Contents

List of figures *viii*
List of tables *x*
List of boxes *xiii*
List of examples *xiv*
Preface to the third edition *xvi*
Acknowledgements *xviii*

Part 1 Investment basics **1**

1 Products, markets and players 2
2 Investment return and risk 40

Part II Bonds and fixed income **67**

3 Bonds and government securities 68
4 Bond strategies 102

Part III Equities **151**

5 Equities: analysis and valuation 152
6 Portfolio theory 194
7 The Capital Asset Pricing Model 222

Part IV Risk management products **259**

8 Financial futures 260
9 Options 305

Part V Institutional and international investment **355**

10 Investing institutions 356
11 International investment 389

Part VI Strategies and issues **421**

12 Investment objectives, strategies and performance 422
13 Current issues in investment theory and practice 452

Useful financial equations *473*
References and suggested further reading *476*
Glossary of terms *479*
Index *493*

1 Products, markets and players

CHAPTER CONTENTS

Introduction	2
Securities markets products	4
Risks of securities markets	8
The market: basic features	10
Market efficiency: an introduction	17
London: profile of an international financial market	24
Summary	38
Review exercises	38

Learning objectives for this chapter

After studying this chapter you should be able to

- describe how the financial markets mediate between savers and borrowers
- describe the role played by securities within the financial markets
- classify the activities of financial markets according to a range of useful criteria
- classify different types of securities according to their key characteristics of risk and return
- apply the theory of efficient markets to real-life situations
- appreciate the main historical influences on the structure and configuration of modern securities markets.

INTRODUCTION

This book is an introduction to the theory and practice of investment in securities, the collective term for ***shares*** (also referred to as ***equities***) issued by companies and ***bonds*** issued by companies, governments and other organisations.

Investment is the opposite of consumption. Consumption is the outlay of money to acquire goods or services to be consumed either immediately or at some time in the not-too-distant future. Investment is the outlay of money with the sole objective and expectation of receiving a money return at some future date or dates. An essential feature of any investment transaction is therefore 'present cash outflow, future cash inflow'. In an important extension to this principle, the sacrifice of an expected present cash inflow has in principle the same effect as a present cash outflow, and a reduction in future cash outflow has the same effect as a future cash inflow.

Investment may be in ***real assets*** or in ***financial assets***. A company seeking to increase its profits by cutting its future costs might replace an old machine by investing in a more efficient replacement which is expected to produce the same output at lower cost, or more

output but at the same cost, as the existing machine. This is an investment in a real asset, and the future cash inflow in this case takes the form of the consequent reduction in the expected stream of future costs. An investor buying shares in the same company is acquiring a financial asset, that is, a *direct* claim to an expected future stream of cash in the form of dividends and the eventual proceeds of sale of the shares. But in both cases – the company buying a new machine and the investor buying shares – each is forgoing the use of cash today in expectation of receiving cash, or of having to spend less cash, in the future.

This book is about investment in financial assets, and its particular focus is on those financial assets known as ***marketable securities***. These are shares and bonds issued in a form that enables them to be readily bought and sold among investors through an organised market or ***stock exchange***. But in order to understand fully how shares and bonds behave, we also need to look at some associated products and markets beyond the strict confines of the stock exchange itself. In response to the ever-increasing volatility and complexity of the markets since the 1970s, a wide and ever-growing range of new financial products has been developed to enable market participants both to manage the risks arising from securities activity and to speculate on future movements in securities prices, without directly buying or selling the securities themselves. These products are called ***derivative products*** (or ***derivatives*** for short) because their essential properties are derived from those of the underlying securities or other financial products on which they are based. Derivatives can be ***exchange-traded*** (either on the stock exchange itself or on a separately organised specialist exchange) or bought and sold on a private bilateral basis, as for example between an investor and her bank (***over-the-counter*** or ***OTC***). Because of the very close relationship between derivatives and their underlying securities, a whole section of this book is devoted to a detailed analysis of these risk management products.

The book naturally features three recurring themes – products, markets and players. Here are some of the more important questions that we will consider about each of them.

Products

How and why are marketable securities and the related derivative products created?
What are their inherent characteristics, and how do they differ from each other?
How are they related to each other?
How does their behaviour – and in particular their value and the returns they earn – respond to changes in external market conditions?

Markets

What is the purpose of having organised exchanges for transactions in securities and in derivative products?
How do the markets operate?
How do we know whether the markets are doing their job efficiently?
How do the markets benefit those who issue and invest in securities – and the economy in general?

Players

Who issues and invests in securities?
Who uses derivative products?
What are the typical objectives of different market participants, and what strategies do they adopt in order to achieve their objectives?

We round off the introduction to this chapter with a brief look at how this chapter and the rest of the book as a whole are organised.

The question of what makes the investor 'tick' is central to any study of securities investment. For this reason we devote the whole of the next chapter, Chapter 2, to the standard model of the investor as a rational self-interested wealth-maximiser who evaluates potential investment opportunities purely in terms of just two criteria – ***risk*** and ***total return***. The mathematical expression of this proposition underpins the whole of finance theory and is developed in detail in that chapter. Possible shortcomings to this approach are explored in Chapter 13 where we examine some open issues in finance.

The next two parts of the book explore in detail the two principal types of marketable securities. Part II, comprising Chapters 3 and 4, looks at the world of bonds or – to give them their more generic title – ***fixed income securities***. Part III, comprising Chapters 5, 6 and 7, analyses equities. Part IV, comprising Chapters 8 and 9, covers the main derivatives products, ***financial futures, options*** and ***swaps***. Part V, comprising Chapters 10 and 11, provides an introduction to the institutional and international dimension of securities investment. Part VI, comprising Chapters 12 and 13, takes a more detailed look at different types of investors and the types of investment strategy they adopt, and ends with a review of open issues in investment theory and practice.

We now turn to securities market products, to explore the different types of securities on offer to investors in securities markets, including shares, bonds and derivative products. We then explore the risks of these products before describing the basics of stock markets, in particular the benefits of such markets and their classifications. The chapter then looks at the concept of market efficiency and the efficient market hypothesis before ending with a historical profile of the London stock market.

SECURITIES MARKET PRODUCTS

The main investment products traded in the stock market – shares and bonds – are financial claims on the companies, governments and other organisations that issue them in order to raise funds for their medium and long-term financing needs. These claims become the assets of investors who buy them, and liabilities of, or claims on, the entities that issue them. They form just a part (though a very important part) of the broader universe of products used by the financial markets to channel funds from economic sectors in financial surplus (*surplus sectors*) to economic sectors in financial deficit (*deficit sectors*). It is important to appreciate where marketable securities fit into the wider financial markets, and how the financial markets as a whole fit into the ***real economy***, where non-financial or real assets (goods and services) are produced and distributed. By contrast, a financial asset is one that consists solely of a claim on a future stream of cash.

When governments, companies and other organisations raise money from investors to finance their activities, they create many different forms of financial claims for investors to

purchase. Claims created in a form that can continue to be readily bought and sold after their original issues are known as securities. If these securities have been accepted for trading on a recognised market such as a stock exchange, they are called marketable securities.

Securitised financial claims form an important part of the wider universe of financial assets, which also includes non-securitised claims such as bank deposits, loans and mortgages. We call all of these assets *financial assets* because they simply represent claims on future cash flows. Those cash flows may or may not be fixed in their amount or timing, but what distinguishes them from other assets – real assets – is that ownership of them does not automatically confer any rights over, or entitlement to, non-financial assets such as the factories owned by a company or the facilities owned by a government.

This distinction between financial and real assets follows the distinction drawn in classical economics between ***product markets*** and ***factor markets.*** In product markets goods and services are distributed to their end-users. In factor markets the two inputs into the production process – labour and capital – are bought and sold. Financial assets are traded in, and created by, the market for capital. So producers and distributors of real goods and services raise funds from investors in the ***primary capital market***. The investors then buy and sell among themselves, in the ***secondary market*** and in the associated derivatives markets, the risks and the associated returns that they have acquired through these indirect stakes in the real economy.

Box 1.1 Confusing terminology 1: When are securities not securities?

The terminology of finance can be very confusing. This is the first of a series of boxes in the text which will highlight these confusions as they arise.

There is no real risk of confusion when the language of finance uses specially coined words (such as ***annuity*** – see Chapter 10) or when it uses common words in senses quite different from their everyday meanings (such as ***straddle*** – see Chapter 9). But a problem may arise when we use common words in senses that are only subtly, but significantly, different from their everyday usage. Possibly the best example of this is ***risk***, which we analyse in detail in Chapter 2.

A further problem arises when we use the same word to mean different things in different contexts. *Security* is one such term. In the context of this book, we are normally using it to mean a readily transferable financial claim such as a share or a bond. But the word is also used in a quite different sense, to denote an asset or assets that a borrower or debtor has pledged as collateral security for a debt or other obligation, on terms giving the lender or creditor direct recourse to those assets if the debtor defaults on the payment obligation. The commonest example from the world of personal finance is the ***mortgage*** that secures a loan on the borrower's house. Companies regularly pledge their assets as security for their borrowings, so securities can be secured or unsecured. And there is nothing to stop securities being used as (collateral) security, for example, for a bank loan.

Basic products: shares and bonds

Companies, governments and other organisations raise funds to finance their activities by issuing a wide range of securities which differ from each other

- in the timing and variability of the future returns they offer to investors

- ❍ in the nature and scale of the risks the investors accept
- ❍ in the rights of monitoring and control enjoyed by the investors – and in their rights of recourse if things go wrong or if their expectations are not fulfilled.

When investors buy different types of securities issued by a company, they are sharing out among themselves the rights to the cash flows arising from the company's future operations, as well as the risks associated with those cash flows. In the simplest case, a company issues a single type of security, known in the United Kingdom as ***ordinary shares*** and in the United States as ***common stock***. Such shares give each investor a proportionate right to the residual value of the company, that is to any distributions of cash from net earnings (after all expenses, taxes and claims of other providers of finance have been satisfied) and to the eventual proceeds of liquidation of the firm (after all outstanding liabilities have been met).

The upside potential of shares is entirely unlimited, because however large the residual income and net assets might be, all of it belongs to the shareholders. But the downside risk of shares is *not* unlimited. The principle of ***limited liability*** limits the amount of shareholders' funds at risk to the value of the ***share capital*** each of them has agreed to subscribe. If a businessman (or woman) trades in his own name as a principal on his own account, and fails to pay his business liabilities, his trade creditors can normally have recourse through the courts to all his personal assets as well as to his business assets. But a limited liability company is an entirely separate legal entity from its shareholders; its assets are not their assets and its liabilities are not their liabilities. So shareholders in a limited liability company do not risk anything above and beyond the money they have promised to subscribe for their own shares. If they have already subscribed all the funds originally promised, they have no further liability at all (unless, of course, it can be proved that the company was established or operated with the deliberate intention of defrauding creditors, in which case further legal sanctions may apply to the shareholders and to the directors they appoint to manage the company on their behalf). Shareholders cannot lose more than 100 per cent of their initial stake in the business. This may sound like cold comfort, but later in this book, in Part V on derivative products, we shall come across highly leveraged instruments where buyers can actually lose far more than 100 per cent of their initial investment and – even more alarmingly – sellers too expose themselves to a potentially unlimited liability.

In contrast to ordinary shares, all other types of security issued by a company have one feature in common: both the upside profit potential and the downside risk are to a greater or lesser degree limited or mitigated by a binding contract (hence the use of the word 'bond' to denote the most important class of such securities). The investors forgo the upside potential enjoyed by the shareholders in favour of a fixed return in the form of periodic interest, and they receive additional compensatory benefits in two forms.

- ❍ Their claims on the company are legally enforceable; they have contractual rights to certain payments by the company, typically for periodic interest on the funds provided plus repayment of those funds on a fixed or determinable date in the future.
- ❍ Their claims rank ahead of those of the ordinary shareholders, who (as in the case where there are no other financial claims on the company) are entitled to what is left after all other claims have been satisfied.

Box 1.2 Confusing terminology 2: Treasury stock and treasury stock

Although the stock exchange is the market where securities of all types are traded, the words 'stock' and 'stocks' as applied to individual securities have different meanings in the United Kingdom and in the United States. The US usage of 'stocks' corresponds to 'shares' in the United Kingdom, though both countries use the generic term 'equities' in the same way. More confusingly still, in the United Kingdom some types of debt security (notably government bonds) are commonly referred to as 'stock', so a government bond issue might be called '8% Treasury Stock due 2013', but in the United States, 'treasury stock' refers not to debt securities issued by the Treasury Department of the US government but to a company's holding of its own shares that it has repurchased on the market, and instead of cancelling, holds in its own 'treasury' for possible future reissue.

Because the claims of debt providers enjoy greater priority and protection than those of equity holders, this class of investors has a much smaller say in the running of the firm and much less control over the actions of its managers. Company legislation provides general protection against fraudulent misuse of investors' money and also requires the regular publication of accounts which, though nominally forming part of a report from the directors to the shareholders, are in practice provided for the protection of all stakeholders in the company. Debt providers may also be able to impose specific covenants restricting the company from taking certain actions that might jeopardise the recovery of their claims, but unlike shareholders, they have no automatic or statutory right to be informed or consulted about the ongoing management of the firm. When the providers of debt are considering what return they should receive for lending money to a company, and what additional safeguards they should seek, a major factor for them is the protection already afforded by the fact that the shareholders' financial claims are subordinated to their own; so the size of this 'equity cushion' behind them in the queue for funds plays a key role in their calculations.

Not all organisations that issue securities issue shares. By far the most important exception is the government itself, which does not have limited-liability shareholders in the conventional sense but (as we shall see in Chapter 4) does issue debt on a much bigger scale than any other organisation in the entire market. One unusual but helpful way to think of the government is not as a limited liability company but as an unlimited liability partnership, with all the taxpayers as the partners. In practical terms, the ability of a government to service debt denominated in its own currency is unlimited, because it can always call on the partners to pay sufficient taxes to meet its debt obligations. It is for this reason that government debt is generally regarded as the nearest thing to a risk-free security; the *equity cushion* is effectively unlimited. This risk-free aspect of government debt is also reflected in the fact that investors accept a lower return for investing in it than in any other comparable security.

Derivative products and other exotic animals

Investing in securities exposes investors to many risks, of which the most obvious is the risk of an unexpected fall in the value of an investment. Similarly, *not* investing also exposes them to risks, such as the risk that the price of a security they intend to purchase

in the future will increase unexpectedly so that it will be more expensive to acquire. The secondary market offers investors an efficient way of managing some of the risks they have incurred by purchasing securities, but conventional secondary market transactions do not provide certainty of future outcomes (in terms of the prices at which securities can be bought and sold for settlement at some more or less remote future date), or true insurance in the sense of protection against negative outcomes without the loss of positive opportunities.

To meet these and other investor needs, since the 1970s the markets have evolved a large and still growing family of derivatives products, of which the most important are futures and options. ***Financial futures*** enable investors and others to fix now the prices at which individual securities (or whole market indices of securities) can be bought or sold for settlement at a future date. ***Options*** give buyers the right to buy or to sell securities (or indices) at a fixed price at a future date but only if it is to their advantage to do so. While futures and options therefore differ crucially from each other in respect of the relative fixity of their outcomes, they are similar to each other (and different from cash market transactions) in that they enable market participants to trade indirectly in large amounts of securities by making just a very small down payment, by way of ***premium*** (in the case of options) or ***initial margin*** (in the case of futures). These are highly geared instruments, because the profit or loss on the investor's down-payment will reflect the change in value of the full amount of the position in the underlying securities.

Cash products and derivative products can be combined into hybrid instruments incorporating features from both. A bond that is convertible into ordinary shares is a combination of a conventional bond and an option to purchase the shares, and the returns and risks of such instruments are a complex amalgam of the individual building blocks.

RISKS OF SECURITIES MARKETS

We have already identified a key characteristic that marketable securities share with all other financial assets. This is the sacrifice of a known amount of cash today (the purchase price) in return for the right to receive a more or less uncertain stream of cash in the future. Common sense suggests that the price an investor will be prepared to pay in order to acquire such a right to future cash flows will depend on three things: their amount, their timing, and the degree of uncertainty in each. In Chapter 2 we shall give formal mathematical expression to these factors, but for the purpose of this introductory analysis we need to consider them only in qualitative terms.

The variability and uncertainty of future cash flows from an investment can be caused by many factors. One way to classify them is as either internal or external. Internal factors are those that are expressed or implied in the terms of the investment itself. External factors result from the interaction of external events with the internal provisions of the investment contract. The two types of factor are not mutually exclusive: an investment can be subject to uncertainty as a result of both types of factor at the same time.

Internal risk factors

At one extreme, the contractual terms of an investment may dictate the exact amounts and due dates of all future cash flows to which the investor is entitled. For example, a bond issued by a company will typically provide for the investor to receive annual interest at a

Box 1.3 Confusing terminology 3: Risk and uncertainty

In everyday conversation, 'risk' is nearly always bad: I risk losing my job, you risk having a traffic accident. But in the specialised language of finance, risk is usually synonymous with uncertainty, and uncertainty cuts both ways, as it refers to the possibility that an outcome can be better, and not just worse, than what we expect or hope for.

A key problem besetting most investment calculations is how to model future uncertainty. Is the spread of possible outcomes distributed symmetrically around the expected outcome, or is it skewed in one direction? Does the probability of possible outcomes diminish in a predictable way with increasing divergence from the expected outcome? To what extent is the distribution of past outcomes a reliable guide to the future?

While uncertainty embraces pleasant as well as unpleasant surprises, the very fact that an investment may give surprises at all is generally regarded by investors as a bad thing.

specified percentage rate for a fixed number of years, with repayment of the principal on the final interest payment date. Here the basic contract allows for no intrinsic uncertainty as to timing or amount, though the small print of the contract may provide for early termination if, for instance, the company is acquired by another company, or gets into financial difficulties, or materially changes the type of business in which it is engaged. In any event, if the company fails to meet its contractual commitments, investors can sue it in the court, just as they would sue any other defaulting debtor.

