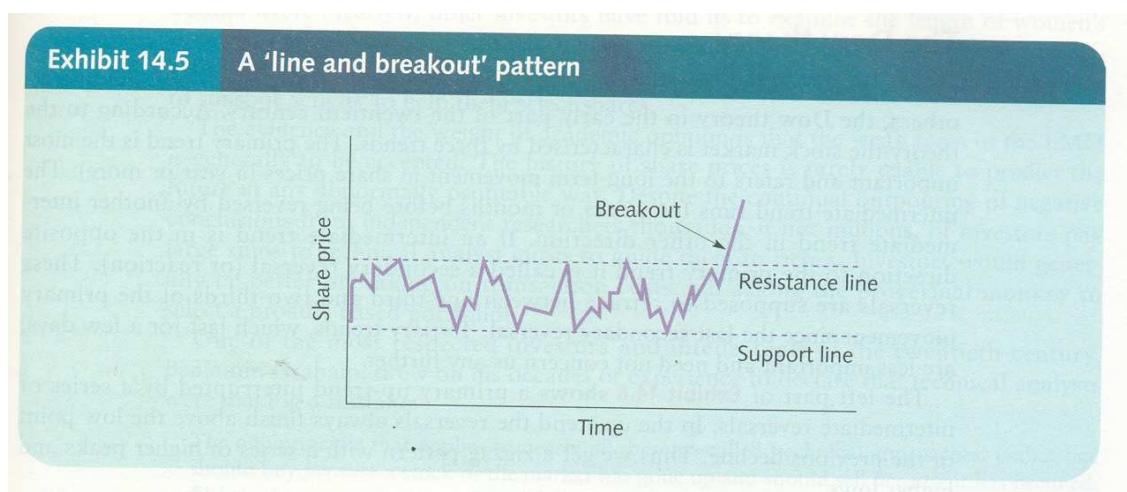
A true chartist is not interested in estimating the intrinsic value of shares. A chartist believes that a chart of the price (and/or volume of trading data) is all that is needed to forecast future price movements. Fundamental information, such as the profit figures or macroeconomic conditions, is merely a distraction from analysing the message in the chart. One of the early chartists, John Magee, was so extreme in trying to exclude any other influences on his 'buy' or 'sell' recommendations that he worked in an office boarded up so that he was not aware of the weather. Exhibit 14.4 shows one of the best known patterns to which chartists respond - it is called a head and shoulders formation.

Exhibit 14.4 The 'head and shoulders' pattern



A head and shoulders pattern like the one shown in Exhibit 14.4 is supposed to herald the start of a major price drop. The left shoulder is formed, according to the chartists, by some investors taking profits after a large price rise, causing a minor price drop. The small fall encourages new buyers, hoping for a continuation of the price rally. They keep pushing the shares above the previous high, but prices soon drift down again, often to virtually the same level at which the left shoulder's decline ended. It drops to a support level called the neckline. Finally the right shoulder is formed by another wave of buying (on low volume). This peters out, and when the prices fall below the neckline by, say, 3 per cent, it is time to sell. Some chartists even go so far as to say that they can predict the extent of the fall below the neckline - this is in proportion to the distance AB.

Exhibit 14.5 provides another chart with a pattern, where the share price trades between two trend lines until it achieves 'breakout' through the 'resistance line'. This is a powerful 'bull signal' - that is, the price is expected to rise significantly thereafter.



Chartists have a very serious problem in that it is often difficult to see a new trend until after it has happened. Many critical voices say that it is impossible for the chartist to act quickly enough on a buy or sell signal because competition among chartists immediately pushes the price to its efficient level. To overcome this, some traders start to anticipate the signal, and buy or sell before a clear breakthrough is established. This leads other traders to act even earlier, to lock themselves into a trade before competition causes a price movement. This will lead to trends being traded away and prices adjusting to take into account all information regarding past price movements, leading us back to the weak form of stock market efficiency.

In academic studies modern high-powered computers have been used to simulate chartist trades. Researchers were instructed to find the classic patterns chartists respond to, ranging from 'triple tops' and 'triple bottoms' to 'wedges' and 'diamonds'.² The result was that they found that a simple buy and hold strategy of a broadly based portfolio would have performed just as well as the chartist method, after transaction costs. Dawson and Steeley (2003), for example, found after examining UK share data that 'economic profits arising from the predictive ability of the technical patterns are unlikely to materialise'.

The filter approach

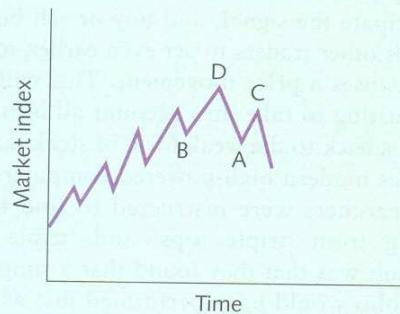
The filter technique is designed to focus the trader on the long-term trends and to filter out short-term movements. Under this system a filter level has to be adopted - let us say this is 5 per cent. If the share under observation rises by more than 5 per cent from its low point the trader is advised to buy, as it is in an up-trend. If the share has peaked and has fallen by more than 5 per cent it should be sold. Price movements of less than 5 per cent are ignored. In a down-trend, as well as selling the share the trader owns, the trader should also 'sell short', that is, sell shares not yet owned in the anticipation of buying at a later date at a lower price. Again, there has been a considerable amount of academic research of various filter rules, and again the conclusion goes against the claims of the technical analysts - a simple buy and hold policy performs at least as well after transaction costs.

The Dow theory

Charles Dow, co-founder and editor of the Wall Street Journal, developed, along with others, the Dow theory in the early part of the twentieth century. According to the theory the stock market is characterised by three trends. The primary trend is the most important and refers to the long-term movement in share prices (a year or more). The intermediate trend runs for weeks or months before being reversed by another intermediate trend in the other direction. If an intermediate trend is in the opposite direction to the primary trend it is called a secondary reversal (or reaction). These reversals are supposed to retrace between one-third and two-thirds of the primary movement since the last secondary reversal. Tertiary trends, which last for a few days, are less important and need not concern us any further.

The left part of Exhibit 14.6 shows a primary up-trend interrupted by a series of intermediate reversals. In the up-trend the reversals always finish above the low point of the previous decline. Thus we get a zigzag pattern with a series of higher peaks and higher lows.

Exhibit 14.6 The Dow theory



The primary up-trend becomes a down-trend (and therefore a sell signal) when an intermediate downward movement falls below the low of the previous reversal (A compared with B) and the next intermediate upward movement does not manage to reach the level of the previous intermediate upward spike (C compared with D).

In practice there is a great deal of subjectivity in deciding what is, or is not, an intermediate trend. Also primary trends, while relatively easy to identify with hindsight, are extremely difficult to identify at the moment they occur. The verdict of some academic researchers is that a simple buy and hold strategy produces better returns than those produced by the Dow Theory, others show more positive results (e.g. Brown et al. 1998).

Other strategies

Technical analysts employ a vast range of trading rules. Some, for example, advise a purchase when a share rises in price at the same time as an increase in trading volume occurs. More bizarrely, other investors have told us to examine the length of women's dresses to get a prediction of stock market moves. Bull markets are apparently associated with short skirts and bear markets (falling) with longer hemlines! Some even look to sunspot activity to help them select shares.

The evidence and the weight of academic opinion is that the weak form of the EMH is generally to be accepted. The history of share prices is rarely usable to predict the future in any abnormally profitable way. Despite the continual outpouring of negative conclusions from independent researchers thousands, if not millions, of investors pay large sums to technical analyst gurus to guide them to riches. Investors would generally be better off saving on transaction costs and asking the proverbial monkey to select a broadly based portfolio!

One of the most respected investors and intellectuals of the twentieth century, Benjamin Graham, drew on his decades of experience to declare that technical analysts were making a mistake:

The one principle that applies to nearly all these so-called 'technical approaches' is that one should buy because a stock or the market has gone up and should sell because it has declined. This is the exact opposite of sound business sense everywhere else, and it is most unlikely that it can lead to lasting success in Wall Street. In our own stock-market experience and observation extending over 50 years, we have not known a single person who has consistently or lastingly made money by thus 'following the market'. We do not hesitate to declare that this approach is as fallacious as it is popular.

Return reversal

Having stated the general conclusions from weak-form efficiency tests, we must also mention a group of studies that seem to indicate that the market might consistently fail to price properly. The first area of research concerns the phenomenon of return reversal. That is, shares that have given the highest returns over the previous three to five years (the 'winners') generally go on to under-perform the stock market over the subsequent three to five years. Those shares that performed worst over a number of years (the 'losers') then, on average, show returns significantly higher than the market over the next three to five years.

De Bondt and Thaler (1985) selected portfolios of 35 US shares at three-year intervals, between 1933 and 1980. These portfolios contained the shares that had given the worst returns over a three-year period. The performances of these portfolios were then compared with the market as a whole over the subsequent three years. They found that these shares outperformed the market by an average of 19.6 per cent in the next 36 months. Their explanation is that the market had overreacted to the bad news and undervalued the shares. Moreover, when portfolios of shares which had risen the most in the prior three years were constructed and followed for a further three years, they underperformed the market by 5 per cent. De Bondt and Thaler claim: 'Substantial weak form market inefficiencies are discovered', in their analysis. Chopra et al. (1992) carried out a more detailed study and concluded: 'In portfolios formed on the basis of prior five-

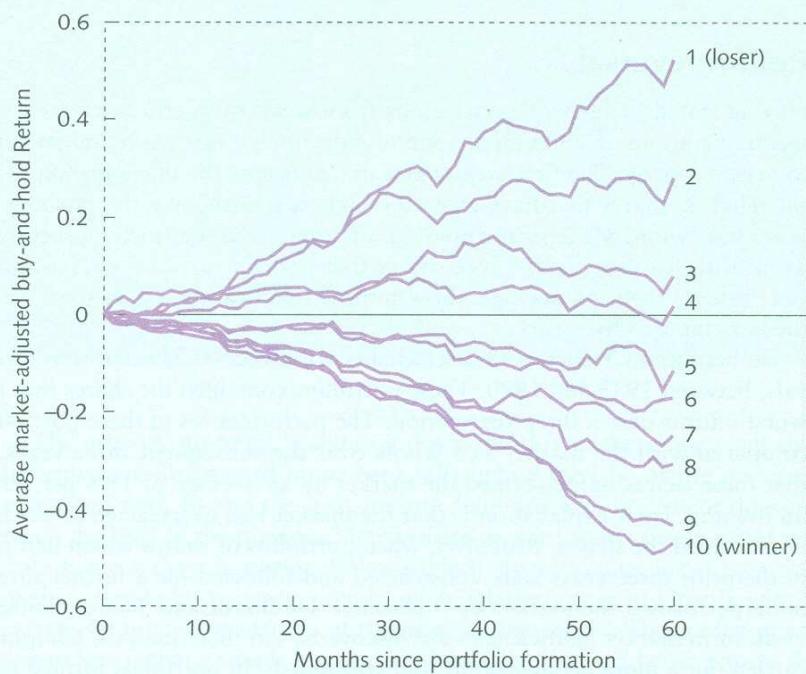
year returns, extreme prior losers outperform extreme prior winners by 5-10 per cent per year during the subsequent five years'.

Arnold and Baker (2005) investigated the return reversal phenomenon in UK shares. Our results show a stronger return reversal effect than that displayed in US shares. Every January between 1960 and 1998 we calculated for every share on the London Share Price Data (LSPD) its prior five-year return (capital gains plus dividends). The LSPD contains all the shares listed on the London Stock Exchange for the period 1975 to 2002. Before 1975 it contains share returns for a random one-third sample. Shares were ranked (an average of over 950 companies each January) in order of their five-year performance. They were then split into ten equal-sized groups (deciles) with group 1 containing the worst performers ('losers') over the prior five years, group 2 the next worst and so on, to group 10 (the 'winners'). We then imagined buying each of the portfolios of shares and holding them for various periods up to 60 months. Returns, relative to the market index, were recorded. We found that the loser shares (on average, over 39 portfolio formations, 1960-98) outperformed the winner shares by 14 per cent per year when held for five years. Furthermore, the 39 loser portfolios outperformed the market index by an average of 8.9 per cent per year over a five-year holding period.

Exhibit 14.7 shows a summary of some of the results. The lines trace the cumulative return for each of the ten portfolios after allowing for the return on the market. The horizontal line at '0' represents the market return re-based to zero throughout. The

Exhibit 14.7

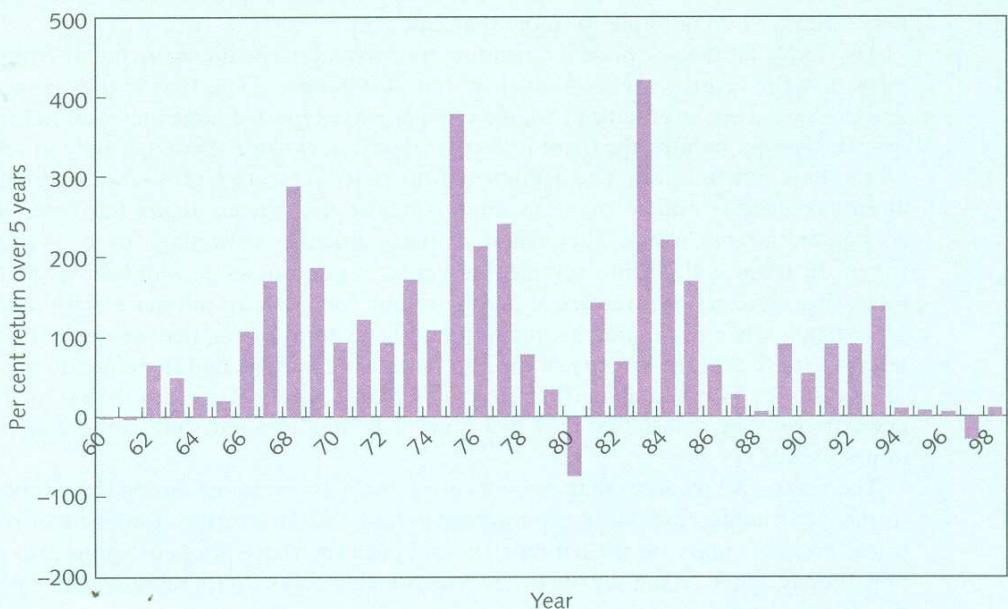
Cumulative market-adjusted returns for UK share portfolios constructed on the basis of prior five-year returns



loser portfolios outperform the market by 53 per cent over five-year holding periods, or 8.9 per cent per year; whereas the winner portfolio, on average over 39 tests, under-

performs the market by 47 per cent. Remarkably, all the other portfolios are in the 'right' order: 2 is above 3, 3 above 4, and so on. This lends considerable support to the view that investors overreact to poor news (e.g. declining profits) coming from 'bad' companies and good news coming from the stars, because the greatest extent of return reversal is in the most extreme prior-period return-ranked portfolios. The overreaction hypothesis states that investors push the losers down too far, and push the winners up too much, failing to allow sufficiently for the potential of losers to pick themselves up, and for the winners to make a mistake and fall off their pedestals, or, at least, to perform less well than expected. **Exhibit 14.8** shows the difference in five-year test-period performance between the losers and the winners (losers minus winners) for each of the 39 portfolio formations separately. There are very few occasions when those companies considered star performers go on to generate better returns for investors than those widely regarded as the 'dogs'.

