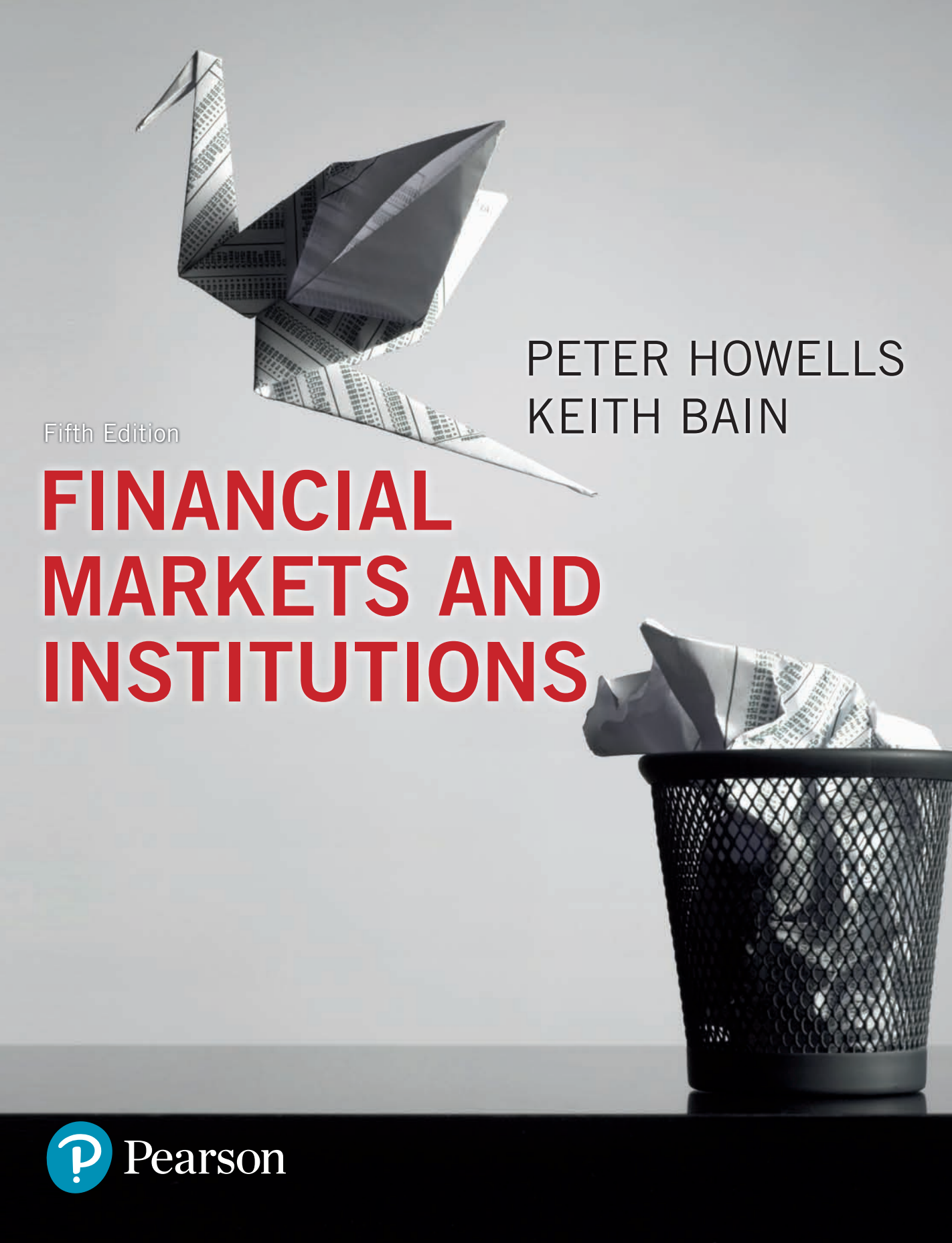

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Fifth Edition

# FINANCIAL MARKETS AND INSTITUTIONS

Pearson

# Financial Markets and Institutions

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**Box 5.1**

## Market participants

### Ultimate lenders and borrowers

Ultimate lenders are households and firms with a financial surplus which they want to lend, while ultimate borrowers are firms and governments with a financial deficit which need to borrow. It is not usual for ultimate lenders and borrowers to participate in markets directly. As a rule they deal through an intermediary which performs one or other of the following functions.