At the other extreme, the stream of future cash flows to which an ordinary shareholder is entitled is defined (partly by company law and partly by the terms of the company's own articles of association), but only in purely qualitative terms as a pro rata share of the periodic dividend and of the proceeds of an eventual liquidation. The amount and timing of the dividends actually paid will depend both on the company's future profits and on the directors' policy for distributing those profits to shareholders rather than retaining them for further investment in the company's business. The shareholders are partially compensated for this high degree of uncertainty by legal provisions which give them a much greater control over the running of the company than that enjoyed by the providers of debt finance. But this control is exercised by the shareholders as a body and rather infrequently (for instance, at annual general meetings), and the degree of control exercised by an individual shareholder with a small fractional holding is negligible.

External risk factors

When we consider the external factors affecting the variability and uncertainty of future cash flows, the situation becomes very much more complicated.

In the case of the bond with ostensibly fixed cash flows, two quite separate problems emerge. The first is that the issuer might be unable to pay the contracted amounts of interest and principal in full and on time. This could be for any of a number of reasons, the most common being an unexpected deterioration in its profitability or in its cash position.

Another possibility is that the company is theoretically able to discharge its debt but is prevented by some external agency from doing so. For instance, its profits might have been accumulated in a foreign country which imposes restrictions on the repatriation of earnings and thus prevents the company from meeting its obligations.

The second potential source of uncertainty stems from the secondary market mechanism that enables investors to realise the value of their securities by selling them on to other investors. Whereas the future cash flows from an investment might be relatively certain in amount and timing (as, for instance, in the case of bonds issued by the government), the value attached by the market to those cash flows, and hence the value that can be realised by a seller on the secondary market, fluctuates in response to external factors, the most important of which is the prevailing *level of interest rates*. If interest rates generally have risen since the investor originally purchased a government bond in the primary market, then – all other things being equal – the value of the investment on the secondary market will have fallen. This is examined in greater depth in Chapter 3.

Under external factors we should also consider some of the main factors affecting company earnings and hence the dividends paid on shares. Apart from the general commercial success of the company, a variety of technical factors in the financial markets can have a significant impact. A principal such factor is the impact of *fluctuating foreign exchange rates*. A company that incurs most of its expenses in its home country but sells its output mainly abroad will experience a drop in its net earnings if the currencies of the countries where it sells suffer a loss in value without a corresponding rise in its selling prices. We shall see just how important this and similar factors are when we consider in detail the strong international dimension of the London stock exchange and of the largest companies whose shares are traded there.

Possibly the most pervasive external factor affecting the value of returns on securities is inflation, or the fluctuation in the *purchasing power of money*. This factor is unique in that it affects all securities in a particular country over a specified time period. Investors in a conventional UK government bond enjoy near-certainty in terms of the amount and timing of their future cash flows, but have no guarantee of what those cash flows will buy in comparison with the purchasing power they sacrificed when they made the original investment; by contrast, investors in a UK government ***index-linked bond*** do enjoy protection against inflation, but the protection is only watertight if they buy the bond at original issue and hold it for its entire life (see Chapter 3). Conventional wisdom has it that investment in equities provides a long-term protection against inflation, but economists are divided on this issue. The return on equities is a residual, representing whatever is left over after all other claims on a firm have been satisfied, and the way in which inflation affects the value of that residual is very complex.

THE MARKET: BASIC FEATURES

Market players

The markets in securities and derivatives are similar in many ways to other organised markets. They bring together as much as possible of the aggregate potential supply and demand in order to reduce transaction and search costs, improve liquidity and build confidence. Most importantly, they aim to promote the discovery of fair and uniform prices. But each of these functions takes on a special importance in the case of investment products because their dependence on unknown and unknowable future events makes their value both uncertain and opaque.

A closer study of the roles taken by the players in the securities markets further reinforces the view that these markets differ quite significantly from conventional

markets in goods and services. In most conventional markets, each participant usually takes on the role of either a producer/seller or consumer/buyer. The goods or services flow in one direction through the market, from the producers at one end to the consumers at the other, while the money flows in the opposite direction. The securities markets conform to this pattern only to a very limited extent. It is true that a key function of the financial markets is to channel surplus funds from households and other economic agents who have more than enough for their current consumption requirements (surplus sectors), to others who can put to productive use funds in excess of what they have currently available (deficit sectors). So companies and governments issuing new securities in the *primary market* are indeed supplying assets for the market to distribute to purchasers. But once a new marketable security has been sold to an initial investor, this is not the end but only the beginning of the story. A key feature of the stock market is that a security can continue to be bought and sold among market participants in a *secondary market* for as long as it has value, that is, for as long as it is expected to produce some future cash flows for the holder. So financial assets do not just pass through the market as if along a one-way street; they also circulate within it. In this respect the market for securities may appear to be similar to markets for second-hand or previously-owned goods such as cars, houses or antique furniture. But the big difference is that the value of a security, unlike that of a house or a car, is not affected by the fact that it has been previously owned *per se*, still less by how well it has been looked after, or even by how old it is. The value of a security depends exclusively on its expected future cash flows, so it is not a backward-looking but a forward-looking concept.

The structure of the securities markets is further complicated by the fact that the companies and governments that supply new securities to the market are also active as buyers of other issuers' new securities and as buyers and sellers of previously issued securities. And as if all this were not enough, in many securities markets, and especially in those of the most advanced economies, it is possible for investors to sell securities they do not already own. All of this makes the job of organising, regulating and understanding the market rather more complex than in the case of a conventional market for goods or services.

The range of firms providing services within the financial markets includes not only pure intermediaries between buyers and sellers (like property agents – or marriage brokers!), but also various types of institution that transform the essential characteristics of savings as they flow from investors to borrowers. The relationship between investors and borrowers is largely determined by a permanent and unavoidable conflict of interest. The most obvious conflict (but it is only one of many) is that investors want to be able to cash in their investments at any time and at short notice, whereas borrowers like to have the use of investors' money for as long as possible. Ideally borrowers would like to have indefinite use of investors' funds, with no legally enforceable contractual requirement to repay them. Different types of *financial intermediaries* have developed different types of financial product to reconcile this conflict, enabling both investors and borrowers to come closer to their objectives.

In the introduction we have already identified some of the general benefits of an organised market in securities. We now discuss these in a little more detail.

Benefits of organised markets

Reduction in search costs

In the absence of an organised market, investors would be confronted with an almost impossible task in their search for suitable outlets for their surplus funds, and borrowers would face a comparable challenge in their quest for finance on exactly the terms they require. The stock exchange and other financial marketplaces substantially eliminate search costs for both groups.

Reduction in transaction costs and uncertainty

If investors and borrowers were left to strike deals with each other individually and in isolation, the costs of executing each transaction could be very high, as it would involve lengthy negotiation and the expense of engaging lawyers and other professional experts to draft documentation acceptable to both sides. And in such a do-it-yourself, hit-and-miss world, there would be no guarantee that investors would get what they had bargained for. The stock exchange reduces transaction costs and uncertainties in several ways. It effectively vouches for the terms of the investment (without of course guaranteeing actual payment) by imposing ***listing requirements*** on issuers and on the securities they issue. The exchange also reduces the actual costs of transactions by means of economies of scale. The financial markets provide standard settlement mechanisms which not only reduce transaction costs but also ensure that investors get exactly what they order, and that they pay only against delivery.

Price discovery and market efficiency

An important test of the efficiency of a market is the fairness of its prices. The market absorbs information and responds by producing a price, called ***price discovery***. A highly developed stock exchange like the London market has complex rules to ensure as far as possible that all information relevant to the determination of a fair price for a security is made available to all potential investors through the market, quickly, simultaneously and at minimum cost. It also has rules to prevent price-rigging, insider dealing and market manipulation by one or more parties acting in concert to establish an artificial price level. These rules encourage the belief that the market price is a fair price, and this belief attracts both issuers and investors. The higher the proportion of aggregate supply of, and demand for, a security that is channelled into the market, the fairer the price will actually be, thus generating a virtuous circle. But if issuers or investors suspect that a significant volume of business is being transacted off-market by parties who have access to better prices or information, they will want to do the same. This takes supply and demand away from the market, and makes it less likely that the market price will be a fair one, so that the investors' and issuers' suspicions become self-fulfilling, generating a vicious circle. This issue of market efficiency is so central to the theory and practice of the securities markets that further sections are devoted to it later in this chapter and in Chapters 12 and 13.

Protection and monitoring – 'after-sales service'

The stock exchange offers a measure of investor protection by requiring issuers to provide a regular and continuing flow of information about their business and about any factors that might affect the prices of their securities. Companies whose securities are listed on the London stock exchange are required not only to provide more financial and other information than is required under the basic company law and accounting disclosure rules, but also to adhere to additional codes of ***corporate governance*** which further safeguard the rights of public shareholders by regulating the relationship between them and the directors they appoint to manage companies on their behalf.

Liquidity

The term ***liquidity***, as applied to a financial market, is frequently misunderstood, perhaps because it has a familiar but quite different meaning, similar to solvency, when applied to a company or an individual. In the context of a financial market, liquidity refers to the ease with which a participant can buy or sell in the required quantity without affecting the market price. Shares in the largest, most actively traded, companies are generally more liquid than those in very small companies. There are a number of reasons for this, and we explore these in more detail later in this book. A stock exchange can employ a variety of measures to ensure that there is some liquidity in the shares of even the most obscure small company.

For liquidity purposes, what matters is not the total size of the share issue but the amount of the ***free float***: that is, the proportion of the issue that the market considers to be not in the hands of long-term investors but potentially available for trading at any time. Examples of large companies whose free float is significantly restricted by such long-term holdings are Sainsbury and Associated British Foods, where the interests of the founding families (in ABF's case, the Weston family) currently control respectively about 20 per cent and 54 per cent of the total equity.

Box 1.4 Liquidity and lobster pots

The late Julian Baring, for many years a stockbroker in the City of London, is reputed to have kept a lobster pot hanging from the ceiling above the desk where he used to meet his clients. It was intended as a reminder to them that it was much easier to get into the shares of a small company than to get out of them again. Liquidity is a measure of the relative ease of buying *and selling* a security.

Transformation …

So far we have considered only the basic types of marketable investment products which are issued directly by end-users of funds (companies, governments and other organisations) to end-investors (individuals and others who are looking for profitable homes for their surplus financial resources). But in the introduction to this chapter we noted that the financial markets perform an additional function of transforming investors' surplus resources into financial instruments that achieve a better compromise between the investors' and the borrowers' objectives. This transformation takes three principal forms.

… of maturity

The provision of an active secondary market in shares and bonds already goes a long way towards meeting the conflicting needs of investors (who want ready access to their money) and borrowers (who want to be able to use it for as long as possible and to maintain control over the timing and amount of repayments), but this is only one of several ways in which the financial markets achieve maturity transformation.

For example, a key function of the banking system is to take short-term deposits from savers and to invest them either in longer-term loans or in marketable and other securities. In this case the transformation is accomplished by means of an intermediary (the bank) accepting as a principal the full liability to repay deposits on demand. The risk of a temporary mismatch between the depositors' demands for funds and the corresponding inflow of interest and principal repayments from the bank's longer-term borrowers falls fairly and squarely on the bank's own shoulders and is borne directly by its shareholders.

… of risk

The financial markets offer a variety of ways in which investors can reduce the risks arising from their investments, or (more strictly) can reduce their risks without suffering a commensurate reduction in the returns they earn. The most obvious example is the way in which the banking sector offers this facility, by pooling the deposits of many savers and investing them in a very wide range of loans and other assets. This reduces individual savers' risk to a fraction of what it would be if, instead of entrusting their comparatively small wealth to the bank, they lent it all to a small number of individuals. The bank further reduces the risk incurred by the saver by means of its superior ability to monitor its borrowers and because any losses are borne first by its own shareholders.

Transformation of risk is also achieved by a range of ***collective investment*** vehicles such as pension funds, insurance companies, ***unit trusts*** (called ***mutual funds*** in the United States), ***open-end investment companies*** (abbreviated to ***OEICs***) and ***investment trusts*** (called ***closed-end investment companies*** in the United States). This confusing plethora of names will be discussed at greater length in Chapter 10 when we analyse the business of different types of investing institution. For the moment it is sufficient to note that all of these are investment vehicles that pool investors' comparatively small sums and invest them in much larger and professionally managed portfolios of securities in order to reduce risks by means of diversification. As a form of intermediation they differ from the banking model in that the full amount of all profits and losses arising from the asset portfolio flows through to the savers, with no equity cushion to protect them from unforeseen losses – but with no upper limit on their profits either.

… of size

Whatever form the intermediation takes, one benefit is that small investors are freed from many of the practical constraints and diseconomies of scale which would otherwise reduce the efficiency of their savings. A small investor who attempted to achieve the same degree of diversification as a bank or a collective investment vehicle would very quickly find that transaction costs (commission, stamp duty and so on) consumed a disproportion-

ately large amount of his or her funds, and the time required to monitor all the investments would leave very little time for anything else.

Classifications of organised markets

Financial markets are sometimes classified either as pairs of mutually exclusive opposites or according to some other more or less formal criterion. We have met a few of these already, such as primary and secondary, underlying and derivative, exchange-traded and over-the-counter (or OTC). It is useful to expand a little on some of these and to add some more to the list.

Primary and secondary

A ***primary market*** is a market in which new securities are issued and sold to investors for the first time, while an active ***secondary market***:

- ❍ provides a means for investors continuously to adjust the risk and return characteristics of the securities in their portfolios in the light of changing circumstances and market conditions
- ❍ plays a key role in reconciling the conflicting time horizons of investors and borrowers
- ❍ provides a reference point for the fair pricing of new issues of securities.

Most importantly, by providing investors with the possibility of an early exit from their investments, a secondary market reduces the returns they are prepared to accept. This ultimately has the effect of reducing the cost of capital to the economy at large, so that more investments in real projects are made and the productive capacity of the economy expands more quickly than would otherwise be the case.

Exchange-traded and over-the-counter (OTC)

The primary focus of this book is investment in exchange-traded securities, but in view of the close relationship between different financial markets it is important also to have an understanding of some of the OTC markets. Although a universal feature of OTC markets is that deals are struck bilaterally between two parties without any intervention or supervision by an exchange, they differ radically among themselves in terms of how public or private they are. The biggest and best known OTC financial markets are the interbank markets in deposits and in foreign exchange.

We might note in passing that the foreign exchange market is another case of confusing terminology: although the buying and selling of different currencies against each other is universally described as foreign exchange, it does not take place on a formally organised exchange like the stock exchange. But despite the absence of a formal exchange, the market is in fact very public, in that the participants in it have full and immediate access to all the other participants' prices and to the flow of information affecting those prices. The foreign exchange market is also quite heavily regulated, in that its members adhere to common codes of conduct which are enforced by their trade associations, by central banks

and by financial services industry regulators. Similarly, the market in ***interest rate*** and ***currency swaps*** (which are described in greater detail in Chapters 8 and 11 respectively) is entirely an OTC market, but there is a high level of price transparency and the product is largely standardised through the use of commonly agreed documentation. Nevertheless, the main advantage of an OTC market is preserved, which is that each transaction can be tailored to the exact needs of the participants.

Capital and money markets

The markets in which securities are traded are described collectively as the capital markets, because they provide the means for companies, governments and other organisations to procure their medium and long-term capital needs, and for investors to find suitable homes for their surplus capital. The money markets (which, incidentally, are almost without exception OTC markets) are where substantially the same players, but primarily the banks, adjust their short-term liquidity surpluses and deficits. The distinction between capital and money markets is by no means clear-cut. Some products trade in only one of these markets. For example, both ***interbank deposits*** and ***certificates of deposit*** (the latter sharing with securities the characteristic of transferability) are traded exclusively in the money markets, whereas shares are traded only in the capital markets. But high-quality debt securities with a remaining maturity of under one year are clearly suitable instruments for the management of short-term liquidity, so the distinction becomes blurred. The informal distinction is that the money markets are concerned with transactions with a maturity of less than one year, whereas the capital markets deal in longer maturities, but the connection between the two remains very close. For instance, one of the principal ways in which the banks adjust their temporary liquidity mismatches is by entering into ***repurchase*** or ***repo*** agreements, whereby one bank raises short-term funds from another (or from the central bank) by selling and simultaneously buying back for a later date its holdings of government bonds. The headline interest rate published by the Bank of England, which is universally regarded as the benchmark for the entire structure of sterling interest rates, is in fact the rate at which the Bank lends money to the banking sector through repo transactions.

Quote-driven and order-driven

Within the subset of markets organised as formal exchanges, an important distinction is the way in which prices are formed and transactions actually come about. In the traditional, quote-driven stock market, a specific type of member firm known as a ***market-maker*** (or a ***jobber*** in the pre-1986 London stock exchange) has an obligation to quote continuous two-way prices at which it is prepared to buy and sell a security from or to other market participants. Usually this commitment is to deal in a predetermined and advertised quantity known (on the London exchange) as *normal market size*. The market-maker trades as a principal for its own account and entirely at its own risk, and the normal commercial imperative of securing business without actually going bankrupt in the process is a powerful force in ensuring that the market remains transparent and competitive. For smaller companies in particular, the existence of committed market-makers is widely considered to be an essential condition for the maintenance of liquidity in their shares.

The development of electronic trading technology in recent years has led to a rapid

spread of an alternative process known as *order-driven trading*. In an order-driven market, members input into a central computer system their buy and sell orders for a security; these may be their own orders as principals or they may be orders they have been asked to execute for customers. The computer system has two functions; it broadcasts the details of all the current orders to the market at large, and it automatically executes buy and sell orders whenever they can be matched in terms of price and amount. Both the London stock exchange and the exchange for associated derivatives products are now predominantly order-driven, and more will be said about each of them later in this chapter and in Chapter 8.