Exhibit 14.8 Market-adjusted buy-and-hold five-year test-period returns for loser minus winner strategies for each of the 39 portfolio formations



It might be thought that the results are explained by investors in loser shares taking on more risk than investors in winners. The study tests risk in six ways and failed to explain the out-performance as a result of losers being more risky. The CAPM-beta of losers is shown to be less than that for winners.

Price (return) momentum

Many professional fund managers and private investors follow a price momentum strategy when choosing shares. That is, they buy shares which have risen in recent months and sell shares that have fallen. The first major academic study in this area was by Jegadeesh and Titman (1993) who found that if you bought US shares that had performed well in the past few months while selling shares that had performed poorly you would generate returns significantly exceeding those on the general market index for

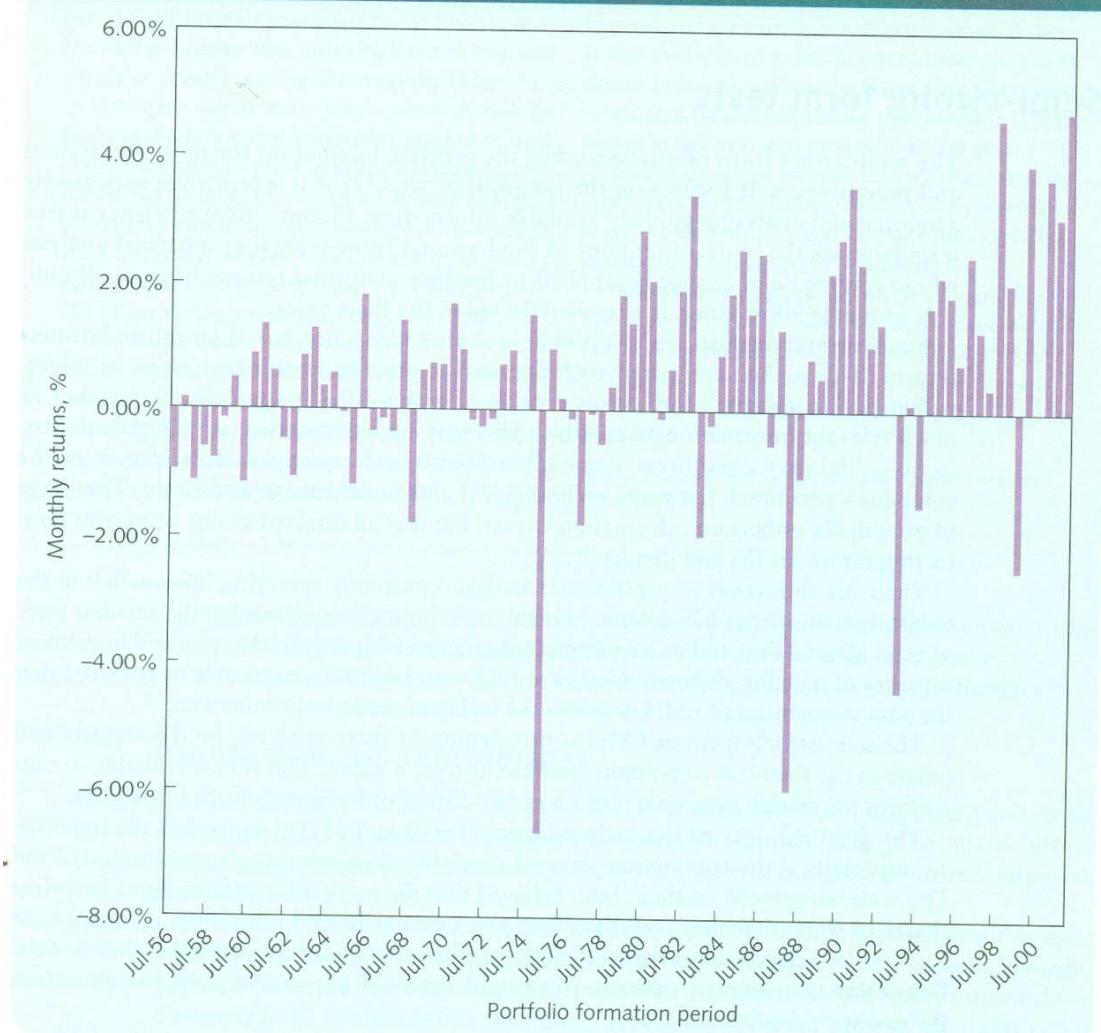
investment periods of three, six, nine and 12 months. For example, a strategy that selects shares on their past six-month returns and holds them for six months, realises a compounded return above the market of 12.01 per cent per year on average. Note: these results at first seem diametrically opposed to those of the return reversal, because the best strategy is to buy winners. However, the key to understanding the results and relating it to investor behaviour is to realise that return reversal is a long-term phenomenon stretching over many years, whereas price momentum strategists look only to the returns over the prior three, six, nine or 12 months to select their extreme winners - and they do not hold for more than one year.

Two explanations for price momentum are debated in the literature (apart from the view that the returns are explained by risk differences). The first is that investors under-react to new information. So, if a company has reported large increases in profits over the last six months the share price rises, but it does not rise enough fully to reflect all the new information. The argument remains that investors tend to 'anchor' beliefs about a company and so they are slow to realise that the company has entered an accelerated growth phase. They might, at first, anticipate it fizzling out, or even that the profit trend will go into reverse. However, as good news accumulates over time, increasing numbers of investors re-rate the shares and push up the share price. On the other hand, when examining a stream of bad news from losers, they are at first reluctant to believe that the severity of the bad news will continue and therefore do not sell off the shares as much as market efficiency would imply. This means that as more news arrives they realise that they had previously under-reacted, and so the share continues to fall.

The alternative theory is that investors are actually overreacting during the test period (rather than under-reacting in the ranking period). After a series of months of rising prices investors jump on the bandwagon and push the share prices of winners to irrational levels, while selling off the losers unreasonably and so pushing their prices below the efficient level during the test period. The advocates of this argument point to the tendency of these winner and loser portfolios to show return reversal over the subsequent two years or so as proof of temporary overreaction. Perhaps both theories could have a role to play in explaining the price momentum effects found in share returns..

Jegadeesh and Titman's work was followed up with papers examining the phenomenon in stock markets around the world. For example, Rouwenhorst (1998) showed price momentum in 12 developed country stock markets, and then in a number of emerging stock markets (Rouwenhorst 1999). In the UK Liu et al. (1999) demonstrated the effect for the period 1977-98, but doubt was cast on the likelihood that price momentum is a feature of the UK market at all times by the work of Hon and Tonks (2003), who showed that while momentum was a good strategy to follow in the 1980s and 1990s (which was mostly one long bull market) it produced poor returns in the previous two decades. To discover the extent to which price momentum is a reliable strategy, and whether it works better in bull or bear markets, Arnold and Shi (2005) tested the strategy over the period 1956 to 2001. Some of the results are shown in **Exhibit 14.9**. While over the whole study period, on average, winners outperform losers by up to 9.92 per cent per year the strategy is fairly unreliable. There are long periods when the losers outperform the winners - an average monthly return of less than zero on the chart. We found no significant performance difference between bull and bear markets.

Exhibit 14.9 Price momentum



Moving averages

Examining the history of share prices and applying specific simple trading rules will produce abnormal returns according to Brock et al. (1992). They found that if investors (over the period 1897 to 1986) bought the 30 shares in the Dow Jones Industrial Average when the short-term moving average of the index (the average over, say, 50 days) rises above the long-term moving average (the average over, say, 200 days) they would have outperformed the investor who simply bought and held the market portfolio. Investors would also have achieved abnormal performance if they bought when a share 'broke out' from the trading range. 'However, transaction costs should be carefully considered before such strategies can be implemented' (Brock et al. 1992). Also it has been discovered that

the trading rules did not work in the 10 years following the study period (Sullivan et al. 1999).

3.4 Semi-strong form tests

The semi-strong form of efficiency has the greatest fascination for most researchers and practitioners. It focuses on the question of whether it is worthwhile expensively acquiring and analysing publicly available information. If semi-strong efficiency is true it undermines the work of millions of fundamental (professional or amateur) analysts whose trading rules cannot be applied to produce abnormal returns because all publicly available information is already reflected in the share price.

Fundamental analysts try to estimate a share's true value based on future business returns. This is then compared with the market price to establish an over- or under-valuation. To estimate the intrinsic value of a share the fundamentalists gather as much relevant information as possible. This may include macroeconomic growth projections, industry conditions, company accounts and announcements, details of the company's personnel, tax rates, technological and social change and so on. The range of potentially important information is vast, but it is all directed at one objective: forecasting future profits and dividends.

There are thousands of professional analysts constantly surveying information in the public domain. Given this volume of highly able individuals examining the smallest piece of news about a firm and its environment, combined with the investigatory and investment activities of millions of shareholders, it would seem eminently reasonable to postulate that the semi-strong form of EMH describes the reality of modern stock markets.

The semi-strong form of EMH is threatening to share analysts, fund managers and others in the financial community because, if true, it means that they are unable to out-perform the market average return except by chance or by having inside knowledge.

The great majority of the early evidence (1960s and 1970s) supported the hypothesis, especially if the transaction costs of special trading strategies were accounted for. The onus was placed on those who believed that the market is inefficient and mis-prices shares to show that they could perform extraordinarily well other than by chance.

The fundamental analysts have not lost heart, and have fought back with the assistance of some academic studies which appear to suggest that the market is less than perfectly efficient. There are some anomalies which may be caused by mis-pricing. For example, small firm shares have performed abnormally well (for certain periods) given their supposed risk class, and 'value investing' seems to produce unexpectedly high returns.

We will now discuss some of the evidence for and against semi-strong efficiency.

Information announcements

Many of the early studies investigated whether trading in shares immediately following announcements of new information (for example announcements on dividends or profit figures) could produce abnormal returns. Overwhelmingly the evidence supports the EMH, and excess returns are nil.

It has been discovered that most of the information in annual reports, profit or dividend announcements are reflected in share prices before the announcement is made. Ball and Brown (1968), for example, found that share prices start to drift upwards or downwards 12 months before the annual report is published. Most of the information contained within it is anticipated because investors receive information through press reports, statements and briefings by directors and interim reports and so on throughout

the year. In the month the final report is produced less than 15 per cent of the information is unanticipated. The share price has already absorbed most of the relevant facts. The share price does tend to move by 10-15 per cent at the time of the announcement of the results, due to unanticipated information in the report. There is, therefore, some potential for investors to try to guess whether the new elements will be good or bad. But the direction of the movement is unpredictable (or unsystematic) and so there is an indication of efficiency. 'Over the entire six-month period after the announcement, investor returns. . . would have been close to zero. Thus, prices had incorporated the information released in annual earnings reports in a way that virtually eliminated future opportunities to profit from that news' (Ball 2001).

Seasonal, calendar or cyclical effects

Numerous studies have identified apparent market inefficiencies on specific markets at particular times. One is the weekend effect, in which there appear to be abnormal returns on Fridays and relative falls on Mondays. The January effect refers to the tendency for shares to give excess returns in the first few days of January in the USA. Some researchers have found an hour of the day effect in which shares perform abnormally at particular times in the trading day. For example, the first 15 minutes have given exceptional returns, according to some studies.

The problem with placing too much importance on these studies for practical investment is that the moment they are identified and publicised there is a good chance that they will cease to exist. Investors will buy in anticipation of the January effect and so cause the market already to be at the new higher level on 1 January. They will sell on Friday when the price is high and buy on Monday when the price is low, thus eliminating the weekend effect.

Even if the effects are not eliminated trading strategies based on these findings would be no more profitable than buying and holding a well-diversified portfolio. This is because of the high transaction costs associated with such strategies as, say, buying every Tuesday and selling every Friday. Also the research in this area is particularly vulnerable to the accusation of 'data-snooping'. Sullivan et al. (1999) claim to demonstrate that calendar effects are illusory and findings obtained merely the result of extensive mining of the data until an (apparent) relationship is found:

Small firms

The searchers for inefficiency seemed to be on firmer ground when examining smaller firms. The problem is that the ground only appears to be firm until you start to build. A number of studies in the 1980s found that smaller firms' shares outperformed those of larger firms over a period of several decades (the small firm effect, small-capitalisation, or small-cap effects). This was found to be the case in the USA, Canada, Australia, Belgium, Finland, the Netherlands, France, Germany, Japan and Britain.⁴ Dimson and Marsh (1986) put the outperformance of small UK firms' shares at just under 6 per cent per year. These studies caused quite a stir in both the academic and the share-investing communities. Some rational explanations for this outperformance were offered: for example, perhaps the researchers had not adequately allowed for the extra risk of small shares - particularly the risk associated with lower liquidity. In most of these studies beta is used as the measure of risk and there are now doubts about its ability to capture all the risk-return relationship (see Unit 8). Besides, the results generally show lower betas for small companies. Some researchers have argued that small firms suffer more in recessions and so can be judged as more risky. Another explanation is that it is proportionately more expensive to trade in small companies' shares: if transaction costs are included, the net return of trading in small company shares comes down (but this does not explain the outperformance of a portfolio bought and held

for a long period). There is also the issue of 'institutional neglect', by which analysts fail to spend enough time studying small firms, preferring to concentrate on the larger 100 or so. This may open up opportunities for the smaller investor who is prepared to conduct a more detailed analysis of those companies to which inadequate professional attention is paid.

