

# Financial markets

## 1. Introduction

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### 1.1. Chapter overview

This chapter explains the purpose and role of markets in general, as well as the role of the London Stock Exchange (LSE), in providing a trading platform for the securities market. As you will see, it is not only shares that are traded on the Exchange, but also corporate bonds, UK Government bonds (gilts), American Depositary Receipts (ADRs), warrants and a selection of other instruments. Importantly, you will learn some of the different trading systems the LSE operates and understand different roles played by LSE member firms.

We will then move onto the debt markets. The trading of debt uses systems and markets, much the same as equity. However, the debt market is a predominantly quote driven market.

The chapter ends by looking at the derivatives markets. These investments are heavily traded on exchanges such as LIFFE, but there is also a very large and liquid over-the-counter market. Both these methods of trading will be looked at in this chapter.

### 1.2. Learning outcomes

On completion of this module you will:

#### The role of the financial market

- 1.2.1 Differentiate between a financial security and a real asset
- 1.2.2 Identify the key features of: -a common equity share, a bond, a derivative contract, a unit in a pooled fund, and a foreign exchange transaction
- 3.4.1 Explain the role of an investment exchange
- 1.2.3 Identify the functions of securities markets in providing price transparency and liquidity
- 1.2.7 Define liquidity risk and identify why it is important
- 1.2.4 Identify the reasons why liquidity and price transparency are thought to be important for the efficient allocation of capital costs when trading in securities markets
- 1.2.5 Calculate round trip transaction costs incorporating bid-ask spreads, dealing commission and transaction taxes, both in percentages and in absolute amounts
- 1.2.6 Identify the types of securities and the market conditions where price transparency, liquidity and depth are likely to be high / low

#### Trading

- 3.4.5 Identify and distinguish the roles of LSE, NYSE Liffe, and LCH.Clearnet
- 1.3.1 Identify the main dealing systems and facilities offered in the UK equities market
- 1.3.2 Identify the nature of the securities that would be traded on each of the main dealing systems and facilities

- 1.3.8 Explain the roles of the various participants in the UK equity market
- 1.3.7 Distinguish between a quote-driven and an order-drive market
- 1.3.6 Distinguish between the following alternative trading venues: Multilateral Trading Facilities, Systematic Internalisers and Dark Pools
- 1.3.9 Explain high-frequency trading, its benefits and risks

### **Bond markets**

- 1.3.3 Explain the structure and operation of the primary and secondary UK markets for gilts and corporate bonds

### **Derivatives markets**

- 3.4.6 Identify the features of trading systems for derivatives
- 3.4.9 Explain the arrangements for market transparency and transaction reporting in the main derivative markets
- 3.4.7 Identify the main features of the regulation of derivatives

### **Settlement**

- 1.4.1 Explain the clearing and settlement procedures for UK exchange traded securities
- 3.4.8 Identify the main features of clearing and settlement for trading on derivatives exchanges, and when trading over-the-counter (OTC)
- 3.4.10 Explain the impact of MiFID and International Accounting Standards on the regulation of derivative markets
- 1.3.5 Compare and contrast exchange traded and over-the-counter (OTC) markets

### **International markets**

- 1.7.2 Explain the structure and operation of the primary and secondary markets for Eurobonds
- 1.7.1 Explain the structure, features, regulatory and trading environment of international markets, including developed markets and emerging markets
- 1.7.3 Explain the settlement and clearing procedures overseas, including the role of international central securities depositories, and the different settlement cycles and challenges in managing global assets

## 2. The role of the securities markets in providing liquidity and price transparency

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### 2.1. Differentiate between a financial security and a real asset

#### Real assets

Real assets are tangible. These include land, buildings, machines, and knowledge that can be used to produce goods and services. Other common examples of investments in real assets are paintings, antiques, precious metals and stones, classic cars etc. Due to the physical nature and variability in quality of these assets, real assets often suffer from illiquidity and difficulty in pricing.

#### Financial assets

Financial assets or securities include shares, bonds, units in unit trusts, etc. These represent a legal claim on future financial benefits. Although they do not contribute directly to the productive capacity of the economy they are the means by which individuals hold their claims on real assets and the income generated by these real assets.

### 2.2. Key features of asset classes

#### Shares

##### Ordinary shares

Ordinary shares are the most common form of equity and are sometimes called **common shares** or **equity**.

Ordinary shares give shareholders the following basic rights:

- **Right to vote** in company general meetings (although non-voting ordinary shares do exist)
- **Right to a dividend** reflecting the profits of the underlying company. Dividends payable to ordinary shareholders will only be paid **after** all interest and preference dividends have been satisfied. Therefore, if a company is unprofitable, the ordinary shareholders are most likely to lose out. However, should the company generate profits, ordinary shareholders can expect a good return in order to compensate for this risk
- **Right to a surplus on winding up**. In the event of the winding up of a company, ordinary shareholders are entitled to a share of the remaining (i.e. surplus) assets of the company after **all** other liabilities have been paid
- **Preference shares** are less common. They offer a fixed dividend (payable before the ordinary share dividend) and no voting rights. Most preference shares allow the dividend to roll up if it is not paid out (**cumulative preference shares**) and some allow conversion into ordinary shares (**convertible preference shares**). Other forms include participating and redeemable.

#### Bonds and bills

Bonds and bills are a form of debt raised by governments and companies. Debt involves borrowing money with a firm commitment to repay both the capital and associated interest in the future.

Debt securities are tradable instruments issued to investors in return for borrowed funds. These instruments typically pay a rate of interest (or **coupon**) on a six-monthly or annual basis. The capital amount (or **principal**) is repaid in full at some point in the future often referred to as the **redemption date**.

A bond is a way of describing a medium- to long-term debt security. Typical maturity (i.e. repayment) of a bond is more than one year from its original issue date.

A bill is a short-term debt security: a security maturing in less than one year.