Market sectors and indices

Market sectors and market indices are an important means employed by the market for classifying securities, and especially shares. The well-established practice of informally classifying the stock market into industry sectors is largely a matter of convenience. Individual researchers and analysts (and even whole teams of them) cannot claim to cover the entire market in any depth, so they specialise instead in industries or sectors, to make it easier to compare one company with its peers – and easier also for investors to compare one analyst with another! It is important to remember that the classification into sectors is both informal (it has no basis in the way the exchange itself is actually organised) and to an extent subjective.

Some sectors are more homogenous than others in terms of the businesses carried on by the companies in them, but even the most apparently homogenous sector (like food retailing, for example) still embraces a range of companies that would not regard themselves as being exclusively in direct competition with each other; Tesco competes with Sainsbury as a food retailer, but also with many other non-food retailers in the sale of electrical and household goods; Marks & Spencer is classified as a general retailer, despite having a significant food-retailing operation which brings it into competition with Tesco. A diversified company might therefore potentially qualify for inclusion in more than one sector. A key objective of such a company's investor relations activities is to 'persuade' the financial community to allocate the company to the sector where it will enjoy the highest rating.

The structure and composition of stock market indices is an altogether more formal matter. We shall see later (Chapter 5) how the main UK stock market indices, of which the most important is the FTSE 100 index of the 100 largest share issues by total value, are compiled, and what their significance is for investors and analysts. The important thing to note, in connection with sectors and indices, is that these are not merely passive ways of conveniently classifying securities; how investors regard a share, and therefore what they are prepared to pay for it, is in part determined by the sector and index to which it belongs.

MARKET EFFICIENCY: AN INTRODUCTION

Significance of market efficiency

We have already mentioned the importance of the *price discovery* function in financial markets. The key input into a market is information, and the key output from a market is

the price. The effectiveness of a market depends on many things, including the quality of its settlement mechanisms, the level of transaction costs and the reputation of its members for integrity and financial soundness, but above all it requires all participants to be confident that the prices quoted are fair. Note that we say 'fair' and not 'correct'. In the absence of perfect foresight about the future, nobody can actually know the correct price for a security. But if the market price reflects all available past and present information that might be relevant to the future, then the price can be said to be fair in the sense that it offers a fair return for the risks perceived to be incurred, and the market is said to be efficient. Another way of expressing this is to say that a price that reflects all available relevant information, although it will almost certainly turn out to have been 'wrong' with the benefit of hindsight, is not likely to be *systematically* either too high or too low.

The idea of markets as being efficient or inefficient causes much emotion and argument in investment circles. This is no doubt partly because, in practice, the great majority of investment advisers act as if markets are inefficient, and therefore they are justified in their attempts to make *excess profits*: that is, profits that more than compensate for the risks actually incurred. But if markets are in fact fully efficient in the above sense, the rationale on which most investment advice and policy is based can be shown to be invalid, because the widespread practice of trying to *pick winners* by studying past prices or other available information cannot lead to *systematically* higher returns.

This debate has become more heated as the proportion of indirect investment (that is, investments held indirectly through pension funds and insurance companies) has increased. Individual investors have only themselves to blame if they try to pick winners and are unsuccessful at it. But if pension fund managers adopt a picking-winners strategy when securities markets are in fact efficient, beneficiaries of the fund will suffer. Firstly, the turnover of the fund (and hence transaction costs) will be unnecessarily high, as the pension fund managers think they see opportunities to invest in winners. Second, the portfolio may well be badly diversified if the managers have concentrated on holding a few potential winners. Chapter 6 will show that diversification is the key to optimising the relationship between portfolio return and risk. Failure to diversify not only increases risk unnecessarily but also – according to the standard market model (the Capital Asset Pricing Model or CAPM) to be studied in Chapter 7 – gratuitously exposes the investor to additional risks for which the market pays no return at all.

The rapid growth in the amount of indirect investment has increased the need to monitor the investment strategy and performance of financial intermediaries such as pension funds. Given that these institutions could adopt the *fair return for risk* strategy prescribed by the CAPM, this model offers a suitable benchmark against which to assess their actual investment strategies. In fact, the CAPM has been used to develop a series of performance measures, adjusted for risk, which can be used to assess any portfolio's performance and hence investment managers' ability, if any, to *beat the market.* Prior to the development of the CAPM, performance was often judged solely on return with little direct account being taken of risk. Even today, tables showing investment trust and unit trust performance, while giving exhaustive details about the returns achieved, show only rudimentary information about the relative riskiness of each trust's investment strategies. Without such information it is not possible to make meaningful comparisons of performance.

Chapter 2 is concerned with the problem of capturing the concepts of risk and fair returns mathematically. The whole of Chapter 10 is devoted to a description of the major institutions involved in the securities markets and how they affect the investment scene.

Chapter 12 considers how performance can be measured using the CAPM. The remainder of this section explores in primarily qualitative terms the question of how efficiently the stock market in fact incorporates available information into securities prices, and introduces the main implications of the different levels of efficiency (known as weak, semi-strong and strong) for investment strategy.

Test of market efficiency – the 'random walk'

It is not possible to observe directly what information is and is not reflected in the price of a particular security at a particular time, so the question of how efficiently markets absorb information has to be approached indirectly. This can be done in three ways:

- by examining short-term price movements
- by searching for long-term trends in prices and returns
- by means of event studies, which examine the behaviour of market prices around the time of identifiable external shocks such as the announcement of a takeover or of a major new contract.

The first way to test the efficiency of markets is to examine successive very short-term price movements for autocorrelation, that is, for signs of a significant correlation between successive price changes. Although the market does have a very long-term tendency to go up, this tendency is negligible in the context of short-term price fluctuations, so that in an efficient market the current price also reflects the market's expectation of what will be a fair price in a few minutes' time. 'If one could be sure that a price would rise, it would have already risen' (Samuelson 1965). We can infer from this that in an efficient market the price will move only in response to genuinely new information, and as information is genuinely new only if it bears no relation to what came immediately before, we would expect in an efficient market that successive price movements are as likely to be in opposite directions as in the same direction: that is, that autocorrelation between price movements would be very low.

Such a situation – where the correlation between successive price movements is close to zero – is popularly referred to as the 'random walk of a drunken man', or more formally as the *random walk theory*, but an important implication of this choice of terminology is often overlooked. It is of course true that a drunken man walks at random, in the sense that it is impossible to predict from his last step the direction in which his next step will take him. But an important extension of this observation is that the most likely place to find a drunken man is very close to the spot where he was last seen, as his random steps will have a tendency over time to cancel each other out and to lead him back to his starting point. In formal statistical terms, the best available unbiased estimate of his current position is the position at which he was last seen. Transferring this analogy to the price of a security in an efficient market, we can say that if the market is reacting only to genuinely new information, then the best unbiased estimate of a fair price is the current price, which is as likely to be too high as it is to be too low.

The idea that security prices in an organised market might follow a random walk was first implied by Bachelier (1900) in a study of commodities traded on the French commodities markets. From the 1930s to the 1960s, the random walk theory was also

tested successfully on company share prices. Cowles (1933 and 1944) pointed towards what has become the most controversial consequence of random share-price movement – that even professional investors cannot consistently outguess the market.

Proofs of the random walk theory can take several forms. As with all tests of theories involving future expected prices or returns, past actual prices or returns are used for the tests (since these are easier to measure). So, for the random walk theory, sets of past share prices are tested for dependence. One such test involves calculating the correlation coefficients of consecutive (or lagged) share price changes over daily and longer intervals. Tests have been carried out on both UK and US share databases, and the serial correlations, as correlation coefficients for time series data are called, have been found to be around zero. For example, Moore (1962) looked at weekly share price changes from 1951 to 1958 on 29 US shares selected at random and found an average serial correlation coefficient of -0.06.

More recent tests of the random walk theory have benefited from more accurate price series data. Price changes over varying periods of time from intra-day to several years, and for individual shares and portfolios of shares, have been tested for serial correlation, giving rise to a range of results. Although there is now some evidence that the autocorrelations, particularly for longer time horizon price changes, are significantly different from zero, they are still close enough to zero to prevent forecastable trends from appearing in time series of prices, and for share price series to look remarkably like random walks.

The second way of approaching the problem is to look at the big picture to see if there are in fact patterns in share prices over time. Clearly if we take a very long view, say over the last 100 years or so, there is one obvious pattern: shares are more likely to go up than down, though even this pattern is prone to reversals which are neither minor nor short-lived – nor widely predicted. In an early study of supposed trends in share prices, Roberts (1959) demonstrated that a fictitious time series generated from random numbers could produce a pattern that was very similar to a chart tracking actual share prices.

What perhaps matters more than just the direction of raw share prices is the question whether there are patterns to be found in the *returns* on shares, and in particular whether such patterns can be systematically exploited to earn more than a fair return for the risks incurred. The central problem in any such study is that in order to determine whether a given return is fair or not, it requires assumptions to be made about what constitutes a fair return for risk; in short, it needs a model of the risk–return relationship. Consequently, a study that appears to show that (contrary to the random walk theory) it is possible to earn excess returns by studying past price movements, is also open to the interpretation that it is the underlying risk/return model that is flawed, and systematic excess returns are in fact not possible. Fama (1998) examined a wide rage of studies from the 1980s and 1990s which seemed to cast doubt on the randomness of share price movements, and concluded that quite small changes in the underlying assumptions about risk and return were sufficient to make the supposed anomalies disappear.

The third type of test, the *event study*, was first undertaken by Ball and Brown (1968) and by Fama et al. (1969) and has subsequently been repeated many times. The purpose of these studies is to establish how quickly and accurately share prices find a new equilibrium level after publication of major events, such as unexpected earnings or dividend

Box 1.5 How wrong can you be?

On the last trading day of 1999, the FTSE 100 index of leading UK shares reached an all-time closing high of 6930. Market commentators, in their routine year-end reviews and forecasts, almost unanimously predicted a further year of positive returns in 2000. In the event, the market registered a negative return of almost 5 per cent. Undeterred, at the end of 2000, they predicted a recovery in 2001. The actual return on the market for 2001 was negative 12.9 per cent. And the whole process was repeated at the end of 2001: a predicted recovery was followed by an even greater negative return of 22.3 per cent. At the end of 2002, sentiment finally turned negative and many now predicted a fourth straight year of losses for 2003. The market did indeed begin the year by sinking a further 15 per cent, but from March onwards it staged a strong if sporadic recovery, and not only made up for the first quarter's losses but actually finished the year with an overall positive return of 21.2 per cent.

What lesson is to be learned from this? Study of the UK stock market from 1900 to 2004 shows that the correlation between successive years' returns is very low. The probability of a negative return in any particular year is about 38 per cent, regardless whether the markets went up or down the previous year – or went down for each of the previous three years.

announcements, or mergers and acquisitions. Generally, such studies have found that share prices are quick to adjust not only to the more obvious implications of such shocks but also to their less direct consequences. Again, however, all such studies must adopt a particular risk/return model as a benchmark.

The efficient markets hypothesis

That share prices appear to follow a random walk is an interesting result, and proving it or attempting to disprove it occupied many researchers throughout the 1960s and 1970s. But what remained to be shown was *why* share prices followed a random walk. There was plenty of evidence, but a formal theory was missing. What was needed was a model of share price behaviour to explain the random walk. This gap was filled by a more general model based on the concept of efficiency of the markets in which shares are traded – the efficient markets hypothesis (EMH).

In a perfect market, information would be freely and instantaneously available to all, there would be a homogenous product, no taxes, perfect competition amongst investors and no transaction costs associated with trading. Under these conditions, each share will be fairly valued, in the sense that all information will be fully absorbed into the share price and investors will be in agreement that the current share price is as likely to go up as go down. Thus, the share price can, until new information is released, be considered to be at an equilibrium value. As new items of information about the company's prospects come in, the company's share price will absorb this information and move to a new equilibrium value. It can be shown that, in such a *perfect market*, successive price changes will be independent and prices will follow a random walk. This follows, first because the news inherent in the new piece of information concerning the company might be either good or bad, but it will certainly be independent of the last piece of information (otherwise it would not be new), and so the price change towards the new equilibrium value will be independent of the last price change. Second, because of the number of traders in

the market and the lack of barriers to trading, the information (known to everyone) will be absorbed so quickly that the new equilibrium value will be achieved straightaway.

However, in a market where transaction costs are high enough to deter trading or where information is slow to reach the majority of investors, and speculative dealing by those who have the new information is in some way prevented, it might take several days or weeks for new information to be impounded in the share price. There would then be a trend in the share price as it moved towards its new equilibrium value. In such an imperfect and inefficient market, share price changes would be serially dependent rather than random, and excess returns could be made either by spotting the trends from charts or by trading on new information before it was fully impounded into the share price.

So a random walk theory for share prices reflects a securities market where new information is rapidly incorporated into prices and where abnormal or excess returns cannot be made from spotting trends or from trading on new information. In practice we know such securities markets are not perfect in the sense of having no transaction costs, no taxes and so on. We also know that it is an impossible task to make all information immediately available to everyone and to give everyone the ability to interpret instantaneously the information correctly. Nevertheless, judging from the evidence on random walks, securities markets do appear to be relatively efficient at reflecting new information in prices. The question then becomes one of how efficient the markets are.

Fama (1970) decided to define different markets in terms of their level of efficiency, where the level reflected the type or scope of information that was quickly and fully reflected in price. He defined three levels of efficiency, each level designed to correspond with the different types of *picking winners* investment strategies which were used in practice to try to achieve excess returns.

Example 1.1 shows the three different 'strengths' of the EMH corresponding to different levels of efficiency.

- In the *weak form* of efficiency, each share price is assumed to reflect fully the information content of all past share prices.
- In the *semi-strong form*, the information impounded is assumed to include not only that given by all past share prices, which are of course public knowledge, but all publicly available information relevant to the share value. This includes, for example, company announcements, brokers' reports, industry forecasts and company accounts.
- The *strong form* of the EMH requires all known information to be impounded in the current share price, whether publicly and generally available or not. The strong form will thus include what is known as *insider information*, for

Example 1.1 Efficient markets hypothesis

Prices fully reflect all available information

Weak form	**Semi-strong form**	**Strong form**
Prices fully reflect past prices	Prices fully reflect all publicly available information	Prices fully reflect all information

example details of an impending takeover bid known only to senior management of both parties to the bid.

As we saw earlier, markets that are efficient in quickly reflecting new information prevent investors from making excess profits using that information. Thus, in a weak-form efficient market, investors would be unable to pick winners by looking at charts of past share prices or by devising trading rules based on share price movements. In a semi-strong form efficient market, investors with access only to publicly available information would not be able consistently to make excess profits by buying shares, say on announcement of favourable new information. For example, if an investor decided to buy shares on each announcement of unexpectedly high earnings, this information would be available to all and the share prices concerned would quickly reflect that information and increase. Even if the shares did not reach their new equilibrium values immediately (because it can take time for new information to be fully analysed), the prices at which the investor could buy the shares would be unbiased estimates of these new equilibrium values, as likely to be above as below them. Finally, if the strong form of the EMH held, no investors could generate excess returns whatever information they used, whether a 'new' analysis of the company accounts or a hot tip from the managing director, since in a market with this level of efficiency, share prices would already reflect all information relevant to the shares, whether publicly available or not.

It can be seen from the above that the ability of investors to pick winners and make excess returns using new information is directly related to the speed and efficiency of a market at absorbing that information.

The EMH does not say that investors will never beat the market and will never make large profits. What it does say is that, on average, over a period of time, investing is a *fair game*. 'You win some, you lose some.' This fair game concept is useful in that it allows the different levels of the EMH to be tested. Instead of trying to measure the amount of information impounded in share prices, we can look to see if, by using different pieces of information, excess returns can be made. If they can, the market is not efficient with respect to that information. If they cannot, it is one piece of evidence supporting efficiency, but not a conclusive proof. However much evidence is piled up in its favour, the EMH can never be formally proved, leaving open the possibility that some investor might have an as yet untested way of picking winners consistently over time.

The EMH, as described above, is a more comprehensive model of share price behaviour than the random walk theory, referring not just to past share price movements but to all information pertaining to the share. It is a model that helps us to understand how markets operate in practice and how closely they approximate to theoretically perfect markets. Figure 1.1 places the EMH in perspective relative to the other models of share price behaviour.

In Figure 1.1, the perfect market has the most stringent requirements concerning market behaviour. The attraction of the perfect market is that it is an assumption underlying the major security pricing models, such as the CAPM. In the real world, we know that the conditions assumed in perfect markets do not prevail. There are transaction costs associated with trading in securities, and information concerning securities is not freely and instantaneously available to all. However, if transaction costs are not excessive, if information is fairly readily available and if there is sufficient competition among investors, markets will be reasonably efficient in the sense that the securities' prices will

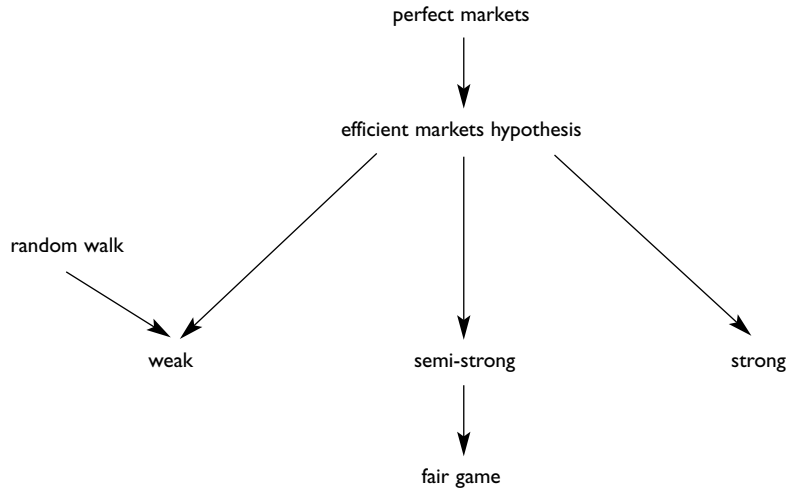


Figure 1.1 Models of share price behaviour

reflect the information available, and reflect it quickly enough to prevent excess returns being consistently made through trading on that information.