### Broker

Strictly speaking a broker is someone who brings together two parties with a coincidence of wants. In practice, however, brokers tend to act as agents of lenders or buyers of a financial service. Thus, they may undertake to find the best price for someone who wishes to buy or sell securities or to find the best insurance policy, for example.

### Issuing house

An intermediary who undertakes to issue new securities on behalf of a borrower. An issuing house thus acts as agent for the borrower in financial markets. In the UK, the task is usually carried out by merchant or investment banks (see Chapter 3).

### Market-maker

An intermediary who holds stocks of securities and quotes a price at which each of the securities may be bought and sold. Market-making is usually performed by the securities divisions of the major banks (see Chapter 3).

In addition to borrowers, lenders and their agents there are:

### Arbitrageurs

An arbitrageur is someone who buys and sells financial assets in order to make a profit from pricing anomalies. Anomalies occur when the same asset is priced differently in two markets at the same time. Because financial markets are well informed and highly competitive, such anomalies are usually very small and short-lived. Thus, to make a serious profit, an arbitrageur has usually to move large sums of money and very quickly. Notice, since the anomalies are known, there is no risk to arbitrage. This distinguishes arbitrage from speculation.

### Speculators

A speculator is one who takes a position, believing he knows better than the market. Since he may well be wrong, a speculator is taking a risk. He may buy share A expecting it to rise in price, only to find that it falls.

### Hedgers

A hedger is someone who buys or sells a financial asset to avoid risk. An importer who knows she will have to pay for goods in $US in three months' time may contract today to buy the dollars at a known price in sterling for delivery in three months' time. This avoids the risk that sterling's value against the dollar may fall before the payment is due.

but as we shall see in Chapter 6, there may be circumstances where it is preferable to raise short-term money instead.

It is sometimes the practice to divide these markets even further. In the case of money markets, for example, we sometimes distinguish as follows:

(a) the discount (or 'traditional') market;

(b) the interbank market;

(c) the certificate of deposit market;

(d) the gilt repo market;

(e) the local authority market;

(f) the eurocurrency markets.

Items (b) to (f) have traditionally been grouped under the heading of 'parallel markets'. This is a reflection of the fact that the discount market is the oldest of the markets and for many years was the largest. It used also to be the market in which central banks used their power to set interest rates. It has no special significance today.

Clearly, the divisions among this group of short-term markets will be even less watertight than they are between these and the capital markets. While there may be some segmentation between money and capital markets, there is very little segmentation *within* each group. This means that a change to interest rates in one market will be transmitted very quickly through all money markets. In other words, money market rates are highly correlated. We shall see that this correlation is frequently exploited by central banks which can cause an instant change in all short-term interest rates by dealing in just one market. Because these markets are highly competitive and interest rates are highly correlated, there are very small differences in the return on different money market instruments. This means we need some way of expressing very small differences in interest rates. This is done by referring to 'basis points'. A basis point is 1/100 of 1 per cent.

**Basis point:** A very fine measure of interest rates. Equal to one hundredth of one percentage point.

Finally, before we begin to look at any financial market, we need to understand that some markets have to fulfil two functions. They have to achieve a primary function of absorbing newly issued securities, which enable borrowers to raise new funds; they also have to carry out a secondary function of allowing holders of *existing* securities to sell them to those who wish to buy. Secondary trading does not raise new funds, of course; it merely redistributes the ownership of loans which were made in the past. But the fact that lenders can sell their loans cheaply and easily in a secondary market may make them much more willing to lend. An active secondary market may do much to increase the supply of lending while reducing its price. While both the primary and secondary trading take place in the same market, the practice has developed of talking about a primary market for a given type of

security and a secondary market, as though they were somehow different in location, design and rules.

**Primary market:** A market for *newly issued* securities.

**Secondary market:** The market for *existing* securities.

While the way in which a market fulfils its primary role is obviously very important to borrowers, every market is dominated by secondary trading.

In section 5.1 we shall look at the characteristics of the discount market. We look at this in some detail for two reasons. Firstly, until very recently the discount market was the money market in which the Bank of England carried out its interest-setting activities, and it remains important from that point of view. Secondly, much of what we learn about the discount market can be carried forward, without repetition, to our discussion of the parallel money markets in section 5.2. In section 5.3 we look at the way in which central banks, and the Bank of England in particular, can exploit their power in the money markets to set short-term interest rates.