## Derivatives

Derivative products 'derive' their value from other products – often called the underlying asset. Examples of derivatives are **futures** and **options**.

### Futures

A future is an agreement (or contract) between two parties who agree to buy or sell a specific quantity of a specific asset to be delivered on a specific date in the future for an agreed price. The person agreeing to buy the asset in the future takes the **long position**. The person agreeing to sell the asset in the future takes the **short position**.

The terms and conditions of the future transaction (i.e. price, size, quality etc) are agreed **now**. The price agreed for the asset, however, is paid on the agreed future delivery date.

### Options

An option gives the buyer the right (not the obligation) to buy (**call option**) or sell (**put option**) an underlying asset at a fixed price on, or before, a given date in the future.

Notice that the buyer has a choice whether to buy or sell: with futures, both the long and short have an obligation. Only the seller of an option has a potential obligation.

Another difference is that the buyer of an option pays a premium to the seller. There is no premium paid when buying futures.

## Units in collective investment schemes

Collective investment schemes are large pooled funds that include **unit trusts** and **investment companies with variable capital** (also called open-ended investment companies). These collective investment schemes manage large portfolios of assets on behalf of many investors. The investors receive a security called a **unit** in these schemes. Each unit reflects a small percentage of the assets under management by the scheme. The units will generate capital gain and income for the investors. The interests of the unit-holders are represented by the Trustee, who will be independent of the fund management group.

## Foreign exchange

The foreign exchange (FX) market is a global **over-the-counter** (OTC, or **off-exchange**) market in the world's different currencies.

It is a **quote driven** market in which major international banks are the only participants. It is not a market in which private investors or companies act directly. Even large companies and investment funds use banks to access the FX markets.

There is a spot market, where settlement occurs T+2, and forward market for longer settlement periods. To avoid default risk (called Herstatt risk in the FX market) many trades are settled through **continuous linked settlement** (CLS), which offer **payment versus payment** (PvP) protection against default (essentially a money back guarantee).

Investment in foreign currencies could be for transactional purposes – companies needing to settle an invoice in a foreign currency – or speculative purposes – investors gambling on the appreciation or depreciation of a currency.

## 2.3. Role of an exchange

As with equity and debt exchanges, a derivatives exchange is a marketplace on which traders can meet to agree prices on various investments. The exchange is generally regulated by the local regulator, but is also given a specific regulatory role itself in monitoring transactions and the participants to ensure that regulatory protocol has been followed. The exchanges will also ensure a transparent market, where all trades are reported and published so that participants know the current market prices and the trends for those prices.

## 2.4. Liquidity and transparency

Liquidity is the ease with which investors can enter into and out of an investment. The greater the number of buyers and sellers for a particular product, the greater the liquidity will be. Buyers and sellers that are well informed about the prices of assets will be more willing to enter the marketplace for those assets. For this reason, transparency of prices and volumes plays a vital role in the liquidity of markets.

### How markets provide liquidity

Exchanges, such as the London Stock Exchange and NYSE.Liffe play a vital role in the liquidity and transparency of markets. Listed below are some of the key reasons.

1. An exchange provides a central market place for buyers and sellers to meet; they concentrate the liquidity in one place.
2. An exchange provides systems that can give investors access to real-time price and volume information, keeping them well informed about market information.
3. An exchange regulates its members, giving an additional layer of confidence. This in itself increases the willingness of participants to trade, adding further to the liquidity of the markets.
4. Where derivatives are concerned, an exchange standardises contracts, to ensure everyone is trading the same type of product.
5. Exchange will give members access, and often insist on the use of, systems to reduce the risk of default on the trade, e.g. LCH.Clearnet and Euroclear UK and Ireland's CREST

### Pre-/Post-trade disclosure requirements

MiFID has laid down a framework of disclosure requirements for trading activities. The pre-trade requirements apply to those trades conducted on regulated markets and multi-lateral trading facilities (MTF) and the post-trade requirements apply to all firms conducting trades either on or off exchange.

#### Pre-trade disclosure

This refers to information displayed by execution venues to investors, whereby an exchange or MTF must display current prices and daily trading volumes to all investors on its trading screens. This allows the investors access to this real-time information before they input their trades.

#### Post-trade disclosure

All firms are required to report their completed transactions as soon as possible after completion, whether they are conducted on a regulated market, multilateral trading facility (MTF) or other market. The publication may be subject to a delay, dependent on the size of the trade.

If the execution venue is an order book, there is no need for the member to make a trade report as the system will do this automatically. Publication will immediately occur on the order book where the best five prices for both buying and selling orders with trading volumes must be displayed.

## 2.5. Why liquidity is important for the efficient allocation of costs

### Introduction

Markets that are decentralised, such as over-the-counter (OTC) markets, or fractured, such as much of the corporate bond market, tend to suffer from less liquidity. Lower levels of liquidity are a disadvantage explicitly – leaving investors unable to crystallise profits or limit losses – or implicitly – through the additional costs involved in the transaction.

**Liquidity risk** is the risk that an investor may be unable to sell an asset they own when they wish to do so at a price that is fair. In the securities markets, this could leave an investor unable to crystallise a profit if their asset has risen in value but there are no willing buyers. It could also mean that they are left holding an asset that continues to fall in value, losing the investor more money.

These risks also exist in the derivatives markets, but there is the additional risk of unwanted delivery situations. If the investor is unable to close out a physically delivered derivative before the delivery date, they may be obliged to take or make delivery on the contract.

There is also a link between liquid markets and efficient pricing. Liquid markets, with many buyers and sellers, tend to have efficient price discovery, where the price at which the asset trades is the price agreed upon by many well-informed participants. Having all prices displayed on order driven platforms, such as the London Stock Exchange's SETS platform, adds to the clarity in pricing and the certainty of receiving the best price available. Illiquid markets, typically, do not have this level of transparency.