The EMH remains exactly what it says it is – a hypothesis – and this means that it cannot be proved but only disproved. During the 1980s and 1990s, many studies appeared that challenged it, mostly by claiming to detect anomalous trends or patterns which created opportunities for genuinely systematic excess returns. We shall examine more recent research we discuss the wider implications of EMH for investment strategy in Chapter 12.

LONDON: PROFILE OF AN INTERNATIONAL FINANCIAL MARKET

We shall base our analysis primarily on the London stock exchange and the corresponding exchange in derivative products, the London International Financial Futures Exchange (LIFFE), which is now known as 'Euronext.liffe' following its 2001 merger with the Euronext group of continental European exchanges. Many of the standard texts on the securities markets concentrate on the US markets, which are the largest in the world. London and Tokyo occupy second and third place (their order depending on the measure used), so the choice of London may appear somewhat limiting. But as we shall see from the more detailed description of the London market later in this chapter, this is not the case. The London stock exchange, like the UK financial markets of which it is a central element, has retained a uniquely international focus throughout its long history. The primary function of the US and Tokyo markets has always been to meet the enormous capital requirements of their respective domestic economies, but the London market has long enjoyed a primacy in the business of cross-border investment. For much of its history it actually played only a subsidiary role in the raising of capital for the UK domestic economy. Despite the troubled history of its domestic economy for much of the latter part of the twentieth century, the United Kingdom has the world's largest surplus in external trade in

financial services and is unique in the relative size and significance of its financial sector. The London markets offer possibly the widest range of financial products of any of the world's major financial centres, and thus provide the opportunity for comprehensive illustration of the theoretical principles and practical techniques explained in this book.

Early development: to the beginning of the Industrial Revolution

The London stock exchange likes to trace its own history to an incident in 1760 when a group of some 150 brokers who had been thrown out of the Royal Exchange in the City of London because of their rowdy behaviour decided to form a club of their own. The Royal Exchange itself had been established in 1571 as a place where merchants, bankers, brokers and financiers of all sorts would eventually come together to conduct the burgeoning business associated with the rapid expansion of England's overseas trade, not only with Europe but also with the Americas and with Asia. London's main competition as a trading and financial centre came from the Netherlands, initially from Antwerp (until that city was occupied by the Spanish in 1585) and then from Amsterdam, which arguably developed the world's first stock exchange in the early seventeenth century. The protracted wars between England and Holland from 1654 to 1672 eventually tipped the balance of commercial power in favour of London, which by 1700 was the world's largest city and port.

The early 1720s brought a major setback in the further development of London as a financial centre. The rampant speculation and the associated fraudulent dealings that came to be known as the South Sea Bubble ruined many fortunes and reputations. One of the longer-term adverse consequences was a ban on the formation of joint-stock (limited liability) companies, other than by the cumbersome and expensive means of a specific Act of Parliament. This hindered the emergence of an effective capital market for more than a century. The ban began to be relaxed from the 1820s onwards, partly in response to the failure of nearly a hundred banks in England and Wales in 1826, but it was not fully lifted until the mid-1850s, by which time the Industrial Revolution was well under way.

In the intervening years the stock exchange had found more than enough to do elsewhere. Between 1739 and 1815 the British government had been at war more often than at peace, and this had produced an ever-increasing deficit which had to be financed through bond issuance. And the stock exchange had also been very busy channelling capital to overseas ventures which were perceived to be more profitable than any opportunities available domestically. The 1820s, for instance, had seen the first in what was to become a regular cycle of boom-and-bust forays into South American investments. This fascination with foreign investment may seem strange in an era when communications were so tenuous, but it is worth remembering that before the railways were built, the long-established network of maritime communications meant that London merchants 'felt' closer to Amsterdam and to Hamburg than they did to any city in the north of England.

This openness to continental influence also showed itself in the steady stream of merchants and bankers who migrated to London from Europe, including several who became so acclimatised that they eventually came to typify the very essence of London merchant banking: the Barings from Bremen in 1762, the Rothschilds from Frankfurt in 1798, and the Schroders from Hamburg in 1804.

The Industrial Revolution and after: 1840–1914

The expansion of the railway and mining industries from the 1830s onwards dramatically increased the requirement for fixed capital investment, but the evidence is that this was initially met on a local and regional level. Between 1830 and 1847 the number of provincial stock broking firms increased from just seven to more than 500, and many provincial stock exchanges opened for the first time. From the middle of the nineteenth century it is possible to talk about the emergence of a genuinely national market in securities, but its importance should not be exaggerated. First, apart from banking, mining and railways, most industries were less capital-intensive than is often supposed, and certainly much less capital-intensive than their modern counterparts. When businesses got into financial trouble, it was less often for lack of long-term fixed capital than because of insufficient liquidity or working capital: that is, short-term revolving bank facilities to finance the production and distribution cycle. Second, many entrepreneurs and family-owned businesses were reluctant to expose themselves to the scrutiny and control of outside shareholders who were complete strangers, so they preferred to finance themselves internally (by retaining profits for reinvestment in the business), by forming partnerships or by raising money through the agency of trusted contacts such as local lawyers. This reluctance to issue new equity but rather to fund expansion internally or by means of debt or ***preference shares*** (all of which involved less loss of control than the issuance of new equity) in fact characterised the financing of British industry right up until the period after the Second World War.

As far as the London stock exchange was concerned, the century after 1815 was a period of almost continuous peace. The growth in government debt slowed down considerably, and was compensated for by a rapid expansion in overseas investment opportunities. Overall, the history of the exchange in the nineteenth century was dominated by a series of bubbles, scams, and failures and near-failures of broking and banking firms. The last and in some ways most significant of these was the Barings crisis of 1890, when that bank found itself unable to meet its liabilities because it had over-invested in Argentinian bonds which proved to be illiquid. The Bank of England averted a broader crisis of confidence by organising the other major London banks into a guarantee fund to keep Barings afloat.

Table 1.1 summarises the growth and the changing composition of the stock exchange in the 60 years leading up to the First World War. It should be explained that most of these securities were ***debentures*** (secured bonds) and other types of non-ordinary-share securities such as preference shares.

Towards the end of the nineteenth century, differences in the pattern of corporate organisation and structure began to emerge between the United Kingdom and the United States, which would have important repercussions for the later development of the stock markets in those countries. At first sight, both countries were characterised by an outbreak of merger mania in the 25 to 30 years before the First World War, but closer inspection reveals key differences, which are partly attributable to the fact that successive UK governments stuck to a policy of free trade while those of its main emerging competitors – the United States, newly unified Germany and Japan – sought to foster the growth of domestic companies behind a wall of protectionism. As a result, whereas US mergers tended to have an expansionist and aggressive flavour, many of those in the United Kingdom were essentially defensive. US mergers tended to be *vertical* – that is, to seek

Table 1.1 Nominal value of securities on London stock exchange, 1853 and 1913

	1853		1913	
	£ million	%	£ million	%
Domestic:				
Gilts and municipals	854	70	1,290	11
Railways	194	16	1,217	11
Other companies	66	6	2,079	19
Total domestic	1,114	92	4,586	41
Foreign:				
Governments	70	6	3,746	33
Railways	31	3	2,931	26
Total foreign	101	9	6,677	59
Grand total	1,215	100	11,262	100

Source: Morgan and Thomas (1962).

savings, efficiencies and growth opportunities through the integration of several connecting links in the supply, production and distribution chain – whereas UK mergers tended rather to take the form of *horizontal* alliances between direct competitors in an industry. To this extent, many UK mergers performed some of the essentially defensive functions of trade associations and cartels. One result of this trend was that big business, in the now familiar form of an enterprise organised into formal divisions under the ultimate control of a strong unifying centralised management, emerged rather later in the United Kingdom than in the other three major industrial countries.

The wars and their aftermath: 1914–79

The First World War radically refocused the attention of the London financial markets, and the stock exchange in particular, on the domestic scene. From the 1920s onwards the financing needs of domestic industry increased sharply just at a time when the strains of waging the first 'total war' had seriously weakened the country's external finances and reduced the volume of surplus capital available for overseas investment. Fundraising by companies on the stock exchange continued to be dominated by offerings of non-equity securities. In addition to the reasons noted above, a deliberate government policy of keeping interest rates low from 1931 onwards, to deter the potential influx of foreign capital and its destabilising effect on the currency, made debt the most attractive source of new capital. There was also a huge increase in the amount of the National Debt, and the first signs emerged of *crowding out* of the private sector by the ever-expanding public sector.

The Second World War reinforced most of these trends but there were new factors too. At the outbreak of war exchange controls were imposed, radically restricting the ability of UK residents (individuals as well as companies) to purchase foreign currencies to finance investment or spending abroad. The United Kingdom emerged from the war with crippling external debts which led to further loss of overseas assets; the external value of sterling became a chronic problem and as a result exchange controls remained in place for a total of 40 years. Although industry was generally very liquid at the end of the war,

from 1950 onwards its appetite for new outside capital increased sharply as the economy finally began to emerge from wartime controls and resume a growth path.

For the first time, companies began to look to the equity market to fill a large part of this financing gap. Many factors were at work here. On the positive side, the increasing popularity of fully funded pension schemes meant that pension funds had a need for a long-term asset whose value would grow in line with the growth of the economy, and bonds – with their fixed maturities and repayment amounts – did not meet this requirement. On the negative side, although the returns on bonds were relatively certain in monetary terms, high and unstable inflation and interest rates, which dogged the UK economy for most of the period from the late 1950s until the 1980s, undermined the value of these returns in real terms, belying the ostensibly low-risk nature of bond investment.

The rapid growth in equity financing also meant that the divorce between ownership and control, which UK industrialists had tended to resist, now gathered pace. It is no coincidence that the same period saw an equally rapid growth in the popularity of the hostile takeover bid. Shareholders with no history of long-term loyalty to a company proved to be susceptible to persuasion by predators who saw opportunities to extract more value out of their companies by replacing incumbent management and merging the business into larger units.

Despite the presence of exchange controls and the economic problems that beset the UK for much of the second half of the twentieth century, the City responded with typical flexibility and opportunism to develop new lines of business to replace those that were in decline. Foremost among these was the development of the ***euromarkets***.

In the 1950s and 1960s a number of factors had come together to cause a substantial build-up in the holdings of US dollar balances by governments, companies and other organisations that were not resident in the United States. These factors included (for governments) the importance of keeping a large part of their external reserves of gold and foreign currency in the form of US dollars (which until August 1970 were backed by the US government's promise to convert them into gold at the fixed price of US$40 for one ounce). The chronic external trade deficit of the United States also led to an accumulation of dollar balances overseas. For various reasons it became either unattractive or inadvisable for these balances to be held directly in accounts at the US offices of banks. One reason (particularly among governments that were not wholly sympathetic to the United States) was the fear of possible expropriation. A more technical reason was the imposition by the US authorities of maximum interest rates on deposits held in US domestic banking offices, and of a withholding tax on interest paid on such deposits. As a result, from the 1950s onwards it became increasingly popular to redeposit these dollars in banking offices in London. As time passed, the practice spread to other financial centres and to other currencies, so that a general definition of a ***eurocurrency*** is any currency held in a bank outside the country of the currency itself. So sterling balances held in Paris banks were eurosterling balances, deutschmark balances held in Luxemburg banks were euromarks, and so on. A key benefit of holding balances in this way was that it not only escaped the possibly unwelcome attentions of the US authorities but also was subject to a lighter regulatory regime in its adoptive country than was applied to banking and other transactions in the local currency.

Dollar balances held outside the United States did not lie idle in their offshore bank accounts, but were actively lent out to governments, companies and other borrowers in the eurodollar loan market, and before long an active market in eurocurrency bonds

Box 1.6 Confusing terminology 4: Euromarkets and euromarkets

For the first 30 years or so of their existence, the euromarkets – complete with their eurocurrencies, eurobonds and eurodeposits – were relatively easy to understand and caused little confusion. It was only necessary to remember only one central principle – that a euro-instrument was one issued outside the country of the currency in which it was denominated – and almost everything else was plain sailing. Then in the late 1990s 12 of the 15 countries in the European Union joined together in a single currency called the euro, which was introduced on 1 January 1999 and finally replaced their national currencies on 1 January 2002. Together these countries are known as the eurozone and their governments now issue bonds not in their former national currencies but in the euro. The euro is therefore their domestic currency for all purposes, including capital markets transactions.

It is usually apparent from the context whether a writer or speaker using the word 'euro' either on its own or in a compound (like 'eurobond') is referring to the European single currency or is using the term in its older and still current sense of an instrument or market outside the country of its currency. The usual (but by no means universal) convention in writing about the single currency is to spell it with a lower case 'e' ('euro' not 'Euro'), and in compound expressions to keep it separate from other words; so, for example, a euro bond is a bond denominated in euros, whereas a eurobond is a bond issued outside the country of the currency in which it is denominated.

sprang up. London continues to dominate the global eurobond business, with an estimated 75 per cent share in total *origination* (new issues) of this product.

Changes since 1979

Exchange controls were completely abolished, without prior warning, by the incoming Conservative government in 1979. This simultaneously increased the attractiveness of the United Kingdom as a destination for inward investment, and opened up the more or less unlimited possibilities of overseas investment for UK individuals and institutions. As Table 1.2 shows, the proportion of UK equities held by foreign investors had sharply declined by some 50 per cent during the 1960s and 1970s to a level of just 3.6 per cent in 1981, but in the following decade it more than tripled and continued to rise steadily to its present level of almost one third of the entire market.

This radical change in the external environment for investment was soon matched by far-reaching changes in the way the securities markets themselves were organised.

When the first edition of this book appeared in the early 1980s, a UK graduate embarking on a career in the City of London could still say that he (or – less probably – she, for it was only ten years since membership of the exchange had been opened to women) was going to work 'on the stock exchange'. That venerable phrase denoted a specific geographical location: 'on' had its origin in 'on the floor of', and the stock exchange tower itself – all 26 floors of it – had physically dominated the central City skyline when it was opened by the Queen just ten years earlier. But the phrase also described equally precisely and exclusively a discrete set of activities – the trade in UK government securities and in shares issued almost exclusively by UK companies. To be absolutely precise, the phrase described two closely interlinked but strictly distinct activities: the trading in

Table 1.2 Beneficial ownership of UK shares 1963–2004, by percentage of equity owned

	1963	1969	1975	1981	1989	1990	1991	1992	1993	1994	1997	1998	1999	2000	2001	2002	2003	2004
Rest of the world	7.0	6.6	5.6	3.6	12.8	11.8	12.8	13.1	16.3	16.3	24.0	27.6	29.3	32.4	31.9	32.1	32.3	32.6
Insurance companies	10.0	12.2	15.9	20.5	18.6	20.4	20.8	19.5	20.0	21.9	23.5	21.6	21.6	21.0	20.0	19.9	17.3	17.2
Pension funds	6.4	9.0	16.8	26.7	30.6	31.7	31.3	32.4	31.7	27.8	22.1	21.7	19.6	17.7	16.1	15.6	16.1	13.7
Individuals	54.0	47.4	37.5	28.2	20.6	20.3	19.9	20.4	17.7	20.3	16.5	16.7	15.3	16.0	14.8	14.3	14.9	14.1
Unit trusts	1.3	2.9	4.1	3.6	5.9	6.1	5.7	6.2	6.6	6.8	6.7	3.0	2.7	1.7	1.8	1.6	2.0	1.9
Investment trusts	11.3[1]	10.1[1]	10.5[1]	6.8[1]	1.6	1.6	1.5	2.1	2.5	2.0	1.9	1.9	1.9	2.1	2.2	1.8	2.3	3.3
Other financial institutions					1.1	0.7	0.8	0.4	0.6	1.3	2.0	4.1	5.1	4.6	9.9	10.5	11.1	10.7
Charities	2.1	2.1	2.3	2.2	2.3	1.9	2.4	1.8	1.6	1.3	1.9	1.4	1.3	1.4	1.0	1.1	1.2	1.1
Private non-financial companies	5.1	5.4	3.0	5.1	3.8	2.8	3.3	1.8	1.5	1.1	1.2	1.4	2.2	1.5	1.0	0.8	0.7	0.6
Public sector	1.5	2.6	3.6	3.0	2.0	2.0	1.3	1.8	1.3	0.8	0.1	.01	0.1	–	–	0.1	–	0.1
Banks	1.3	1.7	0.7	0.3	0.7	0.7	0.2	0.5	0.6	0.4	0.1	0.6	1.0	1.4	1.3	2.1	2.2	2.7
Total[2]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1 Includes investment trusts
2 Components may not sum to the total because of rounding

Source: Office for National Statistics.

securities as principal or market-maker by *stockjobbers*, and the purchase and sale of such securities on behalf of clients by *stockbrokers* acting as their agents, in a *single-capacity* system in which firms could engage in one but not both of these activities. The external demarcation line between the stock exchange and the rest of the financial services industry, and in particular the banking sector, was drawn almost as clearly as this internal division between jobbing and broking. The corporate finance departments of the larger UK merchant banks worked closely with stockbrokers in connection with new issues and takeovers, but otherwise the direct links between the banking industry and the stock market were relatively tenuous.