The excitement about small companies' shares by investors and their advisers was much greater than in academe, but it was to end in tears. Investors who rushed to exploit this small firm effect in the late 1980s and early 1990s had their fingers burnt. As *The Economist* put it: 'The supposedly inefficient market promptly took its revenge, efficiently parting investors from their money by treating owners of small stocks to seven years of under-performance.' This article refers to the US market but similar underperformance occurred on both the US and UK markets.

UK studies by Dimson, Marsh and Staunton (Dimson and Marsh 1999, Dimson et al. 2001, 2002) showed that smaller companies outperformed large companies by 5.2 per cent per annum between 1955 and 1988 (by 4.5 per cent for small companies and 9.0 per cent for very small (micro) companies). However, in the period 1989 to 1998 the return premium in favour of small companies went into reverse: large companies produced a return 7.0 per cent greater than small companies and 10.5 per cent for micro capitalisation companies - see Exhibit 14.11. (The research 'periods for the USA are 1926 to 1983, and then 1984 to 1998). The researchers show that this kind of reversal occurred in many different countries in the late 1980s and 1990s.

Under-reaction

Research evidence is building which shows that investors are slow to react to the release of information in some circumstances. This introduces the possibility of abnormal returns following the announcement of certain types of news. The first area of research has been into 'post-earnings-announcement drift'. That is, there is a sluggish response to the announcement of unexpectedly good or unexpectedly bad profit figures. Bernard and Thomas (1989) found that cumulative abnormal returns (CARs) continue to drift up for firms that report unexpectedly good earnings and drift down for firms that report unexpectedly bad figures for up to 60 days after the announcement. (The abnormal return in a period is the return of a portfolio after adjusting for both the market return in that period and risk). This offers an opportunity to purchase and sell shares after the information has been made public and thereby outperform the market returns. Shares were allocated to 10 categories of standardised unexpected earnings (SUE). The 10 per cent of shares with the highest positive unexpected earnings were placed in category 10. (The worst unexpected return shares were placed in category 1.)

Exhibit 14.12 shows that after the announcement the shares of companies in category 10 continue to provide positive CARs. Investors did not move the share

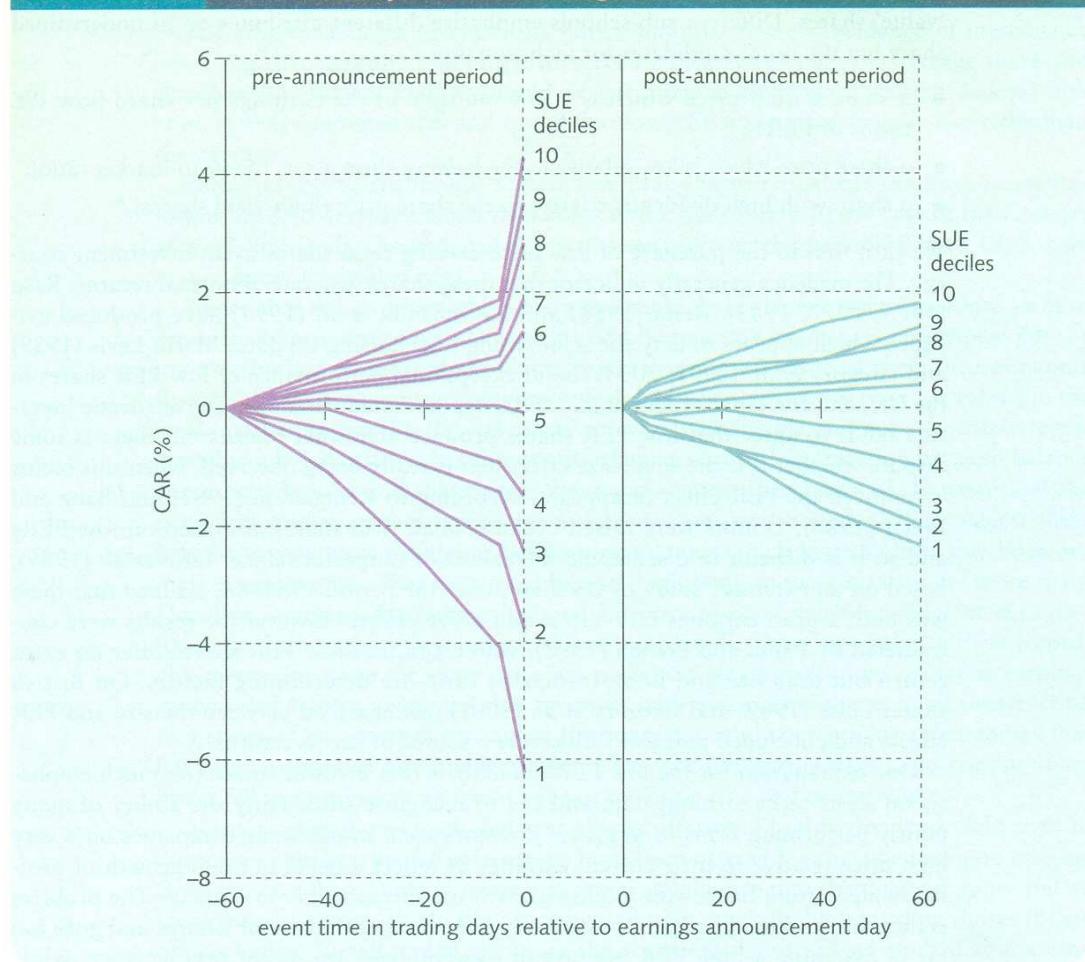
price to incorporate the new information in the earnings announcement on the day of the announcement. Those reporting bad surprises in earnings (the worst of which were in category 1) continued to show a falling return relative to the market in the period after the announcement day. Bernard and Thomas say that a strategy of buying shares in category 10 and selling shares in category 1 on the announcement day and selling (buying) 60 days later would have yielded an estimated abnormal return of approximately 4.2 per cent over 60 days, or about 18 per cent on an annualised basis. Similar results have been reported in studies by Foster et al. (1984), and Rendleman et al.

(1982). These studies suggest that all the news is not properly priced into the shares at the time of announcement as would be expected under EMH.

The second area of research into under-reaction relates to the repurchase of shares. Ikenberry et al. (1995) found that share prices rise on the announcement that the company

will repurchase its own shares. This is to be expected as this is generally a positive piece of news. The suggestion of inefficiency arises because after the announcement the shares continue to provide abnormal returns over the next few years. Thirdly, Michaely et al. (1995) found evidence of share price drift following dividend initiations and omissions. Fourthly, Ikenberry et al. (1996) found share price drift after share split announcements. Fifthly, Jegadeesh and Titman (1993) found that trading strategies in

Exhibit 14.12 The cumulative abnormal returns (CAR) of shares in the 60 days before and the 60 days after an earnings announcement



which the investor buys shares that have risen in recent months produce significant abnormal returns. Chan et al. (1996) confirm an under-reaction to past price movements (a 'momentum effect') and also identify a drift after earnings surprises.

Value investing

There is a school of thought in investment circles that investors should search for 'value' shares. Different sub-schools emphasise different attributes of an undervalued share but the usual candidates for inclusion are:

- a share with a price which is a low multiple of the earnings per share (low P/E)
- ratios or PERs);

- a share price which is low relative to the balance sheet assets (book-to-market ratio); . a share with high dividends relative to the share price (high-yield shares).

We turn first to the purchase of low price-earning ratio shares as an investment strategy. The evidence generally indicates that these shares generate abnormal returns. Basu (1975, 1977, 1983), Keirn (1988) and Lakonishok et al. (1994) have produced evidence which appears to defy the semi-strong EMH, using US data. Mario Levis (1989) and Gregory et al. (2001,2003) found exceptional performance of low PER shares in the UK, and for Japan, Chan et al. (1991) report similar findings. The academic literature tends to agree that low PER shares produce abnormal returns but there is some dispute whether it is the small-size effect that is really being observed; when this factor is removed the PER effect disappears, according to Reinganum (1981) and Banz and Breen (1986). Doubts were raised because small firm shares are often on low PERs and so it is difficult to disentangle the causes of outperformance. Jaffe et al. (1989), based on an extensive study of US shares over the period 1951-86, claimed that there was both a price-earnings ratio effect and a size effect. However the results were contradicted by Fama and French (1992), who claim that low PER shares offer no extra return but that size and book-to-market ratio are determining factors. On British shares Levis (1989) and Gregory et al. (2001) distinguished between the size and PER effects and concluded that low PERs were a source of excess returns.

One explanation for the low PER anomaly is that investors place too much emphasis on short-term earnings data and fail to recognise sufficiently the ability of many poorly performing firms to improve. Investors seem to put some companies on a very high price relative to their current earnings to reflect a belief in rapid growth of profits, while putting firms with modest growth on unreasonably low prices. The problem is that the market apparently consistently overprices the 'glamour' shares and goes too far in assigning a high PER because of overemphasis on recent performance, while excessively depressing the share prices of companies with low recent earnings growth. To put it crudely: so much is expected of the 'glamour' shares that the smallest piece of bad news (or news that is less good than was expected) brings the price tumbling. On the other hand, so little is expected of the historically poor performers that good news goes straight into a share price rise. What investors have failed to appreciate is the tendency for extreme profit and growth trends to moderate - 'to revert to the mean'. This was shown in research by Little as early as 1962. He described profit differences from one period to another as higgledy piggledy growth. Fuller et al. (1993) found that portfolios constructed from shares with low PERs showed lower profit growth than portfolios of high PERs shares in each of the eight years after portfolio formation. However, after three to four years the growth rate differences became very small. If investors were buying high PER shares because they expected high earnings growth for decades into the future (thus bidding up the price) they were frequently disappointed. On the other hand, investors buying low PER shares when the price is low because most investors believe the company is locked into low earnings growth found, after three or four years, that the earnings of these companies, on average grew at very nearly the same rate as the glamour shares. Dreman (1998) is a leading investor who has written on the tendency for investors to overreact and bid up glamour shares too far - while neglecting other companies.

The efficient market protagonists have countered the new evidence of inefficiency by saying that the supposed out-performers are more risky than the average share and therefore an efficient market should permit them to give higher returns. Lakonishok et al. (1994) examined this and found that low PER shares are actually less risky than the average.

Before everyone rushes out to buy low PER shares remember the lesson that followed

the discovery of a small firm effect in the mid-1980s. In the case of the Gregory et al. (2003) study, the under-pricing was observed over the period 1975 to 1993 - we do not know if it still exists.

Shares that sell at prices which are a low multiple of the net assets per share seem to produce abnormal returns? This seems odd because the main influence on most share prices is the discounted value of their future income flows. Take EMI, the music company, which had negative net assets and is valued in the stock market at over N1.7bn. Its assets are largely intangible and not adequately represented in a balance sheet. In other words, there is very little connection between balance sheet asset figures and share price for many shares. The causes of the results of the empirical studies remain largely unexplained. Fama and French (1992) suggest there may be a systematic difference between companies which have high or low book-to market value ratios. That is, companies with high book-to-market ratios are more risky. However, company shares have high market price-to-book value for different reasons for some the nature of their industrial sector means they have few balance sheet recordable assets, for some the share price rose because of projections of strong earnings growth. It has been suggested that investors under-price some shares in an overreaction to a series of bad news events about the company, while overpricing other shares that have had a series of good news events. Thus, the book-to-market ratio rises as share prices fall in response to an irrational extrapolation of a bad news trend.

Many studies have concluded that shares offering a higher dividend yield tend to outperform the market.⁸ Explanations have been offered for this phenomenon ranging from the fact that dividend income is taxed at a higher rate than capital gains and so those investors keen on after-tax income will only purchase high-yielding shares if they offer a higher overall rate of return, to the argument that investors are bad at assessing growth prospects and may under-price shares with a high dividend yield because many have had a poor recent history.

Two other value measures have been examined. The first is the share price to sales; high sales-to-price ratio firms perform better than low sales-to-price firms. Secondly, there is the cash flow (defined as profits after tax plus depreciation and amortisation) to price ratio. Lakonishok et al. (1994) showed a higher return to shares with a high cash flow to price ratio.

Bubbles

Occasionally financial assets go through periods of boom and bust. There are explosive upward movements generating unsustainable prices, which may persist for many years, followed by a crash. These bubbles seem at odds with the theory of efficient markets because prices are not supposed to deviate markedly from fundamental value.

The tulip bulb bubble (tulipmania) in seventeenth-century Holland is an early example in which tulip bulb prices began to rise to absurd levels. The higher the price went the more people considered them good investments. The first investors made lots of money and this encouraged others to sell everything they had to invest in tulips. As each wave of speculators entered the market the prices were pushed higher and higher, eventually reaching the equivalent of N30,000 in today's money for one bulb. But the fundamentals were against the investors and in one month, February 1637, prices collapsed to one-tenth of the peak levels (by 1739 the price had fallen to 1/200th of one per cent of its peak value).

The South Sea Bubble which burst in 1720 was a British share fiasco in which investors threw money at the South Sea Company on a surge of over-optimism only to lose most or all of it. The increase in share prices in the 1920s and before the 1987 crash has also been interpreted as bubbles. Recently, the mania for telecoms, media and

technology shares in the late 1990s has been identified as leading to a bubble. Many see house prices in 2004 in many countries as being determined largely by a bubble mentality (see Kindleburger (1996) for more on bubbles).

One explanation for this seemingly irrational behaviour of markets is what is called noise trading by naive investors. According to this theory there are two classes of traders, the informed and the uninformed. The informed trade shares so as to bring them towards their fundamental value. However the uninformed can behave irrationally and create 'noise' in share prices and thereby generate bias in share pricing. They may be responding to frenzied expectations of almost instant wealth based on an extrapolation of recent price trends - perhaps they noted from the newspapers that the stock market made investors high returns over the past couple of years and so rush to get a piece of the action. This tendency to 'chase the trend' can lead to very poor performance because the dabbler in the markets often buys shares after a sharp rise and sells shares after being shocked by a sharp fall.

To reinforce the power of the uninformed investor to push the market up and up, the informed investor seeing a bubble developing often tries to get in on the rise. Despite knowing that it will all end in disaster for some the informed investor buys in the hope of selling out before the crash. This is based on the idea that the price an investor is willing to pay for a share today is dependent on the price the investor can sell for at some point in the future and not necessarily on fundamental value. Keynes (1936) as far back as the 1930s commented that share prices may not be determined by fundamentals but by investors trying to guess the value other investors will place on shares. He drew the analogy with forecasting the outcome of a beauty contest. If you want to win you are better off concentrating on guessing how the judges will respond to the contestants rather than trying to judge beauty for yourself. George Soros is an example of a very active (informed and successful) investor who is quite prepared to buy into an apparent irrational market move but makes every effort to get out before the uninformed investors. Note that the term informed investor does not equal professional investor. There are many professional fund managers and analysts who, on a close examination, fall into the category of ill-informed noise traders (see Arnold (2002) for more on the inadequacy of 'professional investors', also known as 'the oxymorons').