Liquid markets not only contribute to the efficiency in pricing but also incur lower transaction costs. These could be costs built into a bid offer spread and/or additional cost imposed through broker/adviser fees. Where markets are illiquid, the spreads tend to be wider and the additional costs higher. These higher costs are to compensate those making a market for the additional risk caused by the uncertainty in pricing and the possibility of being unable to exit any position they enter into with their clients.

### Impact of transaction costs on returns

When considering the returns generated through an investment, it is common for an investor to forget to consider the transaction costs involved in generating that profit. These additional costs can significantly erode the returns.

Costs suffered could be:

- Bid/offer spreads on the market itself
- Broker/adviser fees to gain access to the market
- Stamp duty reserve tax charged at 0.5% on purchases of chargeable securities
- Takeover Panel levy charged on all LSE transactions above £10,000
- Foreign exchange rate movements if investing in a foreign currency

### Example

An investor buys 2,000 shares quoted at £4.70/£4.78 on the 10th July. Six months later the shares are sold at a market price quoted at £5.10/£5.22. The investor's broker charges a commission of 0.75% on all trades. Assume no dividends were paid during the holding period. After considering all costs, including SDRT and the PTM levy, what is the investor's return?

#### Without costs

The investor's return would be:

- Cost of shares =  $2,000 \times £4.78 = £9,560$
- Proceeds from sale of shares =  $2,000 \times £5.10 = £10,200$
- Total return =  $£10,200 / £9,560 - 1 = 6.69\%$

Note: even here, there is the cost implied by the spread on the quote.

#### With costs

##### Total cost of purchase

- Cost of shares =  $2,000 \times £4.78 = £9,560$
- **PLUS**
- Broker's commission =  $£9,560 \times 0.0075 = £71.70$
- SDRT =  $£9,560 \times 0.005 = £47.80$
- Total cost =  $£9,560 + £71.70 + £47.80 = £9,679.50$

##### Net proceeds on the sale

- Proceeds from sale of shares =  $2,000 \times £5.10 = £10,200$
- **MINUS**
- Broker's commission =  $£10,200 \times 0.0075 = £76.50$
- PTM levy = £1
- Net proceeds =  $£10,200 - £76.50 - £1 = £10,122.50$

**Total return after all costs** =  $£10,122.50 / £9,679.50 - 1 = 4.58\%$

## 2.6. Impact of the type of security or market on transparency and liquidity

As mentioned before, liquidity on exchanges tends to be very good. This is due to:

- The number of buyers and sellers trading in a central location
- The confidence in the efficiency of the market through the use of:
  - Efficient information systems providing transparency in prices and volumes
  - Electronic order books, such as the LSE's SETS, giving members access to all trading volumes at that point in time and immediate execution at agreed prices
  - Clearing houses, to register and confirm trades, and settlement agencies, to arrange delivery and payment, giving confidence that any agreed trade will proceed to delivery

However, even on exchanges, some securities are less liquid than others are. Securities can become illiquid for many reasons. It could be down to:

- The price becoming too high, creating a large entry cost to the investment
- The price becoming too low, leading to proportionally large bid/offer spreads

- The company becoming unfashionable/uninteresting

Exchanges attempt to create liquidity in less liquid stocks by adapting the crossing platforms they use. For example, the LSE has done this with SETSxx, which provides a series of periodic auctions instead of continuous order book trading.

Market makers also provide liquidity in the markets where there is no natural liquidity. Exchanges may appoint these market makers as part of exchange systems, or they may be systematic internalisers – firms providing a market making (and crossing) function directly to their clients. As a market maker, the firm offers a bid/offer spread to investors and commits to buy/sell at those prices. If an investor cannot find a buyer or seller, they can approach a market maker and trade at the prices quoted. As mentioned above, the less liquid the stock, the wider the bid/offer spread is likely to be.



## 3. Trading securities in the UK

### 3.1. LSE: introduction

The LSE's origins go back to the 17th century, when people wishing to invest in joint-stock companies met in coffee houses to strike deals.

The headquarters are now at Paternoster Square, next to St Paul's Cathedral, and the LSE has grown into one of the major stock exchanges of the world. The LSE provides a marketplace where over 3,000 company securities, both domestic and international, are traded.

The main purpose of an exchange is to provide a centralised market place at which buyers and sellers can meet, and in doing so create the maximum possible liquidity for those products.

It is not just liquidity, however, that exchanges provide. All exchanges in the UK need to be **recognised** by the Financial Conduct Authority (FCA). In acquiring recognised status, an exchange has proved that it has adequate rule making and monitoring facilities to govern its members and their trading activities. In this way an exchange also provides orderly markets on which to trade.

### 3.2. The main dealing systems for UK securities

The list of securities is as follows:

**Table 7. The main dealing systems for UK securities**

Name of system	Function
Trading systems	
SETS	Continuous order book execution system for FTSE All Share index and most liquid AIM and Irish shares
SETSqx	Hybrid system. Periodic order book execution with market maker support for most other UK shares.
SEAQ	Quote driven system for any shares too illiquid for SETS or SETSqx as well as corporate bonds
International Order Book	Order driven system for international depositary receipts
European Quoting Service	Quote driven system for European listed securities
Order book for Retail Bonds (ORB)	Retail focused order book trading for gilts, supra-national bonds and corporate bonds
International Board	Facilitates reciprocal trading arrangements between LSE and other exchanges. Currently only the Singapore Stock Exchange has joined.
Other systems	
European Trade Reporting	Enables members to meet their post-trading obligations
LCH.Clearnet	Central counterparty to all trades executed on the SETS order book. Manages default risk on behalf of members.

Name of system	Function
CREST	Settlement system for UK and Irish securities. Owned by Euroclear UK and Ireland

### 3.3. Participants in the markets

In order to trade on and investment exchange a firm must be a member of the exchange. However, there are differing forms of membership and a range of roles and obligations that can be taken on in addition to the basic membership.