This was all changed by the wave of deregulation which swept through the UK economy in general, and the financial sector in particular, in the course of the 1980s. The initial thrust of government attention on the City had been concentrated quite narrowly on the restrictive stock exchange practice of charging agreed minimum commission rates for securities transactions. But as the implications of dismantling this monopolistic practice gradually sank in, it became clear that exposing the stock exchange to the free flow of competitive market forces would create risks and opportunities which made it both necessary and desirable to attract into the exchange significant new resources in the form of external capital. The abolition of minimum commission rates in 1986 thus ultimately became the trigger for a whole series of changes which collectively came to be known as Big Bang:

- Ownership of member firms, which had previously been unlimited partnerships of either brokers or jobbers, was opened up to outside limited companies.
- All firms became broker/dealers and were able, if they wished, to operate in a dual capacity as agents and as principals.
- Minimum scales of commission were abolished.
- Individual members ceased to have voting rights.

Trading moved from being conducted face-to-face on a market floor to being performed via computer and telephone from separate dealing rooms located either ‘upstairs’ (that is, in the member firms’ suites of offices on the upper floors of the Stock Exchange tower) or, increasingly, from within member firms’ own premises located elsewhere in the City.

The effect of these changes was as rapid as it was dramatic. Within a couple of years and with very few exceptions, the existing firms of brokers and jobbers alike were bought up by other financial institutions (primarily, but by no means exclusively, by the UK commercial and merchant banks) and thus contributed to the formation of what became the ‘one-stop shops’ that characterise the City landscape today. That was but the first wave of ownership changes; a second, more protracted wave in the 1990s led to the current situation where the UK capital markets are dominated by the presence of a handful of foreign-owned, mostly US-based, investment banks.

Concurrently with the liberalising measures of Big Bang came equally radical moves to improve and systematise the chaotic and inadequate arrangements for investor protection in the United Kingdom. These moves imposed new layers of regulation on the investment industry at the same time as Big Bang was deregulating it. The new regime came into force with the passing of the Financial Services Act 1986, which among many other changes subsumed the previously virtually independent and self-governing stock exchange for the first time into a broader statutory framework. This framework is loosely

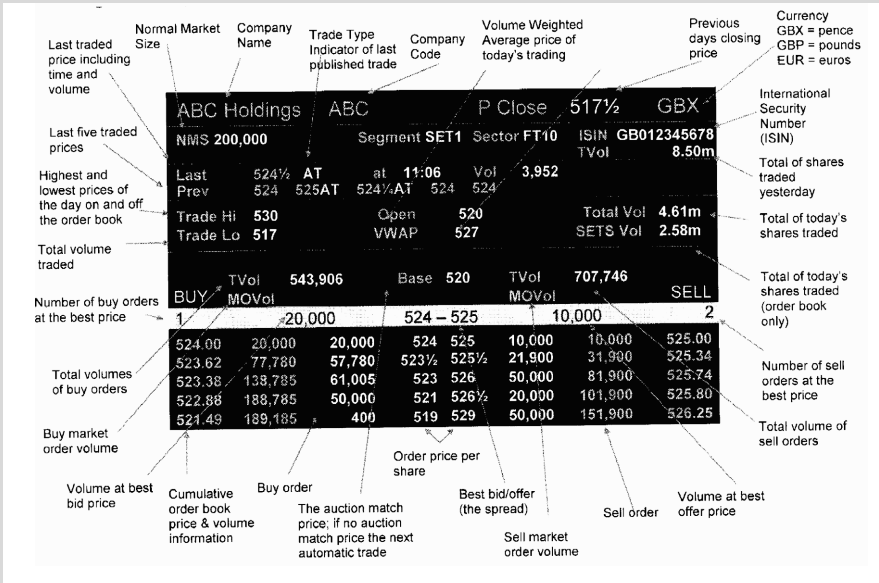
described as *self-regulation* but is more accurately defined as *practitioner-based regulation*. The basic regulations were imposed from above by legislation but the detailed procedural rule books, and their enforcement, were delegated to a number of approved practitioner-led associations, each of which specialised in a segment of the investment industry, with separate bodies looking after (for example) the investment management and securities trading sectors.

Just as Big Bang was followed by two distinct waves of ownership changes among the major players in the industry, the regulatory regime created by the 1986 Financial Services Act proved only to be a first attempt at a truly comprehensive and watertight system of investor protection. The experience gained under the 1986 Act, as well as the changing patterns of activity in the markets themselves, led eventually to a second piece of primary legislation, the Financial Services and Markets Act of 2001. Under the new regime created by the 2001 Act, the former multiplicity of self-regulatory bodies was replaced by a single statutory body, the *Financial Services Authority*. (Confusingly, this is now universally referred to as the *FSA*, which had also been the accepted abbreviation for the 1986 Act which was now consigned to the history books.) This reflected the fact that most larger financial institutions were active in several different sectors and so – under the 1986 regime – were subject to multiple and overlapping supervision. Most of these institutions were also banks, and the licensing and supervision of banks as banks had been left completely outside the 1986 investor-protection framework in the hands of the UK central bank, the Bank of England. The 2001 Act therefore not only subsumed under the FSA the functions of all the former investor-protection organisations, but also transferred to the FSA the prudential supervision of the banks. A further spur for this change was the government decision taken in 1997 to transfer from the Treasury to the Bank of England the responsibility for monetary policy in general and for the setting of interest rates in particular. It was felt that this responsibility did not sit well with the role of banking supervisor in view of the possible conflicts of interest it could produce, especially in times of crisis.

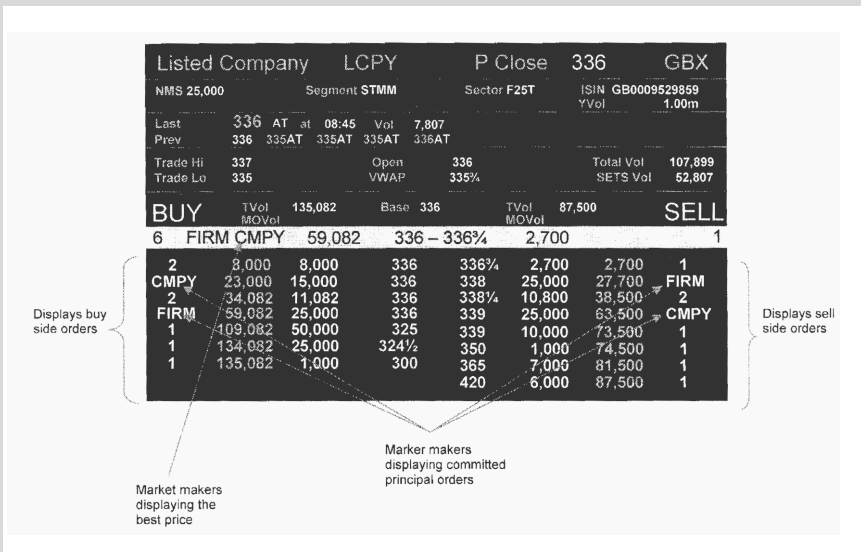
As far as the stock exchange was concerned, the changes that culminated in the 2001 Act completed a process whereby more and more of its traditional functions have in effect been delegated or outsourced. The FSA now has responsibility not only for licensing and supervision of firms and individuals engaged in securities trading, but also – as the UK listing authority – for the vetting and approval of share and other securities issues for listing on the exchange, for the ongoing compliance of listed companies with the listing rules (with regard, for example, to the timely and orderly publication of information to investors), and for the integrity, efficiency and transparency of the securities markets generally.

In 1997, the stock exchange began the transition to an order-driven market with the introduction of the ***Stock Exchange Trading System*** (***SETS*** for short), initially for trading in the most liquid stocks (the top 100 shares) but subsequently extended to most of the top 250 shares. Smaller issues, in which the natural level of market supply and demand may be insufficient to guarantee the maintenance of a liquid two-way market at all times, continue to be traded either on a hybrid system (***SETSmm***, which is a version of SETS supported by dedicated market-makers) or as before on a purely quote-driven system. Examples 1.2 and 1.3 show sample screen displays for stocks traded on SETS and on SETSmm respectively.

Example 1.2 Sample SETS screen



Example 1.3 Sample SETSmm screen, highlighting differences from standard SETS screen



The present

We conclude this section with a description and statistical overview of the range and volume of securities now listed and traded on the London stock exchange.

As we have already seen, the principal types of securities traded on the London stock exchange are shares and bonds. Shares are divided into three categories. The Official List (or Main Market) comprises shares issued by UK companies that have their primary listing on the London exchange. Many of these companies (and most of the largest ones) also maintain a secondary listing on one or more foreign exchanges – in most cases the New York market. The Main Market is the most tightly regulated of the three share markets. A separate, more lightly regulated market, the Alternative Investment Market (or AIM), was established in 1995 for shares in smaller UK and foreign companies, particularly for young rapidly growing companies that could not meet the stringent requirements of the main market in terms of their track record. The third market is the market in foreign companies (mostly, but by no means exclusively, large international companies) that maintain their primary listings in their home countries but find it advantageous to have a secondary listing in London because of the increased visibility it gives to their shares and to their business in general.

The bond market also divides naturally into three segments. The most important is the market in UK government bonds or ***gilts***, which is described in detail in Chapter 3, and is subject to a unique regulatory regime of its own. The second segment, the eurobond market, is more lightly regulated than the Main Market, because of the generally high credit standing of issuers in that market, and also because it is dominated by banks and institutional investors that are considered to require a less rigorously protective regime than individual investors in company shares. The third segment is the market in domestic fixed interest securities other than those issued by the government.

Table 1.3 shows trends in the number of companies and the number and value of securities issued on the equities and domestic fixed interest markets from 1963 to 2004. Figures for gilts are given in Chapter 3. Several trends are apparent from these numbers. As far as the Main Market is concerned, there has been a steady decrease in the number of companies listed, and in the average number of types of security issued by each company. The latter development is the result of the near-disappearance of domestic fixed interest securities; not only has the number of such issues shrunk by over 80 per cent, but their value in comparison with the market value of equities has fallen from 12 per cent in 1963 to barely 1 per cent in 2004. Note that the relative value of fixed income securities was still rising in the 1960s to a peak of almost 20 per cent of equity value in 1973. It is no coincidence that 1975 saw the highest rate of inflation recorded in the UK in the twentieth century (25 per cent); inflation and the associated high and volatile interest rates swung investor sentiment decisively against domestic fixed income securities.

A second clear trend is the popularity of the more lightly regulated Alternative Investment Market. Although the total value of issues listed on AIM declined along with worldwide stock market prices in the first three years of the new century, the number of companies seeking a listing continued to increase steadily.

The trends in the figures for foreign companies are perhaps less clear. The first thing that stands out is that the total value of issues with a secondary listing in London actually exceeded the value of domestic issues throughout the 40-year period under review, although the last five years has seen a decline not only in the number of companies listed

Table 1.3 Companies and securities listed on the London stock exchange, 1963–2004 (figures up to 1994 include Irish companies)

		Equities			Fixed interest	
		No. of companies	No. of secs.	Market value (£m)	No. of secs.	Nominal value (£m)
Main Market	1963	4,409	4,064	32,204	4,173	3,780
	1968	3,673	3,470	35,643	4,252	5,290
	1973	3,585	3,301	40,841	4,243	8,113
	1978	2,930	2,486	64,203	3,474	7,337
	1983	2,295	1,995	156,800	2,787	7,806
	1988	2,054	2,041	398,488	2,253	17,805
	1993	1,927	2,050	810,103	1,605	22,550
	1998	2,087	2,591	1,422,480	951	27,742
	1999	1,945	2,393	1,820,077	858	21,671
	2000	1,904	2,272	1,796,811	819	19,952
	2001	1,809	2,117	1,523,524	758	18,975
	2002	1,701	1,962	1,147,827	704	16,507
	2003	1,557	1,751	1,355,833	634	15,845
	2004	1,465	1,575	1,460,705	567	15,082
AIM	1995	121	129	2,382	14	66
	1996	252	253	5,299	24	82
	1997	308	309	5,655	25	93
	1998	312	311	4,438	20	94
	1999	347	364	13,468	22	102
	2000	524	535	14,935	15	69
	2001	629	631	11,607	15	36
	2002	704	711	10,252	23	39
	2003	754	736	18,358	26	44
	2004	1,021	953	31,753	27	23
Foreign	1966	417		29,124		
	1968	420		42,490		
	1973	397		115,771		
	1978	374		192,950		
	1983	437		486,796		
	1988	526		926,069		
	1993	485		1,918,431		
	1998	522		2,804,584		
	1999	499		3,577,484		
	2000	501		3,525,701		
	2001	453		2,580,359		
	2002	419		1,901,689		
	2003	381		1,974,811		
	2004	351		1,971,636		

Source: London stock exchange.

but also in their relative market value (even after allowing for the general decline in stock market values since the peak of late 1999).

Table 1.4 shows turnover statistics for equities since 1965 (UK Main Market), 1988 (foreign) and 1995 (AIM). The underlying trends in these figures are rather less easy to discern than in Table 1.3, because of changes in the pattern of share ownership between institutions and individuals, and in the trading and investing habits of these groups. We shall return to the theme of share ownership in Chapters 5, 10 and 12. Turnover during 2004 in domestic fixed interest securities amounted to just £30 billion. Some 35 per cent of this total was in ***convertible bonds***, and a further 35 per cent in preference shares.

Finally, it is worth noting that even the apparently 'domestic' section of the equities market in fact has a very international flavour. A popular misconception is that the shares quoted on the Main Market of the stock exchange somehow represent a notional economic entity called 'UK plc' (similar to 'US Inc'). This could hardly be further from the truth, for three main reasons.

First, very large sections of the UK economy are either privately owned or under the control of foreign companies which may have secondary listings in London but invariably have their primary listings elsewhere. A prominent but by no means atypical example is the volume manufacture of cars in the United Kingdom. This is now in the hands of foreign companies. But the shares of four of the largest car manufacturers in the United Kingdom – Ford, General Motors, Honda and Toyota – do have secondary listings on the London market. Similarly, the second-largest UK supermarket chain, Asda, is a subsidiary of the world's largest retailer, Wal-Mart of the United States, but this company does not have a secondary listing in London. In the second rank of UK supermarket chains, one of the biggest operators (Waitrose) is a division of the retailing group John Lewis, which is not a listed company at all but is organised instead as a unique kind of partnership; and the nationwide chain of co-operative foodstores are just that – co-operatives.

Second, many companies that have a primary listing on the Main Market of the London stock exchange conduct a large part of their operations, and earn a substantial proportion of their revenue, outside the United Kingdom. Listed UK companies are required to include in their published accounts a segmental analysis of their sales, profits and net assets by type of business and by geographic region, and a glance at these shows just how misguided the 'UK plc' notion is. According to figures published by the five largest companies quoted on the Main Market (Shell, BP, HSBC, Vodafone and GlaxoSmithKline, which together account for nearly one-third of the total value of all listed shares), none of them earns anything like 50 per cent of its profits in the United Kingdom: all of them are global companies which happen to be headquartered in the United Kingdom. Shell, BP and HSBC publish their accounts in US dollars as the natural currency of their respective businesses; Vodafone publishes its accounts in US dollars and in sterling. Some quoted companies conduct substantially all of their operations outside the United Kingdom and have an insignificant business presence in this country. This is especially true of mining companies, which have been a speciality of the London market since the earliest days of the Industrial Revolution and which continue to seek a London listing because of the depth of experience and understanding that this market brings to bear on a highly specialised sector.

Third, the extent to which companies are financed by equity varies widely between sectors, between companies within a sector, and with the rise and fall of the economic

Table 1.4 Turnover in equities on the London stock exchange, 1965–2004

		Value (£m)	No. of bargains	Average value per bargain (£)
Main Market	1965	3,479	3,417,395	1,018
	1968	9,118	5,313,166	1,716
	1973	17,079	4,954,799	3,447
	1978	19,215	4,129,963	4,652
	1983	52,340	4,277,402	12,236
	1988	325,589	7,099,717	45,859
	1993	563,967	10,343,533	54,524
	1998	1,037,137	16,277,103	63,718
	1999	1,410,590	21,076,558	66,927
	2000	1,895,534	29,427,308	64,414
	2001	1,904,845	32,130,988	59,284
	2002	1,815,034	37,508,832	48,390
	2003	1,876,922	46,160,508	40,661
	2004	2,316,194	53,907,459	42,966
AIM	1995	270	29,009	544
	1996	1,944	187,975	5,529
	1997	2,415	217,426	6,443
	1998	1,948	225,494	6,921
	1999	5,398	845,556	21,258
	2000	13,606	2,013,584	39,510
	2001	4,855	706,582	28,167
	2002	3,518	449,876	24,792
	2003	6,616	823,948	57,662
	2004	18,126	1,675,955	97,326
Foreign	1988	79,649	727,037	109,553
	1993	579,570	2,791,157	207,645
	1998	2,183,248	7,118,502	306,701
	1999	2,420,134	7,563,399	319,980
	2000	3,519,722	11,300,814	311,457
	2001	3,676,342	17,454,095	210,629
	2002	2,780,317	15,159,382	183,406
	2003	1,759,120	9,949,410	176,806

Source: London stock exchange.

cycle. The more mature, stable and cash-generative an industry is, the less it needs to finance itself with risk capital (that is, with equity) and the more it can afford to finance itself with debt: we shall see later that *leveraging* in this way has the effect of enhancing the return to the shareholders, although it also increases the risks they bear. Conversely, companies and sectors that are at a very early stage in their development do not have the track record or cash flow to support a high level of debt, and have to rely to a greater extent on risk capital.

Finally, the market value of foreign listings exceeded the market value of domestic listings in 2004. In addition, the London stock exchange has some foreign companies listed on both the Main Market and AIM.