3.5 Strong-form tests

It is well known that it is possible to trade shares on the basis of information not in the public domain and thereby make abnormal profits. The mining engineer who discovers a rich seam of silver may buy the company shares before the market is told of the likely boost to profits. The director who becomes aware of lost orders and declining competitive position may quietly sell shares to 'diversify his interests' or 'pay for school fees', you understand. The merchant banker who hears of a colleague assisting one firm to plan a surprise takeover bid for another has been known to purchase shares (or options) in the target firm. Stock markets are not strong-form efficient.

Trading on inside knowledge is thought to be a 'bad thing'. It makes those outside of the charmed circle feel cheated. A breakdown of the fair game perception will leave some investors feeling that the inside traders are making profits at their expense. If they start to believe that the market is less than a fair game they will be more reluctant to invest and society will suffer. To avoid the loss of confidence in the market most stock exchanges attempt to curb insider dealing. It was made a criminal offence in the UK in 1980 where insider dealing is considered to be, besides dealing for oneself, either counselling or procuring another individual to deal in the securities or communicating knowledge to any other person, while being aware that he or she (or someone else) will deal in those securities. The term 'insider' now covers anyone with sensitive information, not just a

company director or employee. Most modern economies have rules on insider dealing and the EU has a directive on the subject. Despite the complex legislation and codes of conduct it is hard to believe that insider trading has been reduced significantly in the last two decades.

Another weapon in the fight against insiders is to raise the level of information disclosure: making companies release price-sensitive information quickly.

A third approach is to completely prohibit certain individuals from dealing in the company's shares for crucial time periods.

There is a grey area which stands between trading on inside knowledge and trading purely on publicly available information. Some investment analysts, though strictly outsiders, become so knowledgeable about a firm that they have some degree of superior information. Their inference or guesstimates about future prospects are of a higher order than those of other analysts and certainly beyond anything the average shareholder is capable of. They may make regular visits to the company head office and operating units. They may discuss the opportunities and potential problems for the firm and the industry with the directors and with competitors' employees. Despite the strict rules concerning directors briefing one analyst better than the generality of shareholders it may be possible to 'read between the lines' and gather hints to give an informed edge. The hypothesis that there are some exceptional analysts has limited empirical backing and relies largely on anecdotal evidence and so this point should not be over-emphasised. It is clear from previous sections of this unit that the vast majority of professional analysts are unable to outperform the market.

3.6 Behavioural finance

There has been a forceful attack on the EMH by finance specialists drawing on a combination of human behavioural literature and their knowledge of markets. The EMH rests on the assumption that all investors are rational, or, even if there are some irrational investors, that the actions of rational informed investors will eliminate pricing anomalies through arbitrage. The behavioural finance proponents argue that investors frequently make systematic errors and these errors can push the prices of shares (and other financial securities) away from fundamental value for considerable periods of time.

This is a field of intellectual endeavour that is attracting increasing numbers of adherents as the evidence on apparent inefficiencies grows. Behavioural finance models offer plausible reasoning for the phenomena we observe in the pattern of share prices. They offer persuasive explanations for the out-performance of low PER, high dividend yield and low book-to-market ratio shares as well as the poor performance of 'glamour' shares. They can also be drawn on to shed light on both return reversal and momentum effects. In addition, behavioural science has a lot to offer when it comes to understanding stock market bubbles and irrational pessimism.

Many of the investors who made a fortune in the twentieth century have been saying all along that to understand the market you must understand the psychology of investors. In the 1960s, 1970s and even the 1980s, they were denounced as naive at best by the dyed-in-the-wool quantitative financial economist - the economists had 'scientific proof' of the market's efficiency. They insisted that even if investors were generally irrational the market had inherent mechanisms to arrive at the efficient price, leaving no abnormal returns to be had. The successful investors were merely lucky. Worse! They were lucky and had the nerve to go against the scientific 'evidence' and publicly declare that they believed that there are sound investment principles which permit out-performance.

The successful investors continued to believe in the irrationality and exploitability of

markets despite the onslaught from many university economists who were characterised as believing that 'It might work in practice, but it'll never work in theory'. Eventually a growing band of respected academics provided theoretical and empirical backing to the behavioural view of financial markets. Now the debate has reached a fascinating point with high-quality modelling and empirical evidence on both sides.

3.7

Misconceptions about the efficient market hypothesis

There are good grounds for doubting some aspects of the EMH and a reasoned debate can take place with advocates for efficiency and inefficiency stating their cases with rigorous argument and robust empirical methodology. However the high-quality debate has sometimes been overshadowed by criticism based on one or more misunderstandings of the EMH. There are three classic misconceptions.

1 Any share portfolio will perform as well as or better than a special trading rule to out-perform the market:

A monkey choosing a portfolio of shares from the Financial Times for a buy and hold strategy is nearly, but not quite, what the EMH advocates suggest as a strategy likely to be as rewarding as special inefficiency-hunting approaches. The monkey does not have the financial expertise needed to construct broadly based portfolios which fully diversify away unsystematic risk. A selection of shares in just one or two industrial sectors may expose the investor to excessive risk. So it is wrong to conclude from the EMH evidence that it does not matter what the investor does, and that any portfolio is acceptable. The EMH says that after first eliminating unsystematic risk by holding broadly based portfolios and then adjusting for the residual systematic risk, investors will not achieve abnormal returns.

2 There should be fewer price fluctuations:

If shares are efficiently priced why is it that they move every day even when there is no announcement concerning a particular company? This is what we would expect in an efficient market. Prices move because new information is coming to the market every hour which may have some influence on the performance of a specific company. For example, the governor of Central Bank may hint at interest rate rises, the latest industrial output figures may be released and so on.

3 Minority of investors are actively trading, most are passive, therefore efficiency cannot be achieved and this is wrong.

It only needs a few trades by informed investors using all the publicly available information to position (through their buying and selling actions) a share at its semi-strong-form efficient price.

3.8

Implications of the EMH for investors

If the market is efficient there are a number of implications for investors. Even if it is merely efficient most of the time, for most participants a sensible working assumption is that pricing is based on fundamental values and the following implications apply.

1 For the vast majority of people public information cannot be used to earn abnormal returns:

(This refers to returns above the normal level for that systematic risk class.) The implications are that fundamental analysis is a waste of money and that so long as efficiency is maintained the average investor should simply select a suitably diversified portfolio, thereby avoiding costs of analysis and transaction. This message has struck a chord with millions of investors and thousands of billions of Nairas have been placed with fund managers who merely replicate a stock market index (Index funds) rather than try to pick winners in an actively managed fund.

Another trend has been for small investors to trade shares through execution only brokers. These brokers do not provide their clients with (nor charge them for) analysis of companies, 'hot tips' and suggestions for purchases. They merely carry out the client's

buy or sell orders in the cheapest manner possible.

2 Investors need to press for a greater volume of timely information: Semi-strong efficiency depends on the quality and quantity of publicly available information, and so companies should be encouraged by investor pressure, accounting bodies, government rulings and stock market regulation to provide as much as is compatible with the necessity for some secrecy to prevent competitors gaining useful knowledge.

3 The perception of a fair game market could be improved by more constraints and placed on insider dealers.

3.9 Implications of the EMH for companies

The efficient market hypothesis also has a number of implications for companies.

1. **Focus on substance, not on short-term appearance:** Some managers behave as though they believe they can fool shareholders. For example creative accounting is used to show a more impressive performance than is justified. Most of the time these tricks are transparent to investors, who are able to interpret the real position, and security prices do not rise artificially.

There are some circumstances when the drive for short-term boosts to reported earnings can be positively harmful to shareholders. For example, one firm might tend to overvalue its inventory to boost short-term profitability, another might not write off bad debts. These actions will result in additional, or at least earlier, taxation payments which will be harmful to shareholder wealth. Managers, aware that analysts often pay a great deal of attention to accounting rate of return, may, when facing a choice between a project with a higher NPV but a poor short-term ARR, or one with a lower NPV but higher short-term ARR, choose the latter. This principle of short-termism can be extended into areas such as research and development or marketing spend. These can be cut to boost profits in the short term but only at a long-term cost to shareholders.

One way to alleviate the short-term/long-term dilemma is for managers to explain why longer-term prospects are better than the current figures suggest. This requires a diligent communications effort.

2. **The timing of security issues does not have to be fine-tuned:** Consider a team of managers contemplating a share issue who feel that their shares are currently under-priced because the market is 'low'. They opt to delay the sale, hoping that the market will rise to a more 'normal level'. This defies the logic of the EMH - if the market is efficient the shares are already correctly (unbiased) priced and the next move in prices is just as likely to be down as up. The past price movements have nothing to say about future movements.

The situation is somewhat different if the managers have private information that they know is not yet priced into the shares. In this case if the directors have good news then they would be wise to wait until after an announcement and subsequent adjustment to the share price before selling the new shares. Bad news announcements are more tricky - to sell the shares to new investors while withholding bad news will benefit existing shareholders, but will result in loss for the new shareholders. There are rules against withholding price sensitive information.

3. **Large quantities of new shares can be sold without moving the price:** A firm wishing to raise equity capital by selling a block of shares may hesitate to price near to the existing share price. Managers may believe that the increase in supply will depress the price of the shares. This is generally not

the case. In empirical studies (e.g. Scholes (1972)), if the market is sufficiently large (for example the London or New York Stock Exchange) and investors are satisfied that the new money will generate a return at least as high as the return on existing funds, the price does not fall. This is as we would expect in an efficient market: investors buy the new shares because of the return offered on them for their level of risk.²⁴ The fact that some old shares of the same company already exist and that therefore supply has risen does not come into the equation. The key question is: what will the new shares produce for their holders? If they produce as much as an old share they should be priced the same as an old share. If they are not, then someone will spot that they can gain an abnormal return by purchasing these shares (which will push up the price).

4. **Signals from price movements should be taken seriously:** If, for instance, the directors announce that the company is to take over another firm and its share price falls dramatically on the day of the announcement this is a clear indication that the merger will be wealth destroying for shareholders - as the majority of mergers are. Managers cannot ignore this collective condemnation of their actions. An exception might be allowed if shareholders are dumping the shares in ignorance because the managers have special knowledge of the benefits to be derived from the merger - but then shouldn't the directors explain themselves properly?.

Exercise: 1.1 Explain the three forms of market efficiency
1.2 What is efficiency

4.0 CONCLUSION

While modern, large and sophisticated stock markets exhibit inefficiencies in some areas, particularly at the strong-form level, it is reasonable to conclude that they are substantially efficient and it is rare that a non-insider can outperform the market. One of the more fruitful avenues of future research is likely to concern the influence of psychology on stock market pricing. We have seen how many of the (suggested) semi-strong inefficiencies, from bubbles to under-pricing low PER shares, have at their base a degree of apparent 'non-rationality'.

Another line of enquiry is to question the assumption that all investors respond in a similar manner to the same risk and return factors and that these can be easily identified. Can beta be relied upon to represent all relevant risk? If it cannot, what are the main elements investors want additional compensation for? What about information costs, marketability limits, taxes and the degree of co-variability with human capital returns for the investor (e.g. earnings from employment)? These are factors disliked by shareholders and so conceivably a share with many of these attributes will have to offer a high return. For some investors who are less sensitive to these elements the share which gives this high return may seem a bargain. A problem for the researcher in this field is that abnormal returns are calculated after allowance for risk. If the model used employs a risk factor which is not fully representative of all the risk and other attributes disliked by investors then efficiency or inefficiency cannot be established.

One way of 'outperforming' the market might be to select shares the attributes of which you dislike less than the other investors do, because they are likely to be under-priced for you - given your particular circumstances. Another way is through luck which is often confused with the third way, that of possessing superior analytical skills.

A fourth method is through the discovery of a trading rule which works (but do not

tell anybody, because if it becomes widespread knowledge it may stop working, unless it is based on some deep-seated psychological/cognitive error prevalent among investors). A fifth possibility is to be quicker than anyone else in responding to news.

The last, and the most trustworthy method, is to become an insider - the only problem with this method is that you may end up a different kind of insider - in prison.

5.0 SUMMARY

The equity markets are generally very efficient, but the person with superior analytical ability, knowledge, dedication and creativity can be rewarded with abnormally high returns.

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7.0 TUTOR MARKED ASSIGNMENT

1. If A and B has a 1 for 1 scrip issue when its share price is 550K what would you expect to happen to its share price in theory (no other influences) and in practice?

UNIT 15

CAPITAL STRUCTURE

1.0 INTRODUCTION

Someone has to decide the appropriate level of borrowing for a firm given its equity capital base. To assist this decision it would be useful to know if it is possible to increase shareholder wealth by changing the gearing (debt to equity ratio) level. That is, if future cash flows generated by the business are assumed to be constant, can managers simply by altering the proportion of debt in the total capital structure increase shareholder value? If this is possible then surely managers have a duty to move the firm towards the optimal debt proportion.

The traditional view was that it would be beneficial to increase gearing from a low (or zero) level because the firm would then be financed to a greater extent by cheaper borrowed funds, therefore the weighted average cost of capital (WACC) would fall. The discounting of future cash flows at this lower WACC produces a higher present value and so shareholder wealth is enhanced. However, as debt levels rise the firm's earnings attributable to shareholders become increasingly volatile due to the requirement to pay large amounts of interest prior to dividends. Eventually the burden of a large annual interest bill can lead the firm to become financially distressed and, in extreme circumstances, to be liquidated. So the traditional answer to the question of whether there was an optimal gearing level was 'yes'. If the gearing level is too low, shareholder value opportunities are forgone by not substituting 'cheap' debt for equity. If it is too high the additional risk leads to a loss in shareholder value through a higher discount rate being applied to the future cash flows attributable to ordinary shareholders. This is because of the higher risk and, at very high gearing, the penalty of complete business failure becomes much more of a possibility.