#### Broker/Dealers

A broker/dealer can trade in one (or both) of two ways: buy and sell securities on behalf of clients (act as **agent**), and/or buy and sell securities for their own account (act as **principal**).

#### Dealing (principal trades)

By acting as principal, the firm is taking a position itself, i.e. 'running a book'. The aim is to make a **turn** on the trade (buy low, sell high). When acting as principal the trade will be assigned to the firm's house account.

#### Broking (agency trades)

Alternatively, the firm may act as agent on behalf of a client. In these circumstances, the firm will **not** take a position but instead earns commission on the trade. When acting as agent, the trade will **usually** be assigned to a segregated account which is separate from the firm's own account. Some clients may, however, consent to their trades being allocated to a non-segregated account.

#### Dual capacity

Due to the fact that a member firm may act either as agent or principal to a trade, they are said to have **dual capacity**.

#### Market makers

Market makers are member firms that have volunteered to provide liquidity (make a market) in a security.

A broker/dealer on the London Stock Exchange will apply to the LSE to register as a market maker. They will register to provide a market in a specific security.

They provide continuous liquidity in the markets by providing buy prices (**bid**) and sell prices (**offer**) to the market throughout a set time called the **mandatory quote period** (MQP). During this time the market maker is obliged to trade with clients at the prices quoted.

This means that the market maker is a guaranteed buyer and seller of the security in which they are registered.

Market makers registered to provide liquidity in the bond market are referred to as fixed income market makers (FIMMs).

Market makers registered to provide liquidity in the gilt market are referred to as gilt edged market makers (GEMMs).

#### Inter-dealer brokers (IDBs)

An inter-dealer broker, or IDB, is a firm that has registered with the exchange to provide intermediating services between other firms.

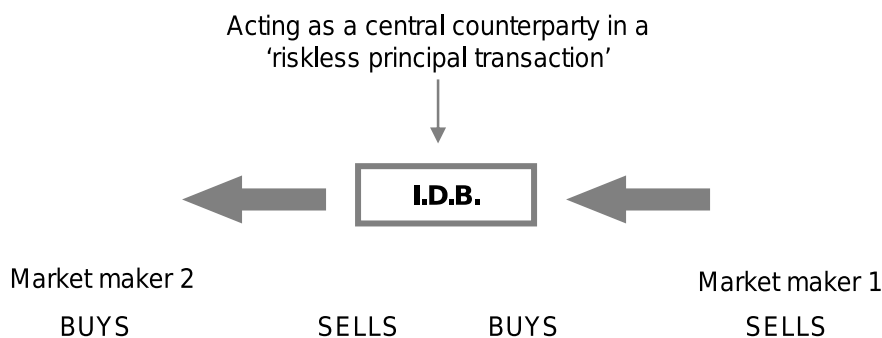
An IDB is used, primarily by market makers, to allow **complete** anonymity when either taking on, or off-loading, a position in a security.

Anonymity can be useful when a firm wishes to expose itself to substantial risk, and this is when IDBs are primarily utilised.

The IDB provides information to its users through screen-based systems or over the telephone.

When the users of an IDB agree a trade, the IDB would act as central counterparty to the trade, in order to maintain its clients' anonymity. This means that the IDB **buys** from MM1 and **sells** to MM2. The IDB is not making a spread on this trade as it earns its profit from fees and commission.

As the IDB agrees the price at which it will buy and the price at which it will sell before the trade is effected, it is said to have performed a **riskless principal transaction**



## Stock borrowing and lending

A Stock Borrowing and Lending Intermediary (SBLI) is used to provide liquidity in the secondary market and can assist firms with short positions in a security.

For example, suppose a market maker sells 1,000 shares of a security in which it is registered without owning the shares.

Although this may sound strange, it is very common. Because settlement of that trade is usually T+3, as long as the market maker has the stock to deliver in three days' time, the trade will settle as normal.

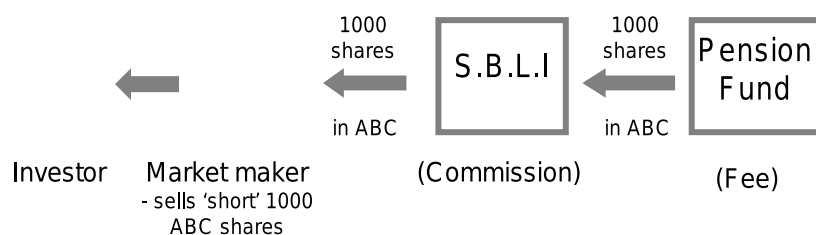
In order to achieve this, the market maker could contact an SBLI who will have access to large blocks of institutionally held stock.

For a fee, an institutional investor, for instance a pension fund, will lend the securities out to the market maker via the SBLI. Collateral may be required by the pension fund.

Lenders of securities tend to be institutional investors with large portfolios that are passively held. These include:

- Pension funds
- Insurance and life companies
- Mutual funds and unit trusts

It is possible that active funds might also lend but there is more chance that the securities will be recalled, thus making it less attractive to borrowers.

**SBLI: example**

After the market maker has sold the shares 'short', it will borrow stock via an SBLI so that it can settle its position with the investor.

**Key points on the SBLI diagram**

The pension fund loses the benefits attached to the securities, i.e. voting rights. All rights are now attributable to the investor. The investor will become the registered owner of the shares.

If this means the pension fund loses out on any dividends paid on the shares during the time the stock is being lent out, an artificial dividend will be manufactured into its fee.

The pension fund is only lending the stock out, and will therefore want it returned at some point in the future. It is the responsibility of the market maker to return the equivalent shares to the pension fund at a pre-determined future date.

**3.4. Quote vs. order driven****Quote driven**

Quote driven markets need price makers, such as market makers, providing continuous quotes during a mandatory period. The market makers offer spreads on the stocks available – a price at which they are prepared to buy (the bid) and a price at which they are prepared to sell (the ask or offer).