The combined impact of all these factors is that the shares listed on the London stock exchange do not directly reflect the structure or the performance of the UK domestic economy. This can be seen from the fact that just four industry sectors – banks, pharmaceuticals, telecommunications and oils – account for 50 per cent by value of all UK company ordinary shares listed on the Main Market. Particularly significant is that fact that whereas a single telecommunications company (Vodafone) accounts for nearly 5 per cent of the market, all the other non-telecommunications utilities together – water, electricity and gas – make up less than 4 per cent. This is because the other utilities are generally more mature, more stable and more cash generative than mobile telephony, so that they have less need to finance themselves with public risk capital; also, many of them are now owned by subsidiaries of foreign companies or indeed companies that are 100 per cent international.

SUMMARY

This chapter has provided an initial introduction to the products, the markets and the players in the world of stock exchange securities investment.

We identified securities as an important subset of the financial products and instruments that a developed economy uses to channel more efficiently its capital resources from surplus sectors (primarily households), which have a temporary excess, to deficit sectors (primarily governments and commercial firms). What makes securities special is that they can readily be bought and sold. Securities come in many shapes and forms, but perhaps the most important distinction is between bonds, which constitute fixed, contractual and legally enforceable claims against the borrowers or issuers, and equities, which constitute a right only to a share in the residual income and assets of issuers after all contractual claims have been discharged.

We then saw how an organised market in such securities can bring benefits to both sectors and to the economy as a whole, primarily by reducing transaction costs and by transforming savings in such a way that both savers and borrowers can get closer to the rather different products that each would ideally like to have.

A key characteristic of a securities market is its informational efficiency, that is, the extent to which its prices fully reflect all relevant information, and we made a preliminary study of the efficient markets hypothesis – a theme to which we return in Chapters 12 and 13.

Finally we sketched the unique evolution of the London financial and securities markets. We saw how the London market first established, and then, by a process of endless adaptation, maintained its position as the world's pre-eminent market for international financial transactions.

REVIEW EXERCISES

1. What are the main functions of an organised market in securities? Outline the main benefits of such markets for:
   a. issuers of securities

b. investors
c. the economy in general.

2. Describe how and why London maintained its pre-eminence as an international financial marketplace despite the relative decline of the UK economy in the first 80 years of the twentieth century.
3. Describe the main changes which have taken place in the UK stock exchange since the early 1980s. Why do you think these changes have occurred?
4. Compare and contrast shares and bonds, from the points of view of:
   a. the issuer
   b. the investor.
5. Describe the main stages in the evolution of the efficient markets hypothesis. Do you agree that, in a strong-form efficient market, the market price for a security is invariably a fair price? Give your reasons.
6. Visit the website of the London stock exchange (www.londonstockexchange.com) and look for the latest versions of the statistics reproduced in Tables 1.3 and 1.4. How have they evolved in the intervening period? What do you think are the main factors that have influenced that evolution?
7. What are the principal factors influencing the relative certainty or uncertainty of future cash flows from a security? Explain how each of them might impact the expected return from:
   a. shares
   b. bonds.

Sample answers to these exercises can be found on the companion website.

Index

30/360, 142

A
abnormal return, 234–5, 238, 443, 445
accounting
  mental accounting, 466
  practices, 176, 183
  standards, 368, 469
accounts, company, 7
accumulated profit, 168
accumulation units in unit trusts, 382
acquisitions *see* mergers and acquisitions, takeovers
active strategies, 103, 136–7, 139–40, 236–9, 461
actual/actual, 77
actuaries, 363–4, 366
agency theory, 468
agents *see* intermediaries
AIM *see* Alternative Investment Market
Alliance Boots, 158
Alliance Unichem, 157, 158
allotment policy, 163
alpha, 435–6, 437, 443, 455
Alternative Investment Market (AIM), 34, 38, 155, 164
  companies listed on, 35, 153
  taxation issues, 188
  turnover statistics, 36–7
American-style options, 306, 342, 346, 475, 487
analysts/analysis, 179, 384–5, 427–8
  fundamental analysis, 184–5, 428–9
  conflicts of interest in, 384–5
  recommendations by, 430
annual general meetings, 9
annuities, 5, 362, 371, 374, 479
  guaranteed, 375
  see also pensions
Antofagasta, 190
arbitrage, 137, 140–1, 282, 286–8, 289–90, 314, 317, 320, 321, 402, 466–7, 479
  channel, 275
  pricing theory, 223, 251–2
articles of association, 160
Asda, 36, 158
asset beta, 245
assets
  'alternative', 366, 434
  charges against, 145
  claims on underlying, 308
  corporate investment in, 183
  financial, 2–3, 4, 5, 483 (*see also* bonds, options, shares)
  intangible, 428
  of investment trust companies, 376, 389
  liquid, 74 (*see also* liquidity)
  mix of insurance companies, 374, 390
  mix of pension funds, 366–8
  non-securitised financial, 5
  of pension funds, 362, 364–7, 390
  real, 2–3, 489
  risk-free, 227–8
  strategic allocation of, 434, 455–6
  tactical allocation of, 435
  underlying *see* underlying
  of UK insurance companies, 371, 372
  of unit trusts and OEICs, 379
  value, 243
Associated British Foods, 13, 159, 190
Association of Investment Trust Companies, 361
ATM *see* at-the-money
at-the-money, 311, 479
auction process for gilts, 97–100
Australia, 84, 416
autocorrelation, 454–5

B
Bachelier, L., 19
backwardation, 479
Ball, R. 20
Bank for International Settlements, 301–2, 398
Bank of England, 16, 32, 71, 72, 96, 118, 142
  action during crises, 26
  and monetary policy, 32
banking system, roles of, 14
banks, 16, 28, 38, 114, 238, 296, 357, 457
  and Big Bang, 31–2
  European, 25
  failures, 25
  financial assets of, 30, 73
  investment, 31, 162
  see also individual banks by name
Baring, Julian, 13
Barings, 25
  1890 crisis, 26
basis, 270
  basis point value (BPV), 136, 479

bear market, 80, 260, 291, 368, 374, 432, 435, 448, 456, 479
beating the market, 18, 139–40
see also strategy, active; picking winners
behavioral finance, 462–70, 479
Belgium, 85
benchmarks, 18, 21, 300, 443, 479
CAPM as, 18
gilt issues, 104, 108, 109
interest rate, 16
market, 461
portfolio, 238, 449, 470
beta, 223, 232, 233–46, 252, 295, 325, 369, 443, 447–8, 460
asset beta, 245
BT estimates, 459
changes in, 250
of debt, 246, 475
for Developed Markets Industry Group, 460
enterprise beta, 245
equity beta, 245, 475
factors determining, 242–6
of investment trusts, 235, 383–4
standard error of, 233–4
bias
in estimating, 121
in investor decision making, 463, 465
bid–ask spread, 379
Big Bang, 31, 32, 96, 384
binomial
method for option valuation, 326–36
tree, 332, 333
Black, F., 336
Black–Scholes model, 308, 336–43, 453, 475
Bloomberg, 179, 457, 459, 460
Bloomer, Jonathan, 167–8
bonds, 6, 28, 68–150, 264, 296, 301, 361, 362–4, 371, 372, 380, 479
callable, 69
cheap and expensive, 113
cheapest-to-deliver, 278–83
convertible, 69
corporate, 44, 46, 143 (*see also* eurobonds)
coupons *see* coupon
definitions, 7
dispersion of returns, 97–8
double-dated, 69, 77, 78, 79, 482
eurobonds *see* eurobonds
floating-rate, 69, 79, 484
futures market in, 275–84
hedging of investments, 293–5
high-yield, 44, 144
and interest-rate swaps, 300
index-linked *see* index-linked bonds
junk, 45
major government markets, 70
market information on, 46
market segments, 34
maturity, 107
perpetual, 69, 488
return on, 85–95, 104–5, 249
single-dated, 68, 79, 490
straight, 68, 490
transaction costs on, 119
types of, 68–70, 147
UK government *see* gilts, UK government securities
undated, 69, 73, 488
yield curves *see* yield curves
zero-coupon, 69, 110
bonus share issues, 168, 480, 489
book-building, 164
Boots, 158
pension fund, 367
bounded rationality, 465
BP, 36, 154, 191, 234, 236, 238, 390
1987 shares issue, 170
as options example, 309–14
breakeven inflation rate, 94
British Gas, 163, 358
British Rail Pension Fund, 434
British Telecom (BT), 163, 234, 358, 359, 469, 470
beta estimates, 459
brokers, 26, 384
see also intermediaries, stock brokers
Brooks, R., 457–8
Brown, P., 20
BTR, 364
Buffett, Warren, 468
building societies, 73–4
bull market, 242, 290, 364, 374, 435, 447, 479–80
bulldogs, 141
Burghley, Lord, 71

C

Cadbury Schweppes, 157, 158, 234
call options *see* options
call protection, 296, 480
callable bonds, 69, 480
Canada, 82, 85, 416
Capital Asset Pricing Model (CAPM), 18–19, 184, 195, 222–58, 415–17, 423, 435, 436, 442–3, 453, 475
alternatives to, 250–2
assumptions of, 226–7
deriving return on a security from, 256–8
in an international context, 415–17
in practice, 233–46
problems with, 246–50
real-world issues, 458–61

capital
market capitalisation, 233, 486
share and debt, 160
working, 26, 162, 164, 183
capital gains tax *see* taxation
capital intensiveness of industries, 26
capital market line, 230–1, 453, 475
capitalisation issue of shares, 168, 480, 489
CAPM *see* Capital Asset Pricing Model
car manufacturers, 36, 158
cash and carry, 282–4, 480
cash efficiency of futures, 288
cash flow
for coupon bond, 131
and dividends, 174
free, 182–3
for interest rate swaps, 298
internal and external factors affecting, 8–10
matching, 364, 373, 470
present value equations, 473
relationship to maturity and return, 126–7, 132
timing and portfolio performance, 438–9
variability and uncertainty of, 8–10
cash settlement, 269, 284, 480
certificates of deposit, 16, 480
charities, 30, 187, 357
chartists, 424–7
cheapest-to-deliver, 278–83, 480
Chicago Board of Trade, 264
Chicago Board Options Exchange, 307
Chicago Mercantile Exchange, 264, 284
claims, legally enforceable, 6, 145
clearing house, 267–8, 289–90, 480
see also Euronext.liffe
closed-end
funds, 361, 362, 375, 378, 480–1
investment companies, 14, 467–8, 481
collateral, 5
collective investment vehicles, 14, 481
see also investment trusts, mutual funds, open-end investment companies, pension funds, unit trusts
commission rates *see* transaction costs
commodities, dealing in, 62–3, 264, 470
company/companies
developing and mature, 37
financial structure, 242–3
global, 36
international, 153, 158–9
legislation, 7, 9, 25, 154
limited liability *see* limited liability
number listed on London stock exchange, 34–5
relations with institutional investors, 385–6
small, 16, 32, 248, 464, 468
conflicts of interest, 11, 14, 32, 268, 384
CONNECT volume, 273–4
conservatism bias, 463, 465
consumption, 2
preferences, 431
continuous compounding, 336, 481
contracts, 6, 483
bond, 8–9
financial futures, 263–4, 265–75
for differences (CFD), 266
foreign exchange, 394–5
forward, 261–2
forward foreign exchange, 263, 485
over-the-counter futures, 262
remedies for failure, 9
specification for FTSE 100 index futures, 284–6
specification for FTSE 100 index options, 347
specification for individual equity options, 308–9
specification for UK long gilt futures, 275–8
spot, 261, 394
three-month sterling futures, 270–5
control and ownership, 28
conversion factor, 481
convertible securities, 36, 69, 81, 141–2, 146–7, 148, 154, 160, 308, 481
convexity, 104, 135–6, 138, 481
co-operatives, 36
corporate
fixed interest securities, 141
governance, 13, 162, 164, 386, 481
image, 161
reserves, 168
correlation, 20, 197–204
between national markets, 248, 413–14, 456–8
between sectors, 457–8
between successive years' returns, 21, 454–5
coefficient, 20, 197, 206, 208, 411
and volatility, 455–8
cost of carry, 86–7, 269, 286–7, 481
costs
of compliance, 153
issuance of shares, 153
management, 377
search, 12
transaction *see* transaction costs
see also fees
coupon, 47, 69, 77, 87, 107, 481
bonds and interest rate changes, 128–9
comparisons, 107
and duration, 131

on eurobonds, 142, 144–5
payment calculations, 81–2, 91–2
yield, 86
covariance of returns, 197, 209–10, 220 (*see also* variance)
covenants, 7
covered call, 481
Cowles, A. III, 20
credit ratings, 45, 46, 142, 297, 486
credit risk, 262, 267, 288–9, 296, 301
Criado-Perez, Carlos, 177
crises, financial, 25, 300, 307, 361, 368, 375, 378, 432
cross-currency swaps, 263, 295, 301–2, 481
cum dividend, 77, 481
cum rights, 481
currency
choice of, 458
holdings/liabilities, 63, 73 (*see also* foreign exchange risk)
swaps, 16
see also foreign exchange

D

Daily Mail and General Trust, 160
Datastream, 460
dates of bonds, 79–80
see also maturity, settlement dates
day trading, 274
daycount conventions, 272, 403
debentures, 26, 44, 141–2, 145, 154, 481
debt financing, 26, 145–6
debt–equity ratio, 146, 242–3
Debt Management Office (DMO), 72, 74, 94–5, 96, 98–9
deep-discount rights issue, 166
default risk, 44–5, 296
deficit sectors, 4, 11
defined benefit/contribution pension plans, 81, 362–3, 481–2
deliverables on a long gilt futures contract, 278–84
delivery
cash-settled vs physical, 269, 284
date, 265, 266, 270, 272–3, 276, 278, 284, 347
delta hedge ratio, 327, 482
depreciation policy, 176, 183
deregulation of financial markets, 31
see also Big Bang
derivatives, 7–8, 261–354, 482
definitions, 3, 7
exchanges, 264
foreign exchange, 395–6
see also futures, options
Developed Markets Industry Group, 460
dilution of equity, 147, 165, 482, 483
Dimson, E., 448, 458
disasters, natural, 371
see also crises, financial
disclosure, standards of, 437
discount, 482
on forward exchange rates, 405
on ITC share prices, 377
on placings, 164
rate, 47, 109–10, 482
rate for pension fund calculations, 363
discounted cash flow, 88, 108, 110, 458
dispersion, measures of, 55–6
distribution, measures of, 55–6, 328, 453–5
see also normal distribution
diversification of portfolios, 18, 214, 223, 434, 455–6
international, 412–17, 434, 455
Markowitz, 214–15, 414
naïve, 214–15, 412
see also portfolio theory
dividends, 10, 44, 166, 168, 391
and accumulation, 382
cover, 155–6, 172–5
cum div and ex div, 77, 481, 483
default in payment, 160
fixed, 146
and options, 326, 346
payment patterns, 171
payment policy, 172–4, 178
payout ratio, 173
and returns on indices, 189
valuation models, 178–82
yield, 155–6, 171–5, 235, 286, 482
Dow Jones index, 188
drug retailing sector, 155–6, 158
dual listing, 159, 248, 467
see also secondary listings
Dunlop, 364
duration, 103, 130–41, 282, 474, 482
Macaulay's, 130, 486
matching, 373
modified duration and convexity, 135–6, 487
see also maturity

E

earnings
available to ordinary shareholders, 172
normalised, 176
per share, 147, 155–6, 172, 176, 179, 482
retained, 172
economies/diseconomies of scale, 12
economy
economic cycle, 177, 242
real, 4
EDSP *see* exchange delivery settlement price
efficiency of markets, 12, 17–24, 119

levels of, 19, 22–3
tests of, 19–21
see also efficient markets hypothesis
efficient frontier, 211, 227, 431
efficient markets hypothesis, 21–4, 296, 424–30
challenges to, 159, 462–70
forms of, 22–3, 424–30
views on, 468
electronic trading *see* technology, trading
emerging markets, 144
EMH *see* efficient markets hypothesis
endowment policies, 373–4
environmental issues, 386
eps *see* earnings per share
Equitable Life, 375
equities *see* shares
equity
beta, 245
cushion, 7
dilution *see* dilution
financing, 36–7
index future contracts, 284–8
risk premium, 236, 453–4, 460, 483
see also shares
ethical issues, 386
euro, the, 29, 302
eurobonds, 29, 34, 44, 72, 89, 141–5, 147, 153, 301, 389, 410, 483
eurocurrency
definition, 28, 29, 483
interbank deposit market, 394
eurodollar market, 28, 400
euromarkets, 28–9, 483
Euronext.liffe, 24, 264, 267, 269, 270–8, 302, 308–9, 322, 348
European Central Bank, 302
European Community, 72
European Union, 29
European-style options, 306, 342, 345–6, 483, 487
eurozone, 302
event studies, 19, 20–1
ex dividend, 77, 155–6, 483
ex rights, 483
excess profit, 18, 483
exchange delivery settlement price (EDSP), 266, 269, 270, 276, 284, 347
exchange, foreign *see* foreign exchange
exchange-traded derivatives, 3, 483
exchange-traded securities, 15–16, 483
exercise
date for options, 309, 347, 483
price, 347
expiry dates for options, 309, 483
expropriation, 28, 392