Then, in the late 1950s a theory was developed by Franco Modigliani and Merton Miller (1958) which said that it did not matter whether the firm had a gearing level of 90 per cent debt or 2 per cent debt - the overall value of the firm is constant and shareholder wealth cannot be enhanced by altering the debt to equity ratio. This conclusion was based on some major assumptions and required the firm to operate in a perfect world of perfect knowledge, a world in which individual shareholders can borrow and lend at the same rate as giant corporations, and in which taxation and cost of financial distress do not exist.

Later Modigliani and Miller (MM) modified the no-taxation assumption. This led to a different conclusion: the best gearing level for a firm interested in shareholder wealth maximisation is, generally, as high as possible. This was an astonishing result; it means that a company financed with N99m of debt and N1m of equity serves its shareholders better than one funded by N50m of debt and N50m of equity. Within academic circles thousands of hours of thinking and research time have been spent over the past four decades building on the MM foundations, and millions of hours of undergraduates' and postgraduates' precious time have been spent learning the intricacies of the algebraic proofs lying behind MM conclusions. Going through this process has its virtues: the models provide a systematic framework for evaluating the capital structure question and can lead to some rigorous thought within the confines of the models.

However, this chapter will not dwell on algebra (the interested reader is referred to some more advanced reading at the end of the unit). Emphasis will be given to explanations which have been advanced to explain actual gearing levels. A conclusion will be drawn which fits neither the MM first conclusion, that there is not an optimal gearing level, nor their modified theory with taxes, in which there is an optimum at the most extreme level of debt.

A fundamental question for any unit of this book is: does this subject have any relevance to the real world?. Senior managers frequently consider the balance between debt and ordinary share capital in a company's financial make-up.

Clearly there is a perception amongst directors, analysts and financial commentators that there is an optimal gearing level, or at least a range of gearing levels which help to maximise shareholder wealth and this lies at neither extreme of the spectrum.

2.0 OBJECTIVES

When you complete this unit, you should be able:

- Discuss the effect of gearing and differentiate business and financial risk;
- Describe the underlying assumptions, rational and conclusions of Modigliani and Miller's models, in worlds with and without tax;
- Explain the relevance of some important, but often non-quantifiable, influences on the optimal gearing level question.

3.0 Debt finance is cheaper and riskier (for the company)

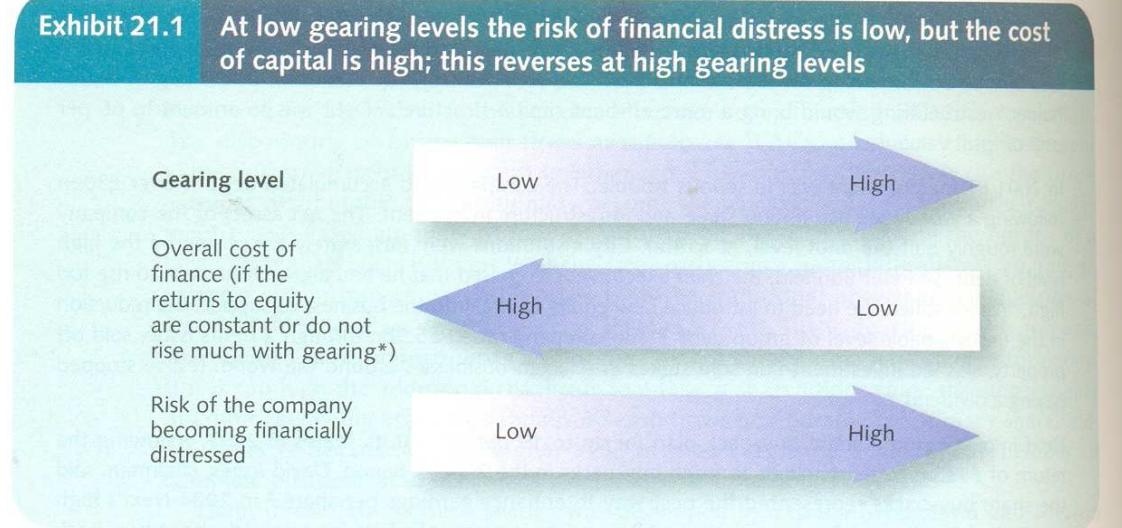
Financing a business through borrowing is cheaper than using equity. This is, first, because lenders require a lower rate of return than ordinary shareholders. Debt financial securities present a lower risk than shares for the finance providers because they have prior claims on annual income and in liquidation. In addition security is often provided and covenants imposed.

A profitable business effectively pays less for debt capital than equity for another reason: the debt interest can be offset against pre-tax profits before the calculation of the corporation tax bill, thus reducing the tax paid.

Thirdly, issuing and transaction costs associated with raising and servicing debt are generally less than for ordinary shares.

There are some valuable benefits from financing a firm with debt. So why do firms tend to avoid very high gearing levels? One reason is financial distress risk. This could be induced by the requirement to pay interest regardless of the cash flow of the business. If the firm hits a rough patch in its business activities it may have trouble paying its bondholders, bankers and other creditors their entitlement. **Exhibit 21.1** shows that, as gearing increases, the risk of financial failure grows.

Exhibit 21.1 At low gearing levels the risk of financial distress is low, but the cost of capital is high; this reverses at high gearing levels



Note the crucial assumption in Exhibit 21.1 - if the returns to equity are constant, the overall cost of finance declines. This is obviously unrealistic because as the risk of financial distress rises ordinary shareholders are likely to demand higher returns. This is an important issue and we will return to it after a discussion of some basic concepts about gearing.

3.1 What do we mean by 'gearing'?

We need to avoid some confusion which is possible when using the word 'gearing'. First, we should make a distinction between operating gearing and financial gearing.

Operating gearing refers to the extent to which the firm's total costs are fixed. The profits of firms with high operating gearing, such as car or steel manufacturers, are very sensitive to changes in the sales level. They have high break-even points (the turnover level at which profits are achieved) but when this level is breached a large proportion of any additional sales revenue turns into profit because of the relatively low variable costs.

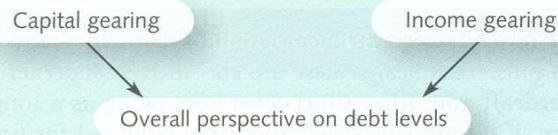
Financial gearing is the focus of this unit and concerns the proportion of debt in the capital structure. Net income to shareholders in firms with high financial gearing is more sensitive to changes in operating profits.

Secondly, the terms gearing and leverage are used interchangeably by most practitioners, although leverage is used more in America.

Thirdly, there are many different ways of calculating financial gearing (to be called simply 'gearing' throughout this unit). Financial analysts, the press and corporate managers usually measure gearing by reference to balance sheet (book) figures, but it is important to recognise that much of finance theory concentrates on the market values of debt and equity. Both book and market approaches are useful, depending on the purpose of the analysis.

There are two ways of putting into perspective the levels of debt that a firm carries - see **Exhibit 21.2**. Capital gearing focuses on the extent to which a firm's total capital is in the form of debt. Income gearing is concerned with the proportion of the annual income stream (that is, the pre-interest profits) which is devoted to the prior claims of debt-holders, in other words, what proportion of profits is taken by interest charges.

Exhibit 21.2 A firm's financial gearing can be measured in two ways



Capital gearing

There are alternative measures of the extent to which the capital structure consists of debt. One popular approach is the ratio of long-term debt to shareholders' funds (the debt to equity ratio). The long-term debt is usually taken as the balance sheet item 'amounts falling due after more than one year', and shareholders' funds is the net asset (or net worth) figure in the balance sheet.

$$\text{Capital gearing (1)} = \frac{\text{Long-term debt}}{\text{Shareholders' funds}}$$

This ratio is of interest because it may give some indication of the firm's ability to sell assets to repay debts. For example, if the ratio stood at 0.3, or 30 per cent, lenders and shareholders might feel relatively comfortable as there would be, apparently, over three times as many net (that is after paying off liabilities) assets as long-term debt. So, if the worst came to the worst, the company could sell assets to satisfy its long-term lenders.

There is a major problem with relying on this measure of gearing. The book value of assets can be quite different from the saleable value. This may be because the assets have been recorded at historical purchase value (perhaps less depreciation) and have not been revalued over time. It may also be due to the fact that companies forced to sell assets to satisfy creditors often have to do so at greatly reduced prices if they are in a hurry.?

Secondly, this measure of gearing can have a range of values from zero to infinity and this makes inter-firm comparisons difficult. The measure shown below puts gearing within a range of zero to 100 per cent as debt is expressed as a fraction of all long-term capital.

$$\text{Capital gearing (2)} = \frac{\text{Long-term debt}}{\text{Long-term debt} + \text{Shareholders' funds}}$$

These ratios could be further modified by the inclusion of 'provisions' and deferred taxation. Provisions are sums set aside in the accounts for anticipated loss or expenditure, for example a bad debt or costs of merger integration. Deferred tax likewise may be included as an expected future liability.

The third capital gearing measure, in addition to allowing for long-term debt, includes short-term borrowing.

All borrowing

$$\text{Capital gearing (3)} = \text{All borrowing} + \text{Shareholders' funds}$$

Many firms rely on overdraft facilities and other short-term borrowing, for example commercial bills. Technically these are classified as short term. In reality many firms use the overdraft and other short-term borrowing as a long-term source of funds. Furthermore, if we are concerned about the potential for financial distress, then we must recognise that an inability to repay an overdraft can be just as serious as an inability to service a long-term bond.

To add sophistication to capital gearing analysis it is often necessary to take into account any cash (or marketable securities) holdings in the firm. These can be used to offset the threat that debt poses.

A measure of gearing which is gaining prominence is the ratio of debt to the total market value of the firm's equity.

$$\text{Capital gearing (4)} = \frac{\text{Long-term debt}}{\text{Total market capitalisation}}$$

This has the advantage of being closer to the market-value-based gearing measures (assuming book long-term debt is similar to the market value of the debt). It gives some indication of the relative share of the company's total value belonging to debt-holders and shareholders.

It is plain that there is a rich variety of capital gearing measures and it is important to know which measure people are using - it can be very easy to find yourself talking at cross-purposes.

Income gearing

The capital gearing measures rely on the appropriate valuation of net assets either in the balance sheet or in a revaluation exercise. This is a notoriously difficult task to complete with any great certainty. Try valuing a machine on a factory floor, or a crate of raw material. Also the capital gearing measures focus on a worst case scenario: 'What could we sell the business assets for if we had to, in order to pay creditors?'

It may be erroneous to focus exclusively on assets when trying to judge a company's ability to repay debts. Take the example of a successful advertising agency. It may not have any saleable assets at all, apart from a few desks and chairs, and yet it may be able to borrow hundreds of millions of Naira because it has the ability to generate cash to make interest payments. Thus, quite often, a more appropriate measure of gearing is one concerned with the level of a firm's income relative to its interest commitments:

$$\text{Interest covers} = \frac{\text{Profit before interest and tax}}{\text{Interest charges}}$$

If the interest cover ratio is lower, the greater the chance of interest payment default and liquidation. The inverse of interest cover measures the proportion of profits paid out in interest - this is called income gearing.

The ratios considered above are now calculated for Cadbury Schweppes. The data in **Exhibit 21.3** and in the following calculations are taken from the Report and Accounts 2003.

Exhibit 21.3 Cadbury Schweppes balance sheet and profit figures, December 2003

	£m	£m
Fixed assets		8,003
Current assets		
Stocks	672	
Debtors	1,302	
Investments	242	
Cash and bank balances	<u>191</u>	
		2,407
Creditors due within one year		(3,091)
of which:		
Loans and other borrowings	1,069	
Other creditors	<u>2,022</u>	
		(3,698)
Creditors due after one year: loans and other borrowings		(428)
Provisions for liabilities and charges		(243)
Minority interests		<u>2,950</u>
Shareholders' funds		£745m
Profit before interest and taxation		£181m
Interest		£9,831m
Market capitalisation		

We now calculate the ratios using the data in Exhibit 21.3:

$$\begin{aligned} \text{Capital gearing (1)} &= \frac{\text{Long-term debt}}{\text{Shareholders' funds}} \times 100 \\ &= \frac{\text{N}3,698\text{m}}{\text{N}2,950\text{m}} \times 100 = 125\% \end{aligned}$$

$$\begin{aligned} \text{Capital gearing (2)} &= \frac{\text{Long-term debt}}{\text{Long-term debt} + \text{Shareholders' funds}} \times 100 \\ &= \frac{\text{N}3,698\text{m}}{\text{N}3,698\text{m} + \text{N}2,950\text{m}} \times 100 = 56\% \end{aligned}$$

$$\begin{aligned} \text{Capital gearing (3)} &= \frac{\text{All borrowing}}{\text{All borrowing} + \text{Shareholders' funds}} \times 100 \\ &= \frac{\text{N}3,698\text{m} + \text{N}1,069\text{m}}{\text{N}3,698\text{m} + \text{N}1,069\text{m} + \text{N}2,950\text{m}} \times 100 = 62\% \end{aligned}$$

$$\text{Capital gearing (4)} = \frac{\text{Long-term debt}}{\text{Total market capitalization}} \times 100$$

$$\frac{\text{N}3,698\text{m}}{\text{N}9,831\text{m}} \times 100 = 38\%$$

$$\text{Interest cover} = \frac{\text{Profit before interest and taxation}}{\text{interest charges}}$$

$$-\frac{\text{N}745\text{m}}{\text{N}181\text{m}} = 4.1 \text{ times}$$

$$\text{Income gearing} = \frac{\text{Interest charges}}{\text{Profit before interest and taxation}} \times 100$$

$$= \frac{\text{N}181\text{m}}{\text{N}745\text{m}} = 24\%$$

3.2 The effect of gearing

The introduction of interest-bearing debt 'gears up' the returns to shareholders. Compared with those of the un-gearred firm the geared firm's returns to its owners are subject to greater variation than underlying earnings. If operating profits are high, the geared firm's shareholders will experience a more than proportional boost in their returns compared to the un-gearred firm's shareholders. On the other hand, if operating profits turn out to be low the geared firm's shareholders will find their returns declining to an exaggerated extent.

The effect of gearing can best be explained through an example. Harbpic is shortly to be established. The prospective directors are considering three different capital structures which will all result in N10m of capital being raised.

1. All equity - 10 million shares sold at a nominal value of N1.
2. N3m debt (carrying 10 per cent interest) and N7m equity.
3. N5m debt (carrying 10 per cent interest) and N5m equity.

To simplify their analysis the directors have assigned probabilities to three potential future performance levels (see Exhibit 21.6).