Quotes are usually displayed on trading screens and firms will trade on these quotes via telephone. These trades will need to be reported to the exchange.

The LSE runs a pure quote driven system called SEAQ, although several systems run by the LSE use market maker quotes.

The major advantage of quote driven markets is the continuous liquidity provided by the market makers.

**Order driven**

Order driven markets have no price makers. Buyers and sellers will simply enter their order on to the system and wait for automatic execution. The stocks are bought and sold at the prices at which buyers and sellers can agree.

Open outcry markets and many electronic trading platforms are order driven. There are no open outcry markets for securities in the UK; although in the US NYSE. Euronext does offer this style of trading. The London Metals Exchange (LME) is an oddity in the UK, offering open outcry trading in derivatives.

As there is no price maker in an order driven market, there is no guarantee of execution. The major advantage, however, is the single price trading. That is, the investor does not suffer from a market maker's bid/offer spread.

## Hybrid systems

Order driven markets work well where there is plenty of liquidity – many buyers and sellers – as this leads to a large number of orders where price agreement is likely.

Quote driven markets are needed where this liquidity is not naturally present in the market, requiring the presence of a market maker.

However, some securities have sufficient liquidity at times, so would benefit from an order driven market, but suffer from illiquidity at other times, so would benefit from market maker support. For this reason the LSE also has hybrid systems, which run the two types of markets simultaneously.

## 3.5. Order book example: SETS

The Stock Exchange Electronic Trading Service (SETS) is the central trading mechanism for the constituents of the FTSE All Share index, the most liquid AIM shares and some euro-denominated Irish securities.

Only member firms authorised to use SETS can place orders on the SETS order book, either for their own account or on behalf of clients. However, anybody is able to view the order book to see the orders being placed.

Once an order has been placed on the order book, it will automatically be matched against a corresponding order. If there is no such corresponding order to match against, the order will either stay working on the order book for future execution or will be returned (in full or in part) to the member who originally entered the order, depending on the type of the order.

### SETS screen

Tesco		TSCO		Currency GBX	
NMS 50 000					
Prev	210	209	211	210	210
SETS Volume		3.41m			
Total Volume		10.2m			
BUY	Total Volume 22,000			Total Volume 22,000 SELL	
5,000		210 – 214		3,000	
	5,000	210	214	3,000	
	1,000	209	215	5,000	
	11,000	208	216	7,000	
	3,000	207	217	6,000	
	2,000	206	218	1,000	

The SETS screen represents an electronic medium for expressing interest in a particular share; in this example, Tesco plc. It divides into two halves: the bottom half (including the middle, or **touch**, strip) and the top half.

The bottom half represents a list of typically anonymous orders to buy (on the left-hand side) and sell (on the right-hand side).

Order management is by price (primary factor), and then time (secondary factor). Better priced orders are placed higher on the screen, and will be matched and executed sooner. If two orders are placed at the same price, the earlier order is placed higher.

The **market price**, or best price offered by the order book, is repeated in the touch strip, i.e. 210-214 for Tesco plc in this example. It is the highest priced order to buy (bid) and the lowest priced order to sell (offer).

If no orders to buy and/or sell are input into the SETS order book, the best bid and/or offer is displayed as **nil**.

## Continuous order book trading

Many orders can be placed on the order book during continuous order book trading. The two most common are tested in the exam: limit orders and market orders.

### Limit order

A limit order specifies the volume of shares to be traded and a limit price (a 'no worse than' price).

When the order is placed, SETS will determine whether the order can be **matched** (or **executed**) against another order recorded on the system. Any unexecuted portion of the order is added to the order book to await subsequent matching.

During the continuous trading period, a limit order is normally the only type of order that will be seen on the order book.

### Example of a limit order

Tesco	TSCO	Currency GBX
5,000	210- 214	3,000
5,000	210	214 3,000
1,000	209	215 5,000
11,000	208	216 7,000
3,000	207	217 6,000
2,000	206	218 1,000

LIMIT ORDER:  
Sell 6,000 at 210 limit

Tesco	TSCO	Currency GBX
1,000	209- 210	1,000
1,000	209	210 1,000
11,000	208	214 3,000
3,000	207	215 5,000
2,000	206	216 7,000
		217 6,000
		218 1,000

Note: The touch price now reflects the new offer at 210

### At best (or 'market') order

An **at best** (or '**market**') order only specifies a volume of shares to be traded. It does **not** specify a price. An at best order requests that a specified volume of shares be executed at the best price currently on the order book.

From a seller's point of view, the best price is the **highest** buy price shown on the order book.

From a buyer's point of view, the best price is the **lowest** sell price shown on the order book.

As with an execute and eliminate order, an at best order will execute, in full or in part, against eligible orders on the order book, and any unexecuted part of the order will be **rejected** from the system.

**Example of a market order**

Tesco	TSCO	Currency GBX
11,000	208- 210	1,000
11,000	208	210 1,000
3,000	207	214 3,000
2,000	206	215 5,000
		216 7,000
		217 6,000
		218 1,000

AT BEST:

Buy 8,000 at best

Tesco	TSCO	Currency GBX
11,000	208- 215	1,000
11,000	208	215 1,000
3,000	207	216 7,000
2,000	206	217 6,000
		218 1,000

**3.6. Order driven example: SEAQ**

The Stock Exchange Automated Quotation System (SEAQ) is a screen based, competitive market making system used for the trading of shares, as well as corporate bonds.

SEAQ acts as an electronic price list, displaying market makers' firm two-way quotes to the market. A firm quote is one that is binding on the market maker.

Should another market marker or broker dealer wish to trade on a quote displayed on SEAQ, the trade is conducted over the telephone.

**The role of market makers**

Market makers, as we have mentioned, are broker dealers that have volunteered to provide quotes. Market makers provide liquidity in the marketplace.