F
factor markets, 483
Fama, E. F., 20, 22, 252, 424, 429, 445–6
fat tail problem, 454
fees
of investment trusts, 378, 381
for underwriting, 163, 166, 170
of unit trusts, 380–1
see also costs; transaction fees
filter rule, 425–6
final salary pension plan, 81, 483
Financial Services Act 1986, 31–2, 358
Financial Services Authority (FSA), 32, 142, 162
Financial Services and Markets Act 2001, 32, 358
Financial Times, 45–6, 75–6, 143–4, 154–5, 174, 176, 177, 299, 396–7, 401
Ordinary Share Index, 188
Fisher, I., 50–1, 92, 483
Fisher's equivalence, 93, 473
International Fisher effect, 408–10, 485
Fitch, 45
fixed benefit savings, 373
fixed interest securities, 34, 44, 141–8, 153, 160, 368, 405, 432, 484
non-government, 34, 44, 141–5
public, 141
value of, 48
see also bonds
flight to quality, 300, 484
floating-rate bonds, 69, 79, 484
flotation, 162
cost of, 26
food production and processing sector, 155–6, 158–9
food retail sector, 17, 155–6, 157–8, 169, 174–5
forecasting
economic, 448
market, 21, 120, 405–6, 463 (*see also* 'picking winners', strategy)
foreign exchange, 264, 391–402
controls, 27, 29, 390, 456
cross-currency swaps, 394, 395–6, 398, 405
forward contracts, 263, 484
forward market, 63
impact of rates on company finances, 10
markets, 15–16, 63
in practice, 396–7
products, 394–7
rate forecasting, 405–6
rates, 10, 390–1, 394
risk, 63–4, 366–7, 390–412, 417, 456, 458
foreign firms listed in the UK market, 27, 34, 35–8, 156–7

foreign investments, 248, 376, 380, 389–420
of British investors, 456
diversification strategies, 412–17
historical pattern of, 25–9
for pension funds, 366–7
in the UK market, 29–30, 34–8, 456
risks associated with, 10
forward
contracts, 261–2
foreign exchange contract, 263, 484
exchange rate, 404–5
interest rates, 114–23
markets, 63
one-year rates for gilts, 127
rate agreement (FRA), 395, 484
see also futures
fractal law, 455
framing, 465
France, 19, 70, 84, 379, 416
fraud, 25
pension fund, 359
protection against, 7, 374
free cash flow valuation model, 182–3
free float, 13, 190, 484
weighting, 190
free lunch, 251, 349, 484
free trade, 27, 409
French, K. R., 252
FSA *see* Financial Services Authority
FTSE 100 index, 17, 21, 154, 156, 160, 167, 188–91, 235, 256, 347, 386, 459, 461, 464
all-time high, 21
futures contracts based on, 284–8, 295
largest five companies 1984/2004, 191
options based on, 346
FTSE 250 index, 189, 256
FTSE 350 index, 189, 256
FTSE-Actuaries Classification, 192–3, 233, 238
FTSE All-Share index, 189, 236, 238, 241, 256, 284, 366, 382, 436, 459, 461
FTSE Fledgling Index, 189
FTSE indices, 186–93
FTSE SmallCap index, 189, 256
fundamental analysis, 184–5, 223, 465
fungibility, 94, 268–9, 484
futures, 260–304
advantages of, 288–90
bond, 275–84
contracts *see* contracts
contracts and interest rate risk, 133
definitions, 8
equity index, 284–8, 295
foreign exchange contracts, 395
markets, 63, 263–5
three-month sterling contract, 270–5
use of, 290–302

G

gambling, 60–1
GDP, 71–2
GDP deflator, 81
GEMMs, 74, 96, 99
General Electric, 191
General Motors, 36
Germany, 25, 70, 85, 379, 414, 416
gilt-edged market-makers (GEMMs), 74, 96, 99
gilts, 34, 45, 73–84, 125, 306, 365, 371, 372, 374, 376, 380, 484
benchmark issues, 104, 108, 109
dispersion of returns, 97–8
double-dated, 306, 308, 482
futures, 275–84
holdings by market value, 73
issue names, 75–7
market and players, 95–100
number in issue, 76
par yield curves, 108
spot rates, 127
strip prices, 95, 125
see also bonds, UK government securities
Giscard d'Estaing, Valery, 84
GlaxoSmithKline, 36, 154, 191, 234, 236
global
companies, 36
depositary receipts (GDRs), 164, 484
gold, 28, 84
Gordon's dividend growth model, 180–1, 250, 474
Greggs, 157, 168
Grinold, R. C., 445
gross domestic product *see* GDP

H

Hanson, 469
Harmondsworth family, 160
hedge funds, 366, 437, 455, 470, 484
hedge ratio, 292–3, 295, 326, 334, 340, 485
hedging, 62–4, 132–3, 138–9, 288, 317, 364
against inflation, 368
of exchange risk, 397–405
with financial futures, 292–5
heuristics, 462–3, 465, 485
see also strategy
holding period
and rates of return, inflation and premia, 249
return, 41–3, 85, 125, 161, 171, 172–3, 177–8, 290, 392, 485
start of, 114
Honda, 36
HSBC, 36, 154, 159, 191, 234, 235, 236, 240
Hurricane Katrina, 371

I
ICI, 191
image, corporate, 161
Imperial Tobacco, 469
in the money, 311, 317, 323, 485
income
  shares, 485
  units in unit trusts, 382
index funds, 241–2, 436
index-linked bonds, 10, 63, 69, 80–5, 433–4, 485
  gilts, 80–4, 433–4
  global issues, 84–5
  yield calculations, 90–4
indices
  consumer price, 80–1
  earnings, 81
  FTSE, 188–93 (*see also* individual named indices)
  global bond, 70
  for index-inked bonds, 81–3
  international returns, 413–14
  market, 17
  rebasing of, 83
  stock market, 17–18, 224, 264, 460
  see also individual indices by name
indifference curves, 204–6, 212, 213, 227
indirect investment, 18
individual
  investors *see* private investors, small investors
  Savings Accounts *see* ISAs
Industrial Revolution, 25–7
industry sectors, 17, 38, 155, 457
  DMIG, 460
  FTSE-Actuaries Classification, 192–3
  as investment basis, 236–40, 457, 464
  LBS risk management service analysis, 255–6
  single-company dominance, 160
  surplus and deficit, 4
inflation, 10, 28, 34, 80, 83–4, 116, 249, 366
  breakeven rate, 94
  and exchange rates, 458
  expected and actual, 51
  extrapolated, 91, 93
  hedge, 368
  impact on investment, 432–4
  premium hypothesis, 120, 122
  retail price, 80
  risk, 50–2, 432
information, market, 15, 17, 21, 22, 226, 385, 430, 435, 456, 463
  and analysis, 384–5
  affecting bonds, 98
  and the efficient markets hypothesis, 22–4, 424, 462
  on identity of traders, 267
  insider, 22–3, 385, 424, 429–30, 435
  affecting interest rates, 119
  providers of, 179, 460
  quality of corporate, 428
  ratio, 445, 485
  sale of, 429
  speed of dissemination, 22, 97
  see also efficiency of markets
initial margin, 8, 267, 485
initial public offering (IPO), 162–3, 465, 485
insider dealing, 12, 23–4, 429–30
insider information, 22–3
insurance companies, 14, 357–8, 369–74
  description, 369–73
  financial assets of, 30, 73, 371
  investment strategy, 49–50, 133,
  life assurance *see* life assurance
  and pooling, 370
  rights issue of, 167–8
  see also life assurance companies
interbank
  deposits/markets, 15, 16, 115, 264, 265,485
  rate, 270
inter-dealer brokers (IDBs), 96
interest
  accrued on settlement of futures contracts, 282
  calculation conventions, 77, 14
  calculation for eurobonds, 142–4
  paid on gilts, 77–8
  yield, 86–7, 90–1, 485
interest rates, 10, 79, 97, 110–25
  Bank of England rate, 16
  bond market, 116–18
  calculation of short-term forward, 116
  changes and bond prices, 123–9
  and duration *see* duration
  forward, 114–26
  future term structure of, 114
  and gilt prices, 74
  historic levels of, 28, 34
  hypotheses, 119–20
  implied forward, 124, 473
  instantaneous, 114
  maximum imposed, 28
  money market, 114–16
  nominal, 47
  options, 485
  parity, 402–5, 485
  risk, 10, 40, 47–50, 107, 133, 137–41, 226, 373
  risk-free, 246, 248, 326, 336, 337
  setting of, 32
  spot rates, 104, 110–14, 116–24
  swaps, 16, 263, 264, 295–300, 485

term structure of, 104, 491
intermediaries, 11, 14, 16, 31, 96, 370, 422
in foreign markets, 417
for private investors *see* investors, institutional
see also analysts; brokers; gilt-edged market-makers; investors, institutional
internal rate of return (IRR), 87, 440, 485
International Fisher effect, 408–10, 485
international
companies, 153
investment, 389–420
see also foreign, global
intrinsic value, 485
of an option, 312, 323
introduction (as form of initial listing), 162, 486
investability weighting, 190
investment
foreign inward, 29
nature of, 2–3, 26
objectives, 422–3, 430–4
overseas, 29, 389–420
policy *see* strategy
return and risk, 40–66 (*see also* return, risk)
investment banks, 31, 162, 296
investment grade, 486
Investment Management Association, 361, 382, 384
investment trusts (ITCs), 14, 189, 235, 242, 357–8, 375–9, 381–4, 389, 417, 441, 467–8, 486
assets of, 30, 376
classification of funds, 383
as investment institutions, 360–1
investing strategy of, 441, 464
investor
put options, 148
relations, 385
investors
disclosure policies of, 437
general questions about, 4
indirect, 18
institutional, 142, 164, 214, 307–8, 356–88, 430 (*see also* by types of institution)
monitoring and control by, 6, 28
private *see* private investors
rationality of, 4, 226, 291, 453, 462–70
share ownership by type, 357
small *see* small investors
see also investment trusts, insurance companies, pension funds, unit trusts
IPO *see* initial public offering
ISAs, 187, 381, 432
issuer call options, 148
Italy, 70, 84, 85, 379
iterative process, 90
ITM *see* in the money

J
Japanese market, 24, 26, 70, 147–8, 368, 414–15, 416
Jensen, M., 468
measure of performance, 443, 445–7, 449
jobbers, 16, 31, 32, 486
see also market-makers
John Lewis, 36, 158
junk bonds, 45, 374, 486

K
Kahn, R. N., 445

L
law of one price, 406–7, 486
Lawson, Nigel, 170
LCH Clearnet, 267
least worst outcome, 466
legislation, 32, 359–60, 375
company, 7, 25, 154
on financial markets, 31–2
see also regulatory regimes, individual laws by name
Lessard, D., 413
leverage, 288, 308, 367, 384, 460
of companies, 243–5
of investment trusts, 377
by investors to increase risk, 223
liabilities, 4
of insurance companies, 373–4
matching of, 49–50, 366 (*see also* hedging)
of pension funds, 365–6
LIBOR, 270, 273, 274, 296–300, 486
life assurance, 133, 360, 371–3, 382, 431
companies as investing institutions, 360, 370
Equitable Life, 375
types of policy, 371–2
see also insurance companies
LIFFE *see* Euronext.liffe, London International Financial Futures Exchange
limited liability, 6, 25, 45, 153, 161, 361, 375, 379, 486
line of best fit, 224
liquidation, 153, 161
liquidity, 13, 18, 74, 486
of banks, 74
of bond issues, 112–13
business need for, 26, 27–8
of foreign exchange markets, 395
of futures markets, 267, 288, 290–1
and lobster pots, 13

premium, 120, 122
and share placings, 164
listing
dual, 159
initial of ordinary shares, 161–4
reasons for seeking, 161–2
requirements, 12, 32, 153, 162, 164, 486
secondary, 34, 36, 155–7, 159
Lloyd's, 62
loans, 5, 141, 328–9, 362, 371, 372
loan stocks, 44, 145
see also bonds
lognormal distribution, 328
London Business School, 233–4
Risk Measurement Service sector analysis, 255–6
London Interbank Offered Rate *see* LIBOR
London International Financial Futures Exchange (LIFFE), 24, 264, 265, 395
see also Euronext.liffe
London stock exchange, 12, 16–17, 160–4
beneficial ownership of shares listed, 30
building, 29, 31
companies and securities listed, 27, 34–8, 389–90
foreign investors on, 456
history of, 24–38, 152–3
international companies listed, 153, 389–90
methods used on, 16–17 (*see also* technology)
nominal values of securities, 1853/1913, 27
and options dealing, 307
turnover in equities, 36–7
voting rights, 31
website, 39
see also Alternative Investment Market, Main Market, Official List
long-run average frequencies, 52
long–short hedge, 437
Long-Term Capital Management (LTCM), 455

M

Macaulay's duration, 130, 486
Main Market (London stock exchange), 34–7, 152, 154
listing requirements, 164
no. of shares listed, 34, 35, 152
turnover statistics, 36–7
see also market(s)
Mannesman, 385–6
margins/margining, 267–9, 288, 291, 297–8
initial margin, 8, 267, 485
of solvency, 374
variation, 268, 491–2
market-makers, 16, 31, 32, 299, 379, 486
market(s)
anomalies *see* arbitrage
basic features of financial, 10–17
bear market, 242, 260, 291, 368, 374, 432, 435, 448, 456, 479
benefits of organised, 12–15
bubble (and bursting), 261
bull market, 242, 290, 364, 374, 425, 447, 479–80
capital, 5, 16
capitalisation, 233, 486
classifications of, 15–17
commodity, 62–3, 264
common influence, 195
convergence, 413
core questions about financial, 3
definition of the, 247–8, 252
deregulation, 31
efficiency of *see* efficiency
emergence of UK national, 26
emerging national, 144, 430, 454, 456
euromarkets, 28–9, 394
factor, 5, 483
financial compared with conventional, 10–11
foreign exchange, 15–16, 398
futures *see* futures
for gilts, 95–100
impact of investing institutions, 384–6
indices *see* indices
inputs and outputs, 17–18
interbank, 16
interest rates, 114–18
London *see* Euronext.liffe, London stock exchange
lumpiness, 240
model, 223–5
money, 16, 264–75
mood, 424
neutrality, 437
perfect, 21, 23–4, 226
premium, 248–9
primary financial, 5, 15, 489
product, 5, 489
questions about, 3
quote and order-driven, 16–17
response, 224
secondary financial *see* secondary market
sectors, 17 (*see also* industrial sectors)
segmentation hypothesis, 120, 122, 415
sizes of major equities markets, 416
technology *see* technology, trading
timing, 435
in traded options, 307
transformation, 13
US *see* US market
marketable securities, definition, 3, 486

marking to market, 268, 486–7
Markowitz diversification, 214–15, 216, 414
Marks and Spencer, 17, 158, 160, 191
Marsh, P., 448, 458
maturity of financial instruments, 14, 16, 49–50, 107
  length of, 16,
  relationship with price and yield, 124–6
  yield to, 87–90
Maxwell, Robert, 359
mean
  expected return, 54
  of sample, 121
measurement of investment performance *see* performance measurement
median, 53
mergers and acquisitions, 166, 169, 177, 469, 486
  horizontal and vertical, 26–7
  'merger mania', 26
  see also takeovers
Merrill Lynch, 457
Merton, R., 336
  Merton formula, 341
mining sector, 36
mm02, 234, 359
mode, 53
  of settlement, 266, 270, 276, 278
models
  alternative to normal distribution, 455
  Black–Scholes, 308, 336–43, 453, 475
  capital asset pricing *see* Capital Asset Pricing Model
  dividend valuation, 178–82
  efficient markets *see* efficient markets hypothesis
  Fama–French three-factor, 252
  finite horizon, 178, 180, 182
  free cash flow valuation, 182–3
  infinite horizon, 182
  market model, 223–5
  multi-factor, 252, 461
  multi-index, 250, 251
  multi-period, 215–16
  of share behaviour, 24
  of share valuation, 182
  one-period, 215, 452
money market, 16
money purchase, 487
monitoring and control by investors, 6, 9, 12, 18
Moody's, 45, 142
Moore, A. B., 20
Morrison, 157, 158, 169, 175, 177, 190
mortgages, 5, 362, 371, 372, 487
mutual funds, 14, 487

N
naked call, 344, 487
National Coal Board, 366–7
National Debt, 27, 70–2
National Savings, 73
National Union of Mineworkers, 366–7
nationalisation, 153
Negro, M., 457
Netherlands, 25, 85, 416
nominal
  amount, 9
  price *see* price
  rate of return, 487
  value of shares, 154
normal distribution, 55–6, 328, 453–5
  area under the function, 354
normal market size, 16
notice days, 276