We can now examine what will happen to shareholder returns for each of the gearing levels.

Note, in Exhibit 21.7, what happens as gearing increases: is that the changes in earnings attributable to shareholders. For example, when earnings before interest rise by 500 per cent from N4.5m to N3.0m the returns on the 30 per cent geared structure rises by 1,200 per cent from 3 per cent to 39 per cent. This magnification effect works in both positive and negative directions - if earnings before interest are only N0.5m the all-equity structure gives shareholders some return, but with the 50 per cent geared firm they will receive nothing. Harby's shareholders would be taking a substantial risk that they would have no profits if they opted for a high level of gearing.

Exhibit 21.6 Probabilities of performance levels

Customer response to firm's products	Income before interest*	Probability (%)
Modest success	£0.5m	20
Good response	£3.0m	60
Run-away success	£4.0m	20

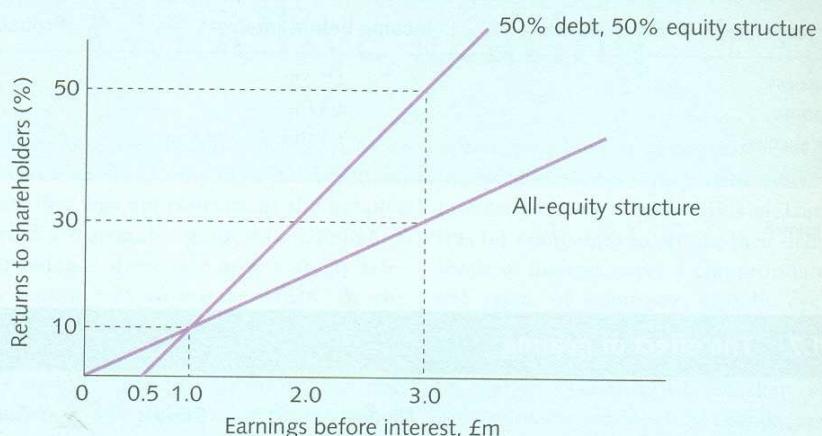
* Taxes are to be ignored.

Exhibit 21.7 The effect of gearing

Customer response	Modest	Good	Run-away
Earnings before interest	£0.5m	£3.0m	£4.0m
All-equity structure			
Debt interest at 10%	0.0	0.0	0.0
Earnings available for shareholders	£0.5m	£3.0m	£4.0m
Return on shares	$\frac{£0.5m}{£10m} = 5\%$	$\frac{£3.0m}{£10m} = 30\%$	$\frac{£4.0m}{£10m} = 40\%$
30% gearing (£3m debt, £7m equity)			
Debt interest at 10%	£0.3m	£0.3m	£0.3m
Earnings available for shareholders	£0.2m	£2.7m	£3.7m
Return on shares	$\frac{£0.2m}{£7m} = 3\%$	$\frac{£2.7m}{£7m} = 39\%$	$\frac{£3.7m}{£7m} = 53\%$
50% gearing (£5m debt, £5m equity)			
Debt interest at 10%	£0.5m	£0.5m	£0.5m
Earnings available for shareholders	0.0	£2.5m	£3.5m
Returns on shares	$\frac{0.0}{£5m} = 0\%$	$\frac{£2.5m}{£5m} = 50\%$	$\frac{£3.5m}{£5m} = 70\%$

The data for the un-gearred and the 50 per cent geared capital structure are displayed in **Exhibit 21.8**. The direction of the effect of gearing depends on the level of earnings before interest. If this is greater than N_{1m} , the return to shareholders is increased by gearing. If it is less than N_{1m} , the return is reduced by gearing. Note that the return on the firm's overall assets at this pivot point is 10 per cent (N_{1m}/N_{10m}). If a return of more than 10 per cent on assets is achieved, shareholders' returns are enhanced by gearing.

Exhibit 21.8 Changes in shareholder returns for ungeared and geared capital structures



Expected returns and standard deviations for Harby plc

It makes intuitive sense to say that year-to-year variations in income will be greater for a more highly geared firm as it experiences good and bad trading years. We can be more precise for Harby if we calculate the standard deviation of the return to shareholders under the three gearing levels (see Exhibit 21.9).

As Exhibit 21.9 indicates, as the gearing levels rise for Harby, the expected return for shareholders also rises (from 27 per cent to 34.6 per cent to 44 per cent), but this is accompanied by a rising level of risk. Management have to weigh up the relative importance of the 'good' resulting from the increase in expected returns and the 'bad' from the wider dispersion of returns attributable to shareholders.

Exhibit 21.9 Expected returns and standard deviations of return to shareholders in Harby plc

All equity

Return, R (%)	Probability, p_i	Return \times probability
5	0.2	1
30	0.6	18
40	0.2	8
		27
		Expected return, $\bar{R} = 27\%$

Return, R (%)	Expected return, \bar{R}	Probability	$(\bar{R} - R)^2 p_i$
5	27	0.2	96.8
30	27	0.6	5.4
40	27	0.2	33.8
			Variance $\sigma^2 = 136.0$

Standard deviation $\sigma = 11.7\%$

Exhibit 21.9 Continued

30% gearing

Return, R (%)	Probability, p_i	Return \times probability
3	0.2	0.6
39	0.6	23.4
53	0.2	10.6
		<u>34.6</u>
		Expected return, $\bar{R} = 34.6\%$

Return, R (%)	Expected return, \bar{R}	Probability	$(\bar{R} - R)^2 p_i$
3	34.6	0.2	199.71
39	34.6	0.6	11.62
53	34.6	0.2	67.71
			Variance $\sigma^2 = 279.04$

Standard deviation $\sigma = 16.7\%$

50% gearing

Return, R (%)	Probability, p_i	Return \times probability	
0	0.2	0	
50	0.6	30	
70	0.2	<u>14</u>	
		<u>44</u>	
		Expected return, $\bar{R} = 44\%$	
Return, R (%)	Expected return, \bar{R}	Probability	$(\bar{R} - R)^2 p_i$
0	44	0.2	387.2
50	44	0.6	21.6
70	44	0.2	135.2
			Variance $\sigma^2 = 544.0$

Standard deviation $\sigma = 23.3\%$

Business risk and financial risk

Business risk is the variability of the firm's operating income, that is, the income before interest. In the case of Harby this is found by examining the dispersion of returns for the all-equity capital structure. This dispersion is caused purely by business-related factors, such as the characteristics of the industry and the competitive advantage possessed by the firm within that industry. This risk will be influenced by factors such as the variability of sales volumes or prices over the business cycle, the variability of input costs, the degree of market power and the level of growth.

The business risk of a monopoly supplier of electricity, gas or water is likely to be significantly less than that for, say, an entrepreneurial company trying to gain a toehold in the internet optical switch market. The range of possible demand levels and prices are

likely to be less for the utilities than for the high-tech firm. Business risk is determined by general business and economic conditions and is not related to the firm's financial structure.

Financial risk is the additional variability in returns to shareholders that arises because the financial structure contains debt. In **Exhibit 21.10** the standard deviation gives the total risk. If a 50 per cent geared structure is selected the returns to shareholders would have a high dispersion, that is, a standard deviation of 23.3 per cent.

Of this overall risk roughly half is caused by underlying business risk and half by financial risk. The increasing proportion of debt raises the firm's fixed financial costs. At high gearing levels there is an increased probability of the firm not only failing to make a return to shareholders, but also failing to meet the interest cost obligation, and thus raising the likelihood of insolvency.

Exhibit 21.10 Business and financial risk

Gearing (%)	Expected return to shareholders (%)	Standard deviation (total risk) (%)	Business risk (%)	Remaining total risk due to financial risk* (%)
0 (all-equity)	27	11.7	11.7	0
30	34.6	16.7	11.7	5
50	44	23.3	11.7	11.6

Firms with low business risk can take on relatively high levels of financial risk without exposing their shareholders to excessive total risk. The increased expected return more than compensates for the higher variability resulting in climbing share prices.

It is appropriate at this point to remember that, until now we have focused primarily on accounting values for debt and equity - book debt, net assets in the balance sheet, etc. In the models which follow the correct bases of analysis are the market values of debt and equity. This is because we are interested in the effect of the capital structure decision on share values in the marketplace, not on accounting entries.

3.3 The value of the firm and the cost of capital

Recall from unit 13 that the value of the firm is calculated by estimating its future cash flows and then discounting these at the cost of capital. For the sake of simplification we will assume, in the following theoretical discussion, that the future cash flows are constant and perpetual (at annual intervals to an infinite horizon) and thus the value of the firm is:

$$V = \frac{C_1}{WACC}$$

where:

V = value of the firm;

C_1 = cash flows to be received one year hence;

WACC = the weighted average cost of capital.

The same logic can be applied to cash flows which are increasing at a constant rate, or which vary in an irregular fashion. The crucial point is this: if the cash flows are assumed to be at a set level then the value of the firm depends on the rate used to discount those cash flows. If the cost of capital is lowered the value of the firm is raised.

What is meant by the value of the firm, V , is the combination of the market value of equity capital, V_E (total capitalisation of ordinary shares), plus the market value of debt capital, V_D ,

$$V = V_E + V_D$$

3.4 Does the cost of capital (WACC) decrease with higher debt levels?

The question of whether the cost of capital decreases with higher debt levels is obviously crucial to the capital structure debate. If the WACC is diminished by increasing the proportion of debt in the financial structure of the firm then company value will rise and shareholders' wealth will increase.

The firm's cost of capital depends on both the return needed to satisfy the ordinary shareholders given their opportunity cost of capital, k_E , and the return needed to satisfy lenders given their opportunity cost of capital k_D . (We will ignore taxes for now.)

$$WACC = k_E W_E + k_D W_D$$

where:

W_E = proportion of equity finance to total finance;

W_D = proportion of debt finance to total finance.

If some numbers are now put into this equation, conclusions might be possible about the optimal debt level and therefore the value of the firm. If it is assumed that the cost of equity capital is 20 per cent, the cost of debt capital is 10 per cent, and the equity and debt weights are both 50 per cent, the overall cost of capital is 15 per cent.

$$WACC = (20\% \times 0.5) + (10\% \times 0.5) = 15\%$$

If it is further assumed that the firm is expected to generate a perpetual annual cash flow of £1m, then the total value of the firm is:

$$V = \frac{C_1}{WACC} = \frac{\text{£1m}}{0.15} = \text{£6.667m}$$

This whole area of finance revolves around what happens next, that is, when the proportion of debt is increased. So, let us assume that the debt ratio is increased to 70 per cent through the substitution of debt for equity. We will consider four possible consequences.

Scenario 1 The cost of equity capital remains at 20 per cent

If shareholders remain content with a 20 per cent return, the WACC decreases:

$$WACC = k_E W_E + k_D W_D$$

$$WACC = (20\% \times 0.3) + (10\% \times 0.7) = 13\%$$

If the cost of capital decreases, the value of the firm (and shareholder wealth) increases:

$$V = \frac{C_1}{WACC} = \frac{\text{£1m}}{0.13} = \text{£7.69m}$$

Under this scenario the debt proportion could be increased until it was virtually 100 per cent of the capital. The WACC would then approach 10 per cent (assuming that the cost of debt capital remains at 10 per cent).

Scenario 2 The cost of equity capital rises due to the increased financial risk to exactly offset the effect of the lower cost of debt

In this case the WACC and the firm's value remain constant.

$$\begin{aligned} \text{WACC} &= k_E W_E + k_D W_D \\ \text{WACC} &= (26.67\% \times 0.3) + (10\% \times 0.7) = 15\% \end{aligned}$$

Scenario 3 The cost of equity capital rises, but this does not completely offset all the benefits of the lower cost of debt capital

Let us assume that equity holders demand a return of 22 per cent at a 70 per cent gearing level:

$$\begin{aligned} \text{WACC} &= k_E W_E + k_D W_D \\ \text{WACC} &= (22\% \times 0.3) + (10\% \times 0.7) = 13.6\% \end{aligned}$$

In this case the firm, by increasing the proportion of its finance which is in the form of debt, manages to reduce the overall cost of capital and thus to increase the value of the firm and shareholder wealth.

$$\frac{V}{\text{WACC}} = \frac{C_1}{0.136} = \frac{Nlm}{N7.35m}$$

Scenario 4 The cost of equity rises to more than offset the effect of the lower cost of debt

Here the equity holders are demanding much higher returns as compensation for the additional volatility and risk of liquidation. Let us assume that shareholders require a return of 40 per cent.

$$\begin{aligned} \text{WACC} &= k_E W_E + k_D W_D \\ \text{WACC} &= (40\% \times 0.3) + (10\% \times 0.7) = 19\% \end{aligned}$$

$$\frac{V}{\text{WACC}} = \frac{C_1}{0.19} = \frac{Nlm}{N5.26m}$$

The first of the four scenarios presented above is pretty unrealistic. If the amount of debt that a firm has to service is increased, the riskiness of the shares will presumably rise and therefore the shareholders will demand a higher return. Thus, we are left with the three other scenarios. It is around these three possibilities that the capital structure debate rumbles.

3.5 Modigliani and Miller's argument in a world with no taxes

The capital structure decision was first tackled in a rigorous theoretical analysis by the financial economists Modigliani and Miller in 1958. MM created a simplified model of the world by making some assumptions. Given these assumptions they concluded that the value of a firm remains constant regardless of the debt level. As the proportion of debt is

increased, the cost of equity will increase enough to leave the WACC constant. If the WACC is constant then the only factor which can influence the value of the firm is its cash flow generated from operations. Capital structure is irrelevant. Thus, according to MM, firms can only increase the wealth of shareholders by making good investment decisions. This brings us to MM's first proposition.

Proposition 1

The total market value of any company is independent of its capital Structure

The total market value of the firm is the net present value of the income stream. For a firm with a constant perpetual income stream:

$$V = \frac{C_1}{WACC}$$

The WACC is constant because the cost of equity capital rises to exactly offset the effect of cheaper debt and therefore shareholder wealth is neither enhanced nor destroyed by changing the gearing level.

The assumptions

Before going any further, some of the assumptions upon which this conclusion is reached need to be mentioned.

1. There is no taxation.
2. There are perfect capital markets, with perfect information available to all economic agents and no transaction costs.
3. There are no costs of financial distress and liquidation (if a firm is liquidated, shareholders will receive the same as the market value of their shares prior to liquidation). Firms can be classified into distinct risk classes.
4. Individuals can borrow as cheaply as corporations.