## 5.1 The discount market

In the discount market funds are raised by issuing bills, 'at a discount' to their eventual redemption or maturity value. We shall look at the characteristics of bills more carefully in a moment. Transactions in the discount market are normally very large, enabling profits to be made from deals involving differentials in discount rates of small fractions of 1 per cent. The market has no physical location, relying almost exclusively on telephone contact between operators and, therefore, on verbal contracts.

As with any market, we can think in terms of a source of supply and a source of demand. In theory, bills can be issued by anyone, but in practice they are issued mainly by large corporations (commercial bills) and by the government (treasury bills). The main buyers and holders of bills used to be a highly specialised group of banks known as discount houses. Their central role came about because traditionally the Bank of England dealt only with the discount houses (rather than with the banks or financial institutions as a whole). In 1997, when the Bank began dealing directly with a wide range of banks, retail and wholesale, the discount houses lost their special position and were generally absorbed into the banks that we described in Chapter 3 as investment banks. This means that treasury and other eligible bills are now widely held throughout the banking system. As we said in section 3.3, this is one of the reasons why banks can manage with such a low ratio of primary reserves. The existence of an active discount market, together with the distinctive characteristics of bills (we look at these in a moment), means that these assets are highly liquid. In the event of a shortage of primary reserves (cash and deposits with the central bank) banks can sell bills very quickly and for a price which is virtually certain.

Bills are certificates containing a promise to pay a specified sum of money to the holder at a specified time in the future. After issue they can be traded (they are thus

'securities') and so the holder at the time of redemption need not be the person to whom the bill was originally issued. Compared with other financial instruments, bills have a number of distinctive features.

Firstly, bills are issued in large denominations. The minimum is £5,000, but few treasury bills are issued for less than £250,000 and most bills are much larger than this, up to a maximum normally of £1m.

Secondly, they are a highly liquid form of asset. This is due firstly to their short maturity (treasury bills are normally issued for ninety-one days) together with the fact that they can be quickly bought and sold before maturity in a highly organised market. It is reinforced further by the fact that they have a low default risk. In the case of treasury bills the reason for this is obvious, but commercial bills can acquire a similar status. We saw earlier that commercial bills are frequently 'accepted' by a bank at the time of issue. Accepting bills was once the principal function of those merchant banks which are still sometimes referred to as acceptance houses (see section 3.2); it is now carried out by a large number of banks. Bills which have been accepted by one of the major banks, recognised for this purpose by the Bank of England, acquire the ultimate standing, along with treasury bills, of being 'eligible' bills. The immediate significance of this is that they are eligible for discount at the Bank of England. Eligible bills, particularly treasury bills, are the nearest examples in practice of risk-free securities. They are short term and so need be held only for a short period to redemption, at which point they deliver a known rate of return; the potential default risk is also minimal, requiring as it does a repudiation of the bill by the government or by a major bank.

Thirdly, the reward to the lender for holding a bill to redemption comes in a form which resembles a capital gain rather than a conventional rate of interest. This is because bills are issued 'at a discount' to their redemption value. For example, the government might make an issue of £100,000 ninety-one-day bills, each at a discount of £1,000. This would mean that a buyer would pay £99,000 and receive £99,000 plus £1,000 in three months' time. However, it is obviously essential to have some way of comparing the cost and reward of borrowing and lending in this way with other methods which pay interest. This is done by calculating a rate of discount. The appropriate formula is

$$d = (R - P)/R \cdot n \tag{5.1}$$

where $d$ is the rate of discount, $R$ the redemption value, $P$ the initial price of the bill and $n$ the time to redemption in years. In the present example, therefore,

$$d = (100{,}000 - 99{,}000)/100{,}000 \times 0.25$$
$$= 1{,}000/25{,}000 = 0.04 = 4\% \text{ p.a.}$$

Although comparable with an annual rate of interest, however, this rate of discount is not identical. Notice that this calculation features the reward (£1,000) as a proportion of the redemption value (£100,000). In calculating a rate of interest, by contrast, we would normally express the reward as a proportion of the outlay, here £99,000. The formula would be

$$i = (R - P)/P \cdot n \tag{5.2}$$

**Table 5.1 Returns on money market instruments**

| | |
|---|---|
| The discount market | |
| – Treasury bills | *d* |
| – Commercial bills | *d* |
| Commercial paper | *d* |
| Certificates of deposit | *y* |
| Interbank deposits | *y* |
| Money market deposits | *y* |
| Repurchase agreements | *y* |

In the present case $i$ would take the value 4.04 per cent p.a. It is important to remember, therefore, when comparing returns on money market instruments that a rate of discount will always indicate a slightly higher equivalent rate of interest. Money market instruments whose rate of return is expressed as a conventional rate of interest are said to be 'quoted on a yield basis'. Table 5.1 lists a variety of money markets, showing those whose returns are quoted thus ($y$) and those where the return is expressed as a rate of discount ($d$).