O
objectives, investment, 422–3, 430–4
  see also risk, strategy
OEICs **see** open-end investment companies
Office for National Statistics, 66
Official List, 34, 152, 162
  see also London stock exchange, Main Market
'one-stop shops', 31
open-end funds, 361, 362, 375
open-end investment companies (OEICs), 14, 375–6, 379–84, 487
open outcry trading, 267, 487
opportunity
  cost, 47, 109, 487
  set, 211, 456
optimism bias, 465
options, 69, 146–8, 292, 305–54, 475, 485, 487
  call options, 306–7, 311–17, 326–34, 338–42, 345
  currency, 396
  definitions, 8,
  embedded in securities, 146–8
  interest rate, 395
  investor put, 148
  issuer call, 148
  option buyer, 305, 487
  option seller, 305, 487
  put options, 306–7, 317–22, 334–6, 343, 345
  uses, 346–51
  valuation of, 322–46
order-driven markets, 17
ordinary shares *see* shares, ordinary
OTC *see* over-the-counter
OTM *see* out of the money
out of the money, 311, 316, 317, 323, 487–8

over-the-counter products/trading, 3, 15–16, 262–3, 295, 299, 301–2, 395, 488

P

par value, 138, 488
partnership, 158
  government seen as, 7
  historical use of, 26
passive strategies, 103, 136–9, 235, 239–41, 436, 461
Paterson, William, 71
pension funds, 14, 28, 81, 187, 357–8, 361–9
  accountability of, 359, 361, 367
  assets of, 362
  description, 362–4
  historic growth of, 28, 360, 361–2
  as investing institutions, 30, 49–50, 80, 456, 469–70
  investment policies, 133, 289, 364–8, 448, 464
  liabilities of, 365–6, 368
  performance of, 360
  stakeholders in, 368–9
  trustees, 363, 365
pensions, 432
  occupational, 362, 487
  personal, 360, 362, 369, 488
  types of, 81, 362–3, 482, 483
  unfunded, 364
Pensions Act 2004, 363
PEPs, 187, 381
performance measurement, 422, 437–49, 469–70
perpetuity, 488
Personal Equity Plans *see* PEPs
pharmaceutical sector, 38, 191, 457
picking winners, 18, 22–3, 423, 437
  see also strategy, active
pit, the, 266, 488
placing (of shares), 162–3, 164, 488
policy, investment *see* objectives, strategy
pooling, 14, 61–2, 200, 370, 434
portfolio, 194–221, 290–1, 320, 327, 338
  churn, 463
  of diversified asset types, 18
  efficient, 247, 461
  hedging, 132–3, 292–5
  market, 223
  optimal, 227, 229, 436
  optimal size, 213–15
  performance improved by options, 346–51
  performance measurement, 235–41
  replicating, 329, 334–5, 339–40
  revisions, 423, 436
  risk equation, 197–8, 218–21, 228, 239, 453
  theory *see* portfolio theory
portfolio theory, 74, 183–4, 194–221, 222, 367, 381, 391, 412–17, 452, 453–8, 465, 474–5
  and the CAPM, 222–58
  for multi-asset portfolio, 209–12
  negatively correlated securities, 201–2
  perfectly correlated securities, 198–200
  practical implications, 212–13,
  problems, 215–16
  small positive correlations, 202–4
  two-security portfolios, 195–204, 220–1
  uncorrelated securities, 200
pound averaging, 367, 488
power law, 455
predictions *see* forecasting
preference shares *see* shares, preference
premium, 8, 249, 488
  equity risk, 236
  on forward exchange rates, 405
  for futures price, 286
  hypotheses, 120–3
  on ITC shares, 377–8
  market, 248–9
  to the offer price, 163
  option, 329
  and risk, 296
  supply uncertainty, 98, 490–1
  yield premium on options, 148
present value, 488
  of future cashflow, 45–7
price
  artificially maintained, 12
  of bonds and interest rate changes, 105–6, 123–9, 133–4
  cheap and expensive of bonds, 113
  cheapest-to-deliver, 278–83
  clean and dirty, 78, 88, 128, 473, 480, 482
  closing, 273
  closing midprice, 155–6
  discovery, 12, 17, 488
  of dual-listed securities, 159, 467
  and duration of bonds, 131
  and efficient markets, 22–3, 424–30
  equilibrium level, 21–3
  factor, 278, 489
  fair vs correct, 12, 18, 286–7, 428
  and filter rules, 425–6
  for foreign exchange swaps, 394–5
  of futures, 261–2, 269–70, 272, 274–5, 278–84, 286–8
  of gilts, 77, 99, 125
  impact of investing institutions on share, 386
  for initial listings, 163
  of investment trust shares, 467–8
  jumps, 455

level for shares, 20, 168–9, 184
maintenance of fair, 12–13
midprice, 155, 486
minimum movement, 265, 270, 272, 276, 284, 309, 347
'noise', 429
nominal value vs market price, 45, 77, 154
for options, 306, 311–22
quote and order-driven, 16–17, 52
and return, 45–7 (*see also* return)
relationship with yield and duration, 135
rigging, avoidance of, 12
series data, 20
setting for new securities, 15
settlement *see* settlement
of shares, 20, 21–4
short and long-term trends, 19, 20
smooth movement of, 337
stop loss, 292
strike price of options, 483
of swaps, 16
theoretical ex-rights (TERPs), 165, 167–8, 491
transparency, 16
trends in, 19–21
price–earnings ratio, 155–6, 175–7, 179, 181, 234–5, 435, 488–9
private equity fund, 489
private finance initiative, 72
private investors, 4, 30, 142, 356–8
see also small investors
privatisation, 72, 153, 163–4, 358
probabilities, 52–3, 183, 336–7
objective, 52–3
of option exercise, 324–5, 340–1
subjective, 53
see also risk
profits
after-tax, 186
corporate, 172, 183
excess, 18, 483 (*see also* picking winners)
and investor strategy, 463
property as investment, 362, 371, 372, 374, 470
protection for investors, 13, 31, 32
see also regulatory regimes
protectionism, 26
Prudential plc, 167–8
public sector, 27
gilt holdings, 73
share ownership, 30, 357
purchasing power of money, 10, 80
purchasing power parity theory, 406–8, 410, 489
put options *see* options
put–call parity, 335–6

Q
quotation basis for futures contracts, 265, 272, 276–7, 284
quotation basis for options, 309, 347
quote-driven markets, 16, 266

R
R squared, 233–4, 235, 240
Ralfe, John, 367
random walk theory, 19–21
ranking of debtors, 6, 7, 4–5, 146, 153, 154
readership of the book, xvii
rebasing indices, 83
redemption yield, 87–90, 91–4, 104–10, 125, 129, 132, 144–5, 294, 489
regression analysis, 224–5, 251
regulatory regimes, 15–16, 28, 31–3, 34, 40, 358, 363, 374, 380–1, 395
repatriation of earnings, 9
repo *see* repurchase agreements
repurchase agreements, 16, 96, 489
research *see* analysis
reserves, national, 28
Retail Price Index, 81–2, 90–1, 433
return on investment, 4, 40–66, 104–5, 170–84, 249
abnormal, 234–5, 238, 443, 445
calculation of, 438–41, 473
calculation for bonds, 85–95
derived from the CAPM, 256–8
dispersion on bonds, 97
distribution for shares, 161
expected, 40, 460
fair, 20, 431, 436, 437
holding period, 41–3, 85, 171, 172–3, 177–8, 290, 392, 485
internal rate of, 440
on London stock market, 453–4
measurement of, 52–8
minimum acceptable, 213
nominal rate, 487
patterns in, 20
for portfolios, 194–221
and present value, 104, 126, 128, 132
and price, 45–50
real and nominal rates, 80, 489
real on government bonds, 28, 97
and risk, 40–1, 104, 183–4, 230–1, 382–4, 431–2
total, 491
Reuters, 179, 460
rights issues, 165–6, 489
case study, 167–8
rights of investors, 6
risk, 8–10, 40–65, 105–6, 161, 183–4, 489

active, 444–5, 461, 470, 479
adjustment in performance measurement, 441–5
aversion, 41, 60, 204, 307, 314
to company profitability, 44
as core investment criterion, 4
credit risk, 262, 267, 288–9, 296, 301
default risk, 44–5, 145, 296
definition of financial, 5, 9, 54–6
diversifiable, 232, 237, 238, 241
external factors, 9–10
foreign exchange, 366–7, 390–4, 397–412, 417, 458
in futures trading, 291
and hedging *see* hedging
inflation, 50–2, 432
and insurance, 373
internal factors, 8–9
and investment trust shares, 378
and leverage, 245
management using futures, 261–304
maximum acceptable, 213, 461
measurement of, 52–8
non-market, 214
and pension funds, 365, 369
and portfolio theory, 194–221, 238, 369, 413
premium, 161, 184, 296, 483
reduction of, 14, 61–4, 206–9
relative, 444–5
and return, 18, 40–66, 183–4, 230–1, 382–4, 431–2
risk-free borrowing rate, 247–8, 250
risk-free securities, 7–8, 72, 74, 223, 226–7
risk-neutral option valuation, 329–30
of shares and options, 313–14, 318–20
specific, 232–4, 237, 241, 437, 447
transformation in markets, 14
types of, 43–52
and uncertainty, 9
Roberts, H. V., 20
Roll, R., 252
Rolls-Royce, 163
Ross, S. A., 251
Rothschild family, 25, 97
Royal Bank of Scotland, 191, 234
Royal Exchange, 25
rump stock, 79

S

Safeway, 169, 175, 177, 190
Sainsbury, 13, 17, 157, 158, 174, 180, 190
Samuelson, P., 19
scale, economies and diseconomies, 14
Scholes, M., 336
Schroder family, 25
scrip issues, 168–70, 489
search costs, 12
seasoned equity offerings, 165, 489
secondary listings, 34, 36, 155–7, 159, 165
secondary market, 5, 8, 10, 11, 15, 489
secondary offerings, 165, 489
sectors *see* industry sectors
secured investments, 44, 145
securities
definition of, 4, 5, 490
dimensions of difference between, 5–6
market line, 223, 231–2, 453, 475
marketable, 5, 486
nominal value on London stock exchange, 27
secured and unsecured, 5
underlying derivatives, 261, 309
see also bonds, shares
selectivity, 445–7
selling short, 287, 337, 490
serial month contracts, 270, 273
SERPS, 360
SETS, 32–3
settle, 273, 309
settlement, 480
dates, 266, 268, 278
mechanisms, 12, 269
mode and price for futures, 266, 270, 273, 276, 278, 284, 305
mode and price for options, 309, 346–7
shareholders
on London stock exchange, 30
and pension funds, 368–9
rights and duties of, 6, 9, 44, 385–6
versus option holders, 308
see also investors
shares, 2, 141–2, 366–8, 371, 372, 376, 379–80
analysis and valuation, 152–93
beneficial ownership of UK, 30
buyers of *see* investors, institutional; private investors
capital, 480, 490
categories on London stock exchange, 34–8
cumulative preference, 146
dilution of, 147
growth, 435
hedging of, 295
in investment trust companies, 468
income, 485
issuance and listing, 161–70
nominal value, 154
ordinary, 6, 152, 154, 487
ownership by type of investor, 30, 357, 362
par value, 154

performance of, 42, 233–4
portfolios of *see* portfolio, portfolio theory
preference, 26, 36, 45, 141–2, 145–6, 152, 153, 154, 160, 488
prices *see* price
return on, 249
selection of, 435
share capital, 6
share split, 170, 490
small company, 464, 468
in split capital trusts, 378
types of, 6, 26, 153
valuation measures for ordinary, 170–84
versus options, 313–14, 318–20
and voting rights *see* voting rights
Sharpe, W. F., 224, 232
measure of risk, 441–2
Shell, 36, 154, 191, 234
dual listing anomalies, 159, 467
Shleifer, A., 466, 468
shocks, market, 21
short positions, 213, 287, 289
short-termism, 385
SICAV, 376, 379
single-capacity system, 31
size of transactions, 75, 275–6
normal market, 16
skewed distribution, 56
Slough Estates, 154
small
companies, 16, 32, 248, 464, 468
investors, 14, 73–4, 75, 163, 214, 289–90, 358–9, 428 (*see also* private investors)
Social Security Act 1986, 360
Social Security Pensions Act 1975, 360
software, use of, xvii
Solnik, B. H., 412–13, 456
Somerfield, 158
South Sea Bubble, 25, 307
Soviet Union (former), 153
Spain, 85
Speidell, L., 456
spike, 490
split capital trusts, 378–9
spot, 490
contract, 394
exchange rate, 394, 396–7, 490
interest rates, 104, 110–14, 116–25, 490
rates for gilts, 127
settlement, 261
stagging, 163, 490
standard deviation, 55–7, 183, 199, 337, 473
Standard & Poor's, 45, 142, 284, 436
State Earnings Related Pension Scheme (SERPS), 360
stock brokers, 31, 358
stock, common, 6
definitions of, 7
gilts no longer named, 77
see also shares
stock exchange, 3, 266, 490
benefits of, 12
London *see* London stock exchange
UK provincial, 26
various, 24, 416
see also market(s)
Stock Exchange Trading System (SETS), 32–3
stock selection, 435 (*see also* picking winners)
stop loss order, 292
straddle, 5, 322, 344, 490
strap, 322
strategy, 102–50, 422–51
active, 103, 136–7, 139–40, 236–9, 417, 423, 434–6, 461
arbitrage *see* arbitrage
buy and hold, 427
hybrid policy, 436–7
international diversification, 412–17
for options, 311–22, 344–51
passive, 103, 136–9, 235, 239–41, 417, 423, 436, 461
strategic asset allocation, 434
two types for bond investment, 103
stripping, 69–70, 490
strips, 70, 85, 113, 126–8, 490
option combination, 322
prices of gilt, 95
return on, 94–5
strip markets, 85
structure of book, xvi–xvii, 4, 18–19
supply uncertainty premium, 98, 490–1
surplus sectors, 4, 11
Swapnote®, 302
swaps, 16, 263, 295–302, 364, 490–1
foreign exchange, 394, 395–6, 398, 402, 405
interest rate, 395, 485
swap spreads, 300
Switzerland, 416

T

T-bill, 73, 491
tactical asset allocation, 435
takeovers, 153, 162, 165, 169, 385–6, 435
hostile, 28
and insider information, 23
and pension funds, 364, 469
and voting rights, 160
see also mergers and acquisitions
taxation, 432, 463, 468
advance corporation tax, 187, 469

capital gains tax, 166, 170, 187–8, 378, 381
corporate, 176, 186, 372, 381
on debenture and loan income, 145
double, 187, 381, 391–2
on foreign investments, 456
income tax, 71, 187–8, 372
on insurance companies, 372–3
and life assurance, 360, 372–3
impact on CAPM, 247
issues for options, 307
on pensions/pension funds, 187, 360, 364, 381
tax credits, 187
UK of investment income, 186–8, 391–2
technology, trading, 16–17, 31, 32–3, 264, 267
tender offer, 163, 491
Tesco, 17, 156, 157, 158, 174–5, 234
theoretical ex-rights (TERPS), 165, 167–8, 491
'three percenters', 45
tick, 265, 270, 272, 276, 284, 309, 347, 491
tilted fund, 437
time horizon of investors, 15, 431
time preference for consumption, 491
time value, 491
of money, 87, 491
of options, 323–4
time-weighted rate of return (TWROR), 439–40
timing of transactions, 447–8
top-down approach, 457
tracking error, 436, 461
trade, international, 24–7
in financial services, 24–5
free, 26, 409
US deficit, 28
trade-off decisions, 58, 204
see also risk, return
trading
days, 266, 270, 273, 276, 284, 309, 347
in futures, 290–2
hours, 266, 270, 276, 284, 309, 347
methodology, 266–7 (*see also* technology, trading)
order-driven, 17
unit, 75, 275–6, 284, 309, 347
volume, 273–4
transaction costs, 12, 14, 18, 21, 22, 119, 214, 261, 262, 287, 288, 313, 337, 382, 396, 427, 431
on bonds, 119
deregulation of, 31
and economies of scale, 14, 384
of foreign investments, 391–2, 456
impact on CAPM, 226, 241, 247
impact on prices, 22
Treasury bills/stock, 7, 73, 223, 226–7, 229, 249, 491
Treynor measure of risk, 441–2, 449
Trustee Investments Act 1961, 368
Tuluca, S., 456
TWROR, 439–40

U

uncertainty, 9, 40–1
of income, 43–4
individual assessment of, 466
see also risk
undated securities, 45–7, 69, 73, 79–80, 491
underlying (asset), 261, 309, 312–13, 491
discount, 405
volatility of, 324–5
underwriting
fee, 163, 170
of IPOs, 162–3, 164, 170
of rights issues, 166
Unilever, 158, 234, 390, 457, 461
dual-listing anomalies, 159, 467
unit-linked insurance policies, 431, 491
unit market price of risk, 231
unit of trading, 275-6, 309
unit trusts, 14, 242, 357–8, 371, 372, 375, 376, 379–84, 417, 441, 491
as investment institutions, 360–1
investment strategy, 381–4, 464
financial assets of, 30,
United Kingdom
corporate organisation and structure, 26–7
economic performance, 24–5
market, 7, 24–38, 414, 416 (*see also* London stock exchange)
National Debt, 27, 70–2
'UK plc', 36, 157–8
UK government securities, 3, 34, 40, 45, 70–150, 270–84, 362, 371, 372
background on, 70–5
dispersion of returns, 97–8
markets and players, 95–100
return on, 42
see also bonds, gilts
US
government bond issues, 77, 84, 123
different from UK in corporate organisation, 26
dollar holdings, 28
market, 7, 24, 26–7, 28, 34, 44, 264, 307, 378–9, 384–5, 414, 416
pension funds, 456
unsecured loan stock, 145, 154
utiles, 59
utility, 41
curve, 204

definitions, 41
expected, 58–61
function, 41, 60, 64, 213, 216
of wealth, 58–61, 204
utility companies, 38, 153, 163, 358

V
value
of corporate assets, 243
of equities, 458
intrinsic, 312, 323, 486
market of equities on London Official List, 152
nominal of securities, 27
of options, 323–4, 326–43
par, 488
present *see* present value
see also price
valuation
methods for options, 326–43
measures for ordinary shares, 170–84
variability, 233, 235
variance, calculation of, 57, 196–7, 218, 232, 473
general rules, 232
variance–covariance matrices, 209–10
variation margin, 268, 491–2
Vodafone, 36, 38, 154, 191, 234, 236, 359, 386, 470
volatility of markets, 260, 291–2
and correlation, 455–8
and options, 311, 324–5
see also risk
voting rights
on London stock exchange, 31
of shareholders, 160

W
Waitrose, 36, 158
Wal-Mart, 36, 158
warrants, 147–8, 160, 308, 492
wars, impact of, 25, 26, 27, 71
Weston family, 13
Wilson, Harold, 358–9
Wilson Committee/Report, 80, 358–9
winner's curse, 98
with-profits policies, 373–4

Y
yield
current yield, 481
of deliverable gilts, 280–1
dividend yield, 171–2, 235, 482
interest, 86–7, 90–1, 172, 485
to maturity, 492
nominal, 93
one-year forward gilt, 119
redemption, 87–90, 91–4, 104–10, 294, 489
relationship with price and duration, 135
yield curves, 103, 107, 113, 118, 488, 492
and bond strategy, 103
convex, 135–6
humped, 122–3
par gilt curves, 107–8
parallel shift, 123
shape for UK government bonds, 122–3
Yugoslavia (former), 392

Z
zero-coupon bonds, 69, 110, 131, 226, 492
portfolio of, 130
yield curve, 113
zero dividend preference shares (zeros), 378, 492
zero-sum game, 103