Clearly, there are problems relating some of these assumptions to the world in which we live. For now, it is necessary to suspend disbelief so that the consequences of the MM model can be demonstrated. Many of the assumptions will be modified later in the unit.

An example to illustrate the MM no-tax capital structure argument In the following example it is assumed that the WACC remains constant at 15 per cent regardless of the debt to equity ratio.

A company is shortly to be formed, called Pivot plc. It needs £1m capital to buy machines, plant and buildings. The business generated by the investment has a given systematic risk and the required return on that level of systematic risk for an all-equity firm is 15 per cent.

The expected annual cash flow is a constant £150,000 in perpetuity. This cash flow will be paid out each year to the suppliers of capital. The prospective directors are considering three different finance structures.

- **Structure 1** All-equity (1,000,000 shares selling at £1 each).
- **Structure 2** £500,000 of debt capital giving a return of 10 per cent per annum.
Plus 500,000 of equity capital (500,000 shares at £1 each).
- **Structure 3** £700,000 of debt capital giving a return of 10 per cent per annum.

Plus N300,000 of equity capital (300,000 shares at N1 each).

Exhibit 21.12: shows that the returns to equity holders, in this MM world with no tax, rises as gearing increases so as to leave the WACC and the total value of the company constant. Investors purchasing a share receive higher returns per share for a more highly geared firm but the discount rate also rises because of the greater risk, to leave the value of each share at N1.

Exhibit 21.12 Pivot plc capital structure and returns to shareholders

	Structure 1 £	Structure 2 £	Structure 3 £
Annual cash flows	150,000	150,000	150,000
less interest payments	0	50,000	70,000
Dividend payments	150,000	100,000	80,000
Return on debt, k_D	0	50,000/500,000 = 10%	70,000/700,000 = 10%
Return on equity, k_E	150,000/1m = 15%	100,000/500,000 = 20%	80,000/300,000 = 26.7%
Price of each share, $\frac{d_1}{k_E}$	$\frac{15p}{0.15} = 100p$	$\frac{20p}{0.20} = 100p$	$\frac{26.7p}{0.267} = 100p$
WACC ($k_E W_E + k_D W_D$)	(15×1.0) + 0 = 15%	(20×0.5) + (10×0.5) = 15%	(26.7×0.3) + (10×0.7) = 15%
Total market value of debt, V_D	0	500,000	700,000
Total market value of equity, V_E	$\frac{150,000}{0.15} = 1m$	$\frac{100,000}{0.2} = 0.5m$	$\frac{80,000}{0.267} = 0.3m$
Total value of the firm, $V = V_D + V_E$	£1,000,000	£1,000,000	£1,000,000

The relationship given in the tabulation in Exhibit 21.12 can be plotted as a graph (see **Exhibit 21.13**). Under the MM model the cost of debt remains constant at 10 per cent, 10 and the cost of equity capital rises just enough to leave the overall cost of capital constant.

Exhibit 21.13 The cost of debt, equity and WACC under the MM no-tax model

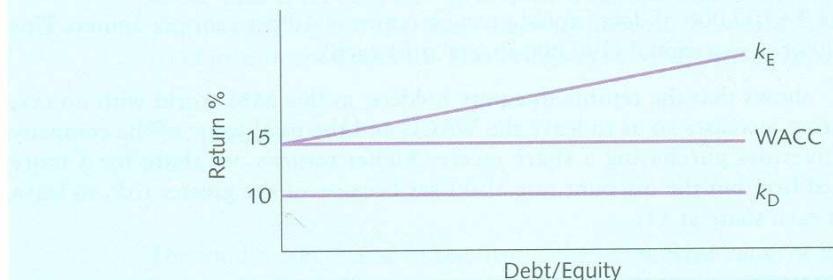
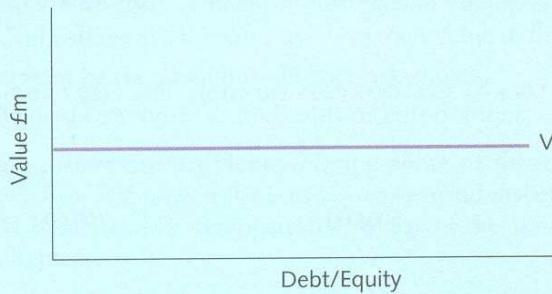


Exhibit 21.14 Value of the firm under the MM no-tax model



Proposition 2

The expected rate of return on equity increases proportionately with the gearing ratio

As shareholders see the riskiness of their investment increase because the firm is taking on increasing debt levels they demand a higher level of return. The geared firm pays a risk premium for financial risk. The increase in the cost of equity exactly offsets the benefit to the WACC of 'cheaper' debt. (Modigliani and Miller actually expressed Proposition 2 in a more technical way requiring a knowledge of the full theoretical proof to understand that 'the expected yield of a share of stock is equal to the appropriate capitalisation rate, P_k' for a pure equity stream in the class, plus a premium related to financial risk equal to the debt-to-equity ratio times the spread between P_k and r' . P_k can be taken as being equal to our k_E and r equals k_D .)

Proposition 3

The cut-off rate of return for new projects is equal to the weighted average cost of capital - which is constant regardless of gearing

MM expressed Proposition 3 differently: 'the cut-off point for investment in the firm will in all cases be P_k and will be completely unaffected by the type of security used to finance the investment. Equivalently, we may say, that regardless of the financing used, the marginal cost of capital to a firm is equal to the average cost of capital, which is in turn equal to the capitalisation rate for an un-levered stream in the class to which the firm belongs'.

Worked example 21.2 Cost of equity capital for a geared firm that becomes an all-equity financed firm in a world with no taxes

Assume that the world is as described by MM, with no taxes, to answer the following.

What would the cost of equity capital be if the firm described below is transformed into being all-equity financed rather than geared?

Perpetual future cash flow of £2.5m

$$\frac{\text{Market value of debt}}{\text{Market value of debt} + \text{Market value of equity}} = 0.40$$

$k_D = 9\%$ regardless of gearing ratio.

At a gearing level of 40%, $k_E = 22\%$.

Answer

Calculate the weighted average cost of capital at the gearing level of 40 per cent.

$$\begin{aligned} WACC &= k_E W_E + k_D W_D \\ WACC &= (22 \times 0.6) + (9 \times 0.4) = 16.8\% \end{aligned}$$

Under the MM no-tax model the WACC is constant at all gearing levels; therefore, at zero debt the return to equity holders will be 16.8 per cent.

3.6 The capital structure decision in a world with tax

The real world is somewhat different from that created for the purposes of MM's original 1958 model. One of the most significant differences is that individuals and companies do have to pay taxes. MM corrected for this assumption in their 1963 version of the model - this changes the analysis dramatically.

Most tax regimes permit companies to offset the interest paid on debt against taxable profit. The effect of this is a tax saving which reduces the effective cost of debt capital.

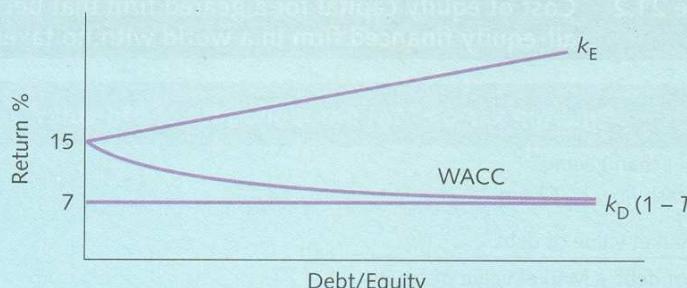
In the previous no-tax analysis the advantage of gearing up (a lower cost of debt capital) was exactly matched by the disadvantage (the increased risk for equity holders and therefore an increased k_E). The introduction of taxation brings an additional advantage to using debt capital: it reduces the tax bill. Now value rises as debt is substituted for equity in the capital structure because of the tax benefits (or tax shield). The WACC declines for each unit increase in debt so long as the firm has taxable profits. This argument can be taken to its logical extreme, such that the WACC is at its lowest and corporate value at its highest when the capital of the company is almost entirely made up of debt.

In Exhibit 21.15 the cost of equity rises but the extent of the rise is insufficient to

exactly offset the cheaper debt. Thus the overall cost of capital falls throughout the range of gearing. In a 30 per cent corporate tax environment a profitable firm's cost of debt falls from a pre-tax 10 per cent to only 7 per cent after the tax benefit:

$$10\% (1 - T) = 10\% (1 - 0.30) = 7\%$$

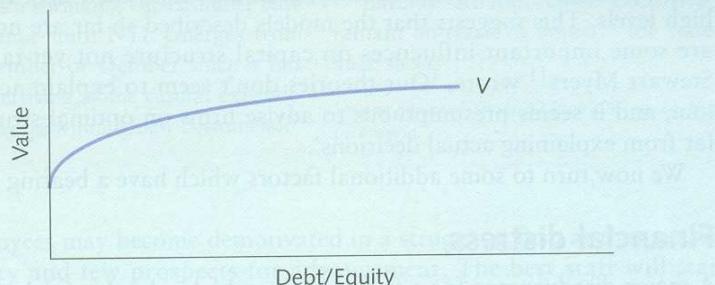
Exhibit 21.15 MM with tax



For a perpetual income firm, the value is $V = C/WACC$. As the WACC falls, the value of the company rises, benefiting ordinary shareholders. See **Exhibit 21.16**.

The conclusion from this stage of the analysis, after adjusting for one real-world factor, is that companies should be as highly geared as possible.

Exhibit 21.16 Value of the firm, MM with tax



3.7 Additional considerations

In the real world companies do not, generally, raise their debt-to-equity ratios to very high levels. This suggests that the models described so far are not yet complete. There are some important influences on capital structure not yet taken into account. As Stewart Myers wrote, 'Our theories don't seem to explain actual financing behaviour, and it seems presumptuous to advise firms on optimal structure when we are so far from explaining actual decisions'.

We now turn to some additional factors which have a bearing on the gearing level.

Financial distress

A major disadvantage for a firm taking on higher levels of debt is that it increases the risk of financial distress, and ultimately liquidation. This may have a detrimental effect on both the equity holders and the debt holders.

Financial distress: where obligations to creditors are not met or are met with difficulty.

The risk of incurring the costs of financial distress has a negative effect on a firm's value which offsets the value of tax relief of increasing debt levels. These costs become considerable with very high gearing. Even if a firm manages to avoid liquidation its relationships with suppliers, customers, employees and creditors may be seriously damaged.

Suppliers providing goods and services on credit are likely to reduce the generosity of their terms, or even stop supplying altogether, if they believe that there is an increased chance of the firm not being in existence in a few months' time.

The situation may be similar with customers. Many customers expect to develop close relationships with their suppliers, and plan their own production on that assumption, for example motor manufacturers. If there is any doubt about the longevity of a firm it will not be able to secure high-quality contracts. In the consumer markets customers often need assurance that firms are sufficiently stable to deliver on promises, for example package holiday companies taking bookings six months in advance.

Employees may become de-motivated in a struggling firm as they sense increased job insecurity and few prospects for advancement. The best staff will start to move to posts in safer companies.

Bankers and other lenders will tend to look upon a request for further finance from a financially distressed company with a prejudiced eye - taking a safety-first approach - and this can continue for many years after the crisis has passed.

Bankers may also insist that managerial freedom to act be constrained.

Management find that much of their time is spent 'fire fighting' - dealing with day-to-day liquidity problems - and focusing on short-term cash flow rather than long-term shareholder wealth. Companies are often forced to sell off their most profitable operations in an attempt to raise cash.

As the risk of financial distress rises with the gearing ratio shareholders (and lenders) demand an increasing return in compensation. The important issue is at what point does the probability of financial distress so increase the cost of equity and debt that it outweighs the benefit of the tax relief on debt? Exhibit 21.20 shows that there is an optimal level of gearing. At low levels of debt the major influence on the overall cost of capital is the cheaper after-tax cost of debt. As gearing rises investors become more concerned about the risk of financial distress and therefore the required rates of return rise. The fear of loss factor becomes of overriding importance at high gearing levels.

In the capital structure literature the balancing of the benefits of debt, such as the tax shield, with the costs of debt, such as distress costs, to achieve an optimal debt to equity ratio is known as the trade-off model.

Some factors influencing the risk of financial distress costs

The susceptibility to financial distress varies from company to company. Here are some influences:

1 The sensitivity of the company's revenues to the general level of economic activity:

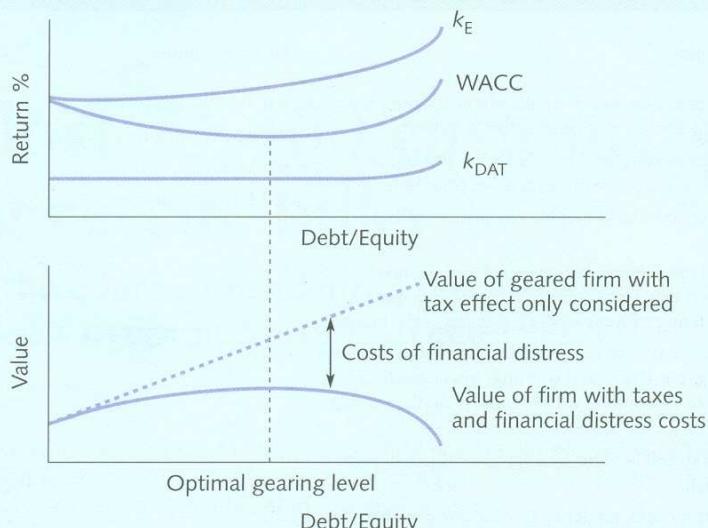
If a company's revenues are highly responsive to the ups and downs in the economy, shareholders and lenders may perceive a greater risk of liquidation and/or distress and demand a higher return in compensation for gearing compared with that demanded for

a firm which is less sensitive to economic events.

- 2 **The proportion of fixed to variable costs:** A firm which is highly operationally **geared**, and which also takes on high borrowing, may find that equity and debt holders demand a high return for the increased risk.

Exhibit 21.20

The cost of capital and the value of the firm with taxes and financial distress, as gearing increases



- 3 **The liquidity and marketability of the firm's assets:** Some firms invest in a type of asset which can be easily sold at a reasonably high and certain value should they go into liquidation. This is of benefit to the financial security holders and so they may not demand such a high risk premium. A hotel chain, for example, should it suffer a decline in profitability, can usually sell hotels in a reasonably active property market. On the other hand investors in an advertising agency, with few saleable assets, would be less sanguine about rises in gearing.
- 4 **The cash-generative ability of the business:** Some firms produce a high regular flow of cash and so can reasonably accept a higher gearing level than a firm with lumpy, highly uncertain and delayed cash inflows.