A member firm may choose in which securities it wishes to make a market. For instance, a firm might wish to be a registered market maker in A plc and B plc, but not C plc. There must be at least two market makers registered for each stock on SEAQ.

Once a firm has registered as a market maker in a security, it is obliged to display continuous two-way prices during market hours. This is the **mandatory quote period**.

Market makers will display prices at which they will buy (**bid**) and sell (**offer**) a stock. The difference between the bid and the offer is the **bid/offer spread**.

Market makers can limit the size of trade at which the quoted prices are 'firm' (or binding). However, the exchange does not allow them to limit this size below the normal market size (NMS) of the share. In the example below, the NMS is 5,000. This means the market maker quotes must be firm on any order



up to 5,000 shares. For orders above 5,000 shares, the market maker can use the displayed prices as indicative prices. Some market makers are happy to make their prices firm for higher volumes. This will clearly be stated in the bottom half of the screen.

**Normal market size** is an measure of liquidity provided by the exchange and is based on the average number of shares traded per day.

**Example of a quote driven screen:**

ABC ORD 5p		ABC		Currency GBX	
NMS 5 000				CREST	
Last	103				
Prev	101.5M 106 105 105.5X				
Volume	340 000				
1	GH	101 - 104	EF JK	2	
AB	100 - 105 5 X 5 08.50	GH	101 - 106 5 X 5 08.37		
DC	100 - 105 10 X 10 08.44	JK	99 - 104 10 X 10 08.44		
EF	99 - 104 5 X 5 08.26				

The top half of the screen displays the stock code, normal market size, trading currency and historic trading information.

The bottom half of the SEAQ screen (below the 'touch strip') shows an alphabetical list of market makers registered in ABC. Each market maker is displaying a bid offer spread (e.g. 100-105), a volume quote (e.g. 10 x 10, in thousands) and the time the quote was input (e.g. 08.50).

The touch strip itself shows the best bid and offer prices and identifies the market makers offering those prices.

### 3.7. Hybrid system example: SETSqx

SETSqx stands for the Stock Exchange Electronic Trading Service – quotes and crosses.

It is used for the trading of domestic listed securities that are not traded on SETS.

SETSqx is a hybrid system combining a central order book displaying buy and sell orders with two-way prices quoted by market makers.

There is no required minimum number of market makers (there could be zero for a certain stock). If there are market makers, they provide continuous liquidity throughout the day with a mandatory quote period running from 8.00am to 4.35pm. These must quote firm prices up to the normal market size for the share.

There is no continuous order book trading on SETSqx. Execution on the central order book happens during four uncrossing periods (periodic auctions) throughout the day which are designed to concentrate liquidity. These occur at 8.00am, 11.00am, 3.00pm and 4.35pm.

### 3.8. Equity markets: alternative trading venues

#### Introduction

As well as exchange-traded and pure over-the-counter trades, there are a range of alternative trading venues. The main venues can be grouped into three distinct types:

- Multi-lateral trading facilities (MTF)
- Dark pools of liquidity
- Systematic internaliser

### Multi-lateral trading facilities (MTF)

A multi-lateral trading facility is a privately owned market place that provides an alternative execution venue for buyers and sellers. Most run an order driven market, much the same as SETS.

The Markets in Financial Instruments Directive (MiFID) treats MTFs as it treats an exchange. This means that any pre- and post-trade disclosure requirements must still be met. It also means that the price transparency regime and best execution needs to be applied.

The major benefits of these systems are availability and accessibility. As they do not need to be recognised by a regulator, whereas an exchange would, they are quicker and cheaper to set up. This means that although a country may not have an established exchange on which companies can raise capital, there may well be an MTF. This creates the benefits of exchange-traded without the need for an exchange.

An MTF can be seen as a mid-point between exchange-traded and over-the-counter.

### Dark pools

Dark pools of liquidity, or simply dark pools, are another privately owned market place providing an execution venue for buyers and sellers. However, where a dark pool differs from a multi-lateral trading facility is in the transparency of the market.

A dark pool allows investors, usually large funds, to place large orders on an order book, but, unlike SETS for example, no price is revealed. This allows block trades to be placed and executed without the price of the order or the identity of the firm being revealed to the open market.

Due to the lack of transparency on these markets they are still considered over-the-counter.

### Systematic internaliser

Earlier in this chapter we looked at members of the London Stock Exchange and their capacity to act as both broker and dealer (if the firm were to regularly act as dealer, dealing in principal with its clients and linking clients together through cross trades). The Markets in Financial Instruments Directive (MiFID) created the term systematic internaliser to make this role distinct from other trading business and harmonise the rules followed by these firms with those of an exchange or multi-lateral trading facility.

### Summary

**Table 8. Alternative trading venues summary**

	MTF	Dark pool	Systematic internaliser
<b>Description</b>	Central market place	Central market place	Firms performing principal trades or cross trades
<b>Purpose</b>	Alternative to exchanges	Exchange-traded liquidity with OTC confidentiality	Allows investment firms to match orders of clients

	MTF	Dark pool	Systematic internaliser
<b>Operated by</b>	Investment firm or market operator	Investment banks, stockbrokers and private organisations	Investment firms
<b>Regulatory</b>	Treated as exchange-traded	Considered OTC	Considered as a mini-exchange
<b>Users</b>	Banks, mutual funds, insurance companies	Funds	Clients of investment firms
<b>Benefits</b>	Can give access to capital where there is no established exchange	Anonymous trading – neither price nor identity revealed	Creates a direct source of liquidity without the need for external markets
	Improves liquidity and transparency over OTC markets	Ability to move large volumes without revealing themselves to the open market	Benefits from the pre and post-trade disclosure requirements
<b>Examples</b>	Chi-X. Turquoise. NYSE Arca Europe.	Instinet. Liquidnet. Many banks and stockbrokers run their own dark pools	Any investment firm

### 3.9. Algorithmic trading and high-frequency trading

#### Algorithmic trading

Algorithmic trading is a form of automated electronic trading performed by institutional investors. It involves creating electronic algorithms that use various metrics, such as price, volume and volatility, and attempts to identify predictable patterns. These will trigger buy and sell signals for the investors, who can then choose to act on the information or not. In more extreme cases, computer systems will automatically execute the trades based on these triggers without the need for a human to place these orders.