Fourthly, since the return for holding a bill to redemption is known at the time of issue, bills are *fixed-interest securities*. In common with all fixed-interest securities, therefore, their price will change with any change in market or current interest rates. We shall see more formally why this is the case when we discuss bonds in Chapter 6, but it is a relationship which is easy to grasp intuitively if we just consider the position of a holder of existing bills. These will have been issued with a fixed redemption value and we must assume that the holder calculated that this would give him a return equal or similar to alternative returns currently available. If market rates now rise, there will be instruments newly available with the higher return. Indeed, newly issued bills will have to carry a larger discount to match the higher market rates. In the circumstances, ignoring transaction costs, it will pay existing holders to sell their old bills in order to buy the new, higher-yielding instruments. The price of existing bills will therefore fall. As their price falls, however, a larger differential between their current and redemption price emerges. Eventually their price will fall until they yield a rate of return similar to that available on new ones.

Lastly, with no change in interest rates, the market price of a bill will approach its redemption price as the period to redemption shortens. Again, this may seem intuitively obvious. The redemption value is fixed. If the price were to remain constant, the gain received on redemption would be constant. However, with the period to maturity diminishing this would represent an ever-increasing rate of return. It can be seen clearly by considering the expression for the rate of discount above. If market interest rates are unchanged, then $d$ is given. $R$ is given also. As redemption approaches, the value of $n$ diminishes. With $n$ diminishing and $R$ constant, the value of the denominator will fall. If the value of the whole expression, $d$, is to remain constant, the value of the numerator must also fall. With $R$ given, this can happen only if $P$ rises.

Given the expression for finding the rate of discount (5.1), we can easily find the price by rearranging as follows:

$$P = R - d(R \cdot n) \tag{5.3}$$

**Exercise 5.1**

### Rates of discount and rates of interest

The current rate of discount on treasury bills is quoted at 11 per cent.

(**a**) Calculate the price of a newly issued, ninety-one-day treasury bill for £100,000.

(**b**) Assuming that interest rates remain unchanged, what will its price be when there are 36 days left to redemption?

(**c**) The interest rate currently quoted on three-month local authority deposits is 11.5 per cent. Is this better or worse than the return on treasury bills?

(**d**) What would be the price of a newly issued, ninety-one-day treasury bill if interest rates generally rose by 1 per cent?

*Answers at end of chapter*

We now know that bills are short-term instruments, issued to raise funds for periods of up to one year, and that they are issued at a discount where the discount provides the return to the holder of the bill. If interest rates change, this must be reflected in the money markets as in all others. A rise in interest rates causes bill prices to fall, while falling interest rates will boost bill prices.

However, when we talk of a 'market', we normally think of prices changing because of changes in supply and demand. It might be useful, therefore, to see how we can analyse the operation of the discount market, using a supply and demand framework but maintaining a focus upon short-term interest rates. (This will be a useful investment for the future, since much of the analysis can be applied to other financial markets in which we are interested.) We begin with the supply side of the market and then turn to demand.

Compared with markets for goods and services, financial markets display a few curious features. The first of these is that what we refer to as the 'supply' of bills is in fact a stock rather than a flow. There is, more or less continuously, a flow of newly issued bills and a flow of bills maturing (i.e. ceasing to exist) and the relative sizes of these flows will cause the stock to expand or contract. But we cannot in this case take the flow of newly issued bills, or even the net flow (new issues minus redemptions) as the supply and learn anything useful from it about the operation of the market. We have to take the supply of bills to be the existing stock because, as we said above, bills are securities which can be traded. People can buy and sell existing bills. What is more, the stock of existing bills is much larger than current flows and therefore most transactions will involve existing bills.

In Figure 5.1 we have the price of bills on the vertical axis and the stock of bills on the horizontal axis. Because we are treating it as a stock, the supply of bills is