Agency costs

Another restraining influence on the decision to take on high debt is the agency cost of doing so. Agency costs arise out of what is known as the 'principal-agent' problem. In most large firms the finance providers (principals) are not able to actively manage the firm. They employ 'agents' (managers) and it is possible for these agents to act in ways which are not always in the best interests of the equity or debt holders.

Agency costs are the direct and indirect costs of attempting to ensure that agents act in the best interest of principals as well as the loss resulting from failure to get them to act this way.

If management are acting for the maximisation of shareholder wealth debt holders may have reason to fear agency problems, because there may be actions which potentially benefit the owners at the expense of lenders. It is possible for lenders to be fooled or

misled by managers. For example, management might raise money from bondholders, saying that this is low-risk lending (and therefore paying a low interest rate) because the firm has low gearing and the funds will be used for a low-risk project. In the event the managers invest in high-risk ventures, and the firm becomes more highly geared by borrowing more. As a result the original lenders do not receive a return sufficient for the level of risk and the firm has the benefit of low-interest financing

Alternatively, consider a firm already in financial distress. From the shareholders' point of view there is little to lose from taking an enormous gamble by accepting very high-risk projects. If the gamble pays off the shareholders will win but the debt holders will gain no more than the obligatory fixed interest. If it fails, the shareholders are no worse off but the lenders experience default on their securities. Another temptation is for the shareholders to take large amounts out of a business through the payment of dividends when the managers become aware of a high chance of liquidation, leaving the debt holders with little to salvage.

The problem boils down to one of information asymmetry - that is, the managers are in possession of knowledge unavailable to the debt providers. One of the solutions is to spend money on monitoring. The lenders will require a premium on the debt interest to compensate for this additional cost. Also restrictions (covenants) are usually built into a lending agreement. For example, there may be limits on the level of dividends so that shareholders do not strip the company of cash. There may be limits placed on the overall level of indebtedness, with precise capital and income-gearing ratios. Managers may be restricted in the disposal of major assets or constrained in the type of activity they may engage in.

Extensive covenants imposed by lenders can be costly for shareholders because they reduce the firm's operating freedom and investment flexibility. Projects with a high NPV may be forgone because of the cautiousness of lenders. The opportunity costs can be especially frustrating for firms with high growth potential.

Thus agency costs include monitoring costs passed on as higher interest rates and the loss of value caused by the inhibition of managerial freedom to act. These increase with gearing, raising the implicit cost of debt and lowering the firm's value.

There may also be a psychological element related to agency costs; managers generally do not like restrictions placed on their freedom of action. They try to limit constraints by not raising a large proportion of capital from lenders. This may help to explain why, in practice, we find companies generally have modest gearing levels.

Borrowing capacity

Borrowing capacity has a close connection with agency costs. Lenders prefer secured lending, and this often sets an upper limit on gearing. They like to have the assurance that if the worst happened and the firm was unable to meet its interest obligations they could seize assets to sell off in order that loans could be repaid. Thus, high levels of gearing are unusual because companies run out of suitable assets to offer as security against loans. So, the gearing level may not be determined by a theoretical, informed and considered management decision, but by the limits to total borrowing imposed by lenders.

Firms with assets have an active second-hand market, and which do not tend to depreciate. Such properties are likely to have a higher borrowing capacity than firms that invest in assets with few alternative uses.

Managerial preferences

Liquidation affects not only shareholders, but managers and other employees. Indeed, the impact on these people can be far greater than the impact on well-diversified investors. It may be argued that managers have a natural tendency to be cautious about

borrowing.

Pecking order

There is a 'pecking order' for financing. Firms prefer to finance with internally generated funds. If a firm has potentially profitable investments it will first of all try to finance the investments by using the store of previous years' profits, that is, retained earnings. If still more funds are needed, firms will go to the capital markets. However, the debt market is called on first, and only as a last resort will companies raise equity finance. The pecking order of financing is in sharp contrast to the MM plus financial distress analysis, in which an optimal capital structure is targeted. Myers (1984, p. 581) puts it this way: 'In this story, there is no well-defined target debt-equity mix, because there are two kinds of equity, internal and external, one at the top of the pecking order and one at the bottom.'

One reason for placing new issues of equity at the bottom is supposedly that the stock markets perceive an equity issue as a sign of problems - an act of desperation. Myers and Majluf (1984) provide a theoretical explanation of why an equity issue might be bad news - managers will only issue shares when they believe the firm's shares are overpriced. In the capital structure literature the term 'adverse selection problem' is used to convey the idea that managers are better informed than investors (asymmetric information) and so there is an extra degree of risk for equity investors because usually only those managers observing overpricing of their shares relative to the company's prospects would elect for a new share issue. Companies with under-priced shares would generally raise debt capital. This means that equity has 'an adverse selection premium' - a raised level of return required - making newly raised equity an expensive form of finance. Bennett Stewart (1990, p. 391) puts it differently: 'Raising equity conveys doubt. Investors suspect that management is attempting to shore up the firm's financial resources for rough times ahead by selling over-valued shares.' The pecking order idea helps to explain why the most profitable companies often borrow very little. It is not that they have a low target debt ratio, but because they do not need outside finance. If they are highly profitable they will use these profits for growth opportunities and so end up with very little debt and no need to issue shares.

Less profitable firms with many positive NPV projects to fund issue debt because they do not have internal funds sufficient for their capital investment programme and because debt is first in the pecking order of externally raised finance.

There is an argument that firms do not try to reach the 'correct' capital structure as dictated by theory, because managers are following a line of least resistance. Internal funds are the first choice because using retained earnings does not involve contact with outside investors. This avoids the discipline involved in trying to extract investors' money. For example, the communication process required to raise equity finance is usually time consuming and onerous, with a formal prospectus, etc., and investors will scrutinise the detailed justifications advanced for the need to raise additional finance. It seems reasonable to suppose that managers will feel more comfortable using funds they already have in their hands. However, if they do have to obtain external financing then debt is next in the line of least resistance. This is because the degree of questioning and publicity associated with a bank loan or bond issue is usually significantly less than that associated with a share issue.

Another reason for a pecking order is that ordinary shares are more expensive to issue (in terms of administrative costs) than debt capital, which in turn is more expensive than simply applying previously generated profits. The costs of new issues and rights issues of shares can be very expensive, whereas retained earnings are available without transaction costs.

Financial slack

Operating and strategic decisions are generally the prime determinants of company value, not the financing decision. Being able to respond to opportunities as they fleetingly appear in business is important. If a firm is already highly geared it may find it difficult to gain access to more funds quickly as the need arises. Financial slack means having cash (or near-cash) and/or spare debt capacity. This slack can be extremely valuable and firms may restrict debt levels below that of the 'optimal' gearing level in order that the risk of missing profitable investments is reduced. Graham and Harvey (2001) show that 59 per cent of US companies deliberately restrict debt 'so we have enough internal funds available to pursue new projects when they come along'. This was the most important factor determining the debt levels of these firms, out-ranking tax deductibility of debt and risk of distress.

Financial slack is also valuable for meeting unforeseen circumstances. Managers may wish to be cautious and have a reserve of cash or spare borrowing capacity to cope with a 'rainy day'.

Signaling

Managers and other employees often have a very powerful incentive to ensure the continuance of the business. They are usually the people who suffer most should it become insolvent. Because of this, managers will generally increase the gearing level only if they are confident about the future. Shareholders are interested in obtaining information about the company's prospects, and changes in financing can become a signal representing management's assessment of future returns. Ross (1977) suggests that an increase in gearing should lead to a rise in share price as managers are signaling their increased optimism. Managers, therefore, need to consider the signal transmitted to the market concerning future income whenever it announces major gearing changes.

Control

The source of finance chosen may be determined by the effect on the control of the organisation. For example, if a shareholder with 50 per cent of a company's shares is unable to pay for more shares in a rights issue, he or she may be reluctant to allow the company to raise funds in this way, especially if shares are sold to a rival. This limits the range of sources of finance and may lead to a rise in debt levels.

Industry group gearing

Suppose you are a financial manager trying to decide on an appropriate gearing ratio and have absorbed all the above theories, ideas and models. You might have concluded that there is no precise formula which can be employed to establish the best debt to equity ratio for firms in all circumstances. It depends on so many specific, and often difficult to measure, factors. One must consider the tax position of the firm, the likelihood of financial distress, the type of business the firm is in, the sale-ability of its assets, the level of business risk and the 'psychology' of the market. (For example, are rights issues perceived as bad signals, and debt issues a sign of confidence, or not?)

Given all these difficulties about establishing the theoretically 'correct' gearing level that will maximise shareholder wealth, managers may be tempted simply to follow the crowd, to look at what similar firms are doing, to find out what the financial markets seem to regard as a reasonable level of gearing, and to follow suit.

3.8 Some further thoughts on debt finance

There are some intriguing ideas advanced to promote the greater use of debt in firms' capital structure. Three of them will be considered here.

Motivation

High debt will motivate managers to perform better and in the interests of shareholders. Consider this thought: if an entrepreneur (an owner-manager) wishes to raise finance for expansion purposes, debt finance is regarded as the better choice from the perspective of entrepreneurs and society. The logic works like this: if new shares are sold to outside investors, this will dilute the entrepreneur's control and thus the level of interest of the entrepreneur in the success of the business. The firm will be run less efficiently because less effort is provided by the key person.

Or consider this argument: Bennett Stewart argues that in firms without a dominant shareholder and with a diffuse shareholder base, a re-capitalisation which substitute debt for equity can result in the concentration of the shares in the hands of a smaller, more proactive group. These shareholders have a greater incentive to monitor the firm. (If managers are made part of this shareholder owning group there is likely to be a greater alignment of shareholders' and managers' interests.) Large quoted firms often have tens of thousands of shareholders, anyone of whom has little incentive to go to the expense of opposing managerial action detrimental to shareholders' interests - the costs of rallying and co-ordinating investors often outweigh the benefits to the individuals involved. However, if the shareholder base was shrunk through the substitution of debt for equity, the remaining shareholders would have greater incentive to act against mismanagement. An extreme form of this switch to concentration is when a management team purchases a company through a leveraged buy-out or buy-in. Here a dispersed, divided and effectively powerless group of shareholders is replaced with a focused and knowledgeable small team, capable of rapid action and highly motivated to ensure the firm's success.

Reinvestment risk

High debt forces the firm to make regular payments to debt holders, thereby denying 'spare' cash to the managers. In this way the firm avoids placing a temptation in the manager's path which might lead to investment in negative NPV projects and to making destructive acquisitions. Deliberately keeping managers short of cash avoids the problem that shareholders' funds may be applied to projects with little thought to returns. If funds are needed, instead of drawing on a large pot held within the firm, managers have to ask debt and equity finance providers. This will help to ensure that their plans are subject to the scrutiny and discipline of the market.

The problem of managers over-supplied with money, given the limited profitable investment opportunities open to them, seems to be widespread, but specific examples are only clearly seen with hindsight.

The danger of poor investment decisions is at its worst in firms that are highly profitable but which have few growth opportunities. The annual surplus cash flow is often squandered on increasingly marginal projects within existing SBU or wasted in a diversification effort looking to buy growth opportunities: unfortunately these often cost more than they are worth. It is far better, say Stewart (1990), Hart (1995), Jensen (1986) and others, that managers are forced to justify the use of funds by having to ask for it at regular intervals. This process can be assisted by having high debt levels which absorb surplus cash through interest and principal payments and deposit it out of the reach of empire-building, perk-promoting, lazy managers.

Operating and strategic efficiency

'Equity is soft; debt is hard. Equity is forgiving; debt is insistent. Equity is a pillow; debt is a dagger.' This statement by Bennett Stewart (1990, p. 580) emphasises that operating and strategic problems and inefficiencies are less likely to be attended to and corrected with a capital base which is primarily equity. However, the managers of a

highly geared company are more likely to be attuned to the threat posed by falling efficiency and profitability. The failing is the same under both a high equity and a high debt structure: it just seems more of a crisis when there is a large interest bill each month. The geared firm, it is argued, simply cannot afford to have any value-destructive activities (SBU or product lines). Managers are spurred on by the pressing need to make regular payments, to reform, dispose or close - and quickly.

These are some of the arguments put forward, particularly in America in the era of massive leveraged buy-outs (LBO), junk bonds and share repurchase programmes (in the 1980s and 1990s), in support of high debt. They seem to make some sense but the downside of excessive debt must be balanced against these forcefully advanced ideas. In addition, many firms have found themselves crippled and at a competitive disadvantage because of the burden of high debt.

Exercise: 1. What is the traditional (pre-MM) view on optimal gearing levels?
2. Explain how debt finance is 'cheaper and riskier' for the firm.

4.0 CONCLUSION

The proportion of debt in the total capital of a firm can influence the overall cost of capital and therefore the value of the firm and the wealth of shareholders. If, as a result of increasing the gearing ratio, it is possible to lower the weighted average cost of capital, then all the future net cash flows will be discounted at a lower rate. It is generally observed that as gearing increases the WACC declines because of the lower cost of debt. This is further enhanced by the tax relief available on debt capital.

But as gearing rises the risk of financial distress causes shareholders (and eventually debt holders) to demand a greater return. This eventually rises to such an extent that it outweighs the benefit of the lower cost of debt, and the WACC starts to rise. This risk factor is difficult, if not impossible, to quantify and therefore the exact position and shape of the WACC curve for each firm remains largely unknown.

5.0 SUMMARY

We cannot scientifically establish a best debt to equity ratio. There are many complicating factors which determine the actual gearing levels adopted by firms. These cloud the picture sufficiently for us to say that while we accept that the WACC is probably U-shaped for firms generally, we cannot precisely calculate a best gearing level.

6.0 REFERENCES

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7.0 TUTOR MARKED ASSIGNMENT

Hickling plc has estimated the cost of debt and equity for various financial gearing levels:

Proportion of debt

$$\frac{VD}{(VD + VE)}$$

Describe and explain the factors which might lead to a rise in the overall cost of capital for Hickling.

Given the following facts about Company X, what would the equity cost of capital be if it was transformed from its current gearing to having no debt, if Modigliani and Miller's model with no tax applied?

$$k_E = 30\%$$

$$\frac{k_D = 9\%}{\frac{V_D}{((V_D + V_E))}} = 0.6$$