Algorithmic trading, where computer systems automatically execute the trades, has led to an evolution in the trading of investments, called high-frequency trading.

#### High-frequency trading

##### Introduction

High-frequency trading (HFT) involves the automatic execution of trades where holding periods can be as short as a fraction of a second, but the volumes are of such a significant size that large profits can be made on the smallest price movement.

##### Advantage

The supporters of HFT, mainly the market participants using the systems, claim that it increases liquidity and drives down the costs and commissions associated with execution. Many automated markets, such as NASDAQ and the LSE have seen volumes increase due to this trading.

##### Disadvantage

The critics of HFT, mainly regulators, claim that it increases the volatility of the markets and can lead to systemic risk. Many have proposed that exchanges should impose speed or frequency restrictions on traders, or position limits on how many positions that traders can hold in a day.

## HFT strategies

There are many HFT strategies. Four identified in the syllabus are:

### Market making

This is where the algorithm is programmed to place both buy and sell limit orders closely around the current price to create a bid-offer spread. If the market falls slightly, it triggers the buy order. If the market rises slightly, it triggers a sell order. After the order is triggered, the original orders are removed and a new bi-offer is placed around the new price.

### Ticker tape trading

This is where the algorithm is programmed to analyse the information being released, at the moment of release, and react immediately. Systems can be programmed, for example, to recognise large orders being placed on the market, through analysis of price movement and volumes, and trade on this information.

### Event arbitrage

Certain recurring events, such as the announcement of a profit warning, generate predictable short-term responses in a selected set of securities. High-frequency traders take advantage of such predictability, before the regular market user has had time to react, generating short-term profits.

### Statistical arbitrage

A more traditional form of arbitrage, where the systems are programmed to identify price discrepancies among assets and trading on this mispricing. Due to the nature of HFT and the computer models used, mispricing can be identified in increasingly complex scenarios and traded on very quickly.

## 4. Bond markets

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### 4.1. UK government gilts

#### Participants

##### Gilt-edged market makers (GEMMs)

GEMMs are specialist gilt trading firms, also referred to as primary dealers, who undertake to the Debt Management Office (DMO) to make a market in gilt-edged securities.

GEMMs register with the DMO but are supervised by the FCA.

GEMMs provide liquidity to the market by being obliged to quote two-way prices at which they are committed to deal, in appropriate sizes discussed in advance with the DMO. The quotes will be structured to the nearest £0.0001 per £100 nominal value.

GEMMs are obliged to quote prices to broker-dealers acting for clients and other clients known to them. They are not obliged to quote to other GEMMs or broker-dealers acting in principal.

GEMMs may make a market in index-linked gilts only, non-index-linked gilts only or all gilts (both index-linked and non-index-linked).

GEMMs are expected to participate in primary gilt issuance, provide the DMO with relevant data about the gilts market and accept the DMO's monitoring arrangements.

##### Broker dealers

Broker dealers are LSE member firms who can trade gilts on behalf of clients (as agents) and/or on their own account (as principal). They have dual capacity.

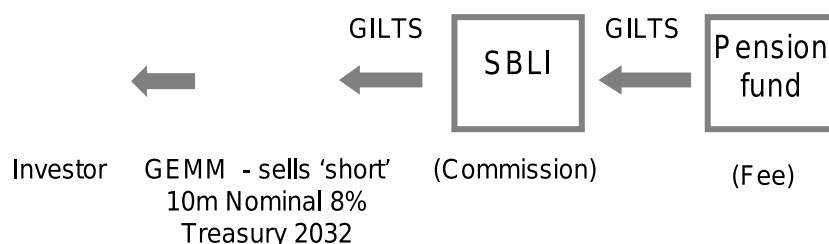
Broker dealers acting in the gilt market act in the same way as broker dealers in the equity market.

##### Inter-dealer brokers (IDBs)

A gilt IDB, like an equity IDB, is an LSE member firm which has registered with the Exchange to provide intermediating services between other LSE member firms.

IDBs are used primarily by GEMMs and equity market makers to facilitate anonymous offset of positions in securities.

IDBs settle as principal, i.e. the parties dealing via the IDB are unaware of each other's identity. They cannot take positions in anticipation of finding other parties requiring their services.

**Stock borrowing and lending intermediaries (SBLIs)**

After the market maker has sold the gilts 'short', it will borrow stock via an SBLI so that it can settle its position with the investor.

SBLIs perform the same function in debt markets as they do in equity markets, namely facilitating stock lending.

**Primary issuance**

The Government's agent issues gilts, which usually pay coupons semi-annually, to finance the public sector net cash requirement (PSNCR). The Debt Management Office (DMO), manages UK Government's debt it is an agency of the Treasury. Approximately 15% of gilt issues are index-linked gilts (ILGs).

The DMO offers gilts in the primary markets via an auction, where it collects bids from interested parties and issues them to the successful bidders.

Issuing gilts by auction is also the method preferred in a number of other countries, most notably the US.

Although now quite rare, the UK Government has chosen in the past to issue gilts via the 'tap' method, where the issue is announced and investors are invited to tender for the issue. If bidders do not offer the price required by the DMO, that part of the issue not taken up originally can be temporarily withdrawn and released slowly into the market as market conditions become more favourable.

**Dealing and reporting**

Investors can buy gilt-edged securities either from the DMO auction (in the primary market), or by trading in gilts on the LSE (the secondary market).

The LSE provides an orderly marketplace for the trading of gilt-edged and fixed interest securities. It ensures order through rules and guidance, and the monitoring of trading and market activity. GEMMS will quote prices on their screens and interested parties will contact the GEMMs to execute their trades. GEMMs do not deal directly with retail clients. If retail clients wish to trade with a GEMM, they must do so through a broker.

Gilts are quoted at a clean price, but the price paid on settlement is the dirty price. The dirty price is the clean price of the bond plus any interest that has accrued on the bond over time. When calculating accrued interest over a period, it is done on an actual over actual basis. This means the accrued interest is based on the actual number of days since the last coupon and the actual number of days in the coupon period.

Gilts settle one business day after the trade (T+1) and normally go ex-dividend seven business days before the coupon date.

Although GEMMs offer guaranteed liquidity, much of the trading in gilts is carried out by using e-trading systems between member firms.

## STRIPS

STRIPS stands for separate trading of registered interest and principle securities. The STRIPS market allows the cash flows on a gilt (coupons and redemption value) to be traded as separate instruments. This allows investors to trade the STRIPS as if they were zero-coupon bonds.

## 4.2. Corporate bonds

### Primary issuance

When corporate bonds are issued, they may be sold as an open offer for sale or directly to a small number of professional investors (**a private placing**).

The former involves a syndicate of banks with one as lead manager buying the bonds and then reselling them to investors. The sale of these bonds is typically **underwritten** by the banks (who naturally charge for this service). Underwriting offers the issuer a guarantee that a specified level of capital will be raised in the issue – even if this means that the underwriter has to buy some or all of the bonds themselves.

If the lead bank buys all the bonds and sells them to a collection of issuing bonds (the syndicate), this is called a **bought deal**. The syndicate members could then sell the bonds on at varying prices.

More usually, the lead manager and the syndicate buy the bonds together and offer them at a fixed price for a certain period (**a fixed price re-offering**).

### Dealing and reporting

The corporate bond market is similar in many respects to the gilt market, except that the DMO is not involved. Market makers register with the LSE and are obliged to quote prices to other member firms, **excluding** other market makers, IDBs and SBLIs.

Market makers in the corporate debt market are essentially the same as GEMMs; however, unlike GEMMS, they make use of SEAQ, a quote driven system in the LSE. Both firm and indicative prices may be available on the SEAQ screen during the mandatory quote period. Note, although corporate debt securities may be quoted on SEAQ, there is no obligation for market makers to use the system in the same way as there is for the trading of equities. In fact, the majority of corporate bonds trade **over-the-counter**.

Market makers may display different prices for different sizes of trade. Trades on the LSE are reported in the same way as equity trades to fulfil post-trade transparency requirements.

As mentioned earlier in the chapter, the LSE has introduced order book trading for corporate bonds on the order book for retail bonds (ORB). Corporate bonds have not generally been an asset class available to the small investor and the introduction of this system is hoped to improve this access.

There is also a decentralised dealer market where dealers make a market amongst themselves, creating pools of liquidity rather than having a centralised exchange. This creates an extra liquidity risk to the price of these bonds.

Corporate bonds can also have a maturity date much longer than is found in gilts, i.e. bonds with maturities of up to 100 years.

## 5. Derivative markets

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### 5.1. Participants: principal vs. agent

Like equity and debt markets, member firms of derivative exchanges may act either as principal to a trade and/or as agent.

#### Dealing (principal trades)

By acting as principal, the firm is taking a position itself, i.e. 'running a book'. The aim is to make a **turn** on the trade (buy low, sell high). When acting as principal, the trade will be assigned to the firm's house account. These traders are sometimes referred to as '**locals**'.

#### Broking (agency trades)

Alternatively, the firm may act as agent on behalf of a client. In these circumstances, the firm will **not** take a position but instead earns commission on the trade. When acting as agent, the trade will **usually** be assigned to a segregated account which is separate from the firm's own account. Some clients may, however, consent to their trades being allocated to a non-segregated account.

Some members of an exchange may execute a trade for other members of an exchange. These trades will usually be allocated, or '**given up**' to the house account of the originating firm.

A trade is 'given up' so that the originating firm can clear the trade on behalf of the client.

Members that can act as either agent or principal to a trade, are said to have dual capacity. **dual capacity**.

### 5.2. Trading styles: open outcry and screen trading

Historically, most derivatives trading took place face-to-face on a market floor. Traders gathered in pits and 'cried' out prices, hence the term **open outcry** trading. The London Metal Exchange (LME) and New York Mercantile Exchange (NYMEX) are markets where open outcry trading still takes place.

Rather like the securities markets, derivative exchanges have tended to move towards **screen-based order book trading**. Trading takes place electronically based on prices displayed on screens. There is no requirement for an exchange floor as trading takes place remotely via computers. NYSE Liffe uses such an order driven system called **LIFFE's CONNECT**. Execution occurs in very much the same way as we say on the LSE SETS.

When trading derivatives, the participants are entering into legally bonding contracts to perform an action (make or take delivery of an asset) at some point in the future. To ensure the contracts are legally binding, the exchange will construct the contract that is agreed. To ensure the maximum liquidity, the exchange will standardise these contracts; this means every member is trading an equivalent contract within an underlying asset class.

Like all exchanges, derivatives exchanges will set down rules that dictate the requirements of members. Among these are requirement on reporting trades. Adherence to the rules on NYSE Liffe is monitored by the Market Supervision Department.

### 5.3. Over-the-counter (OTC) trading

Over-the-counter (OTC) contracts are one-to-one (bilateral) agreements between two counterparties where the contract specifications are completely flexible and non-standardised. A great benefit of this is



that, when hedging, the contract used can be specifically tailored to the requirements of the underlying position, whereas when using standardised exchange-traded contracts hedges need to be continually rebalanced or rolled on from month to month.

OTC deals are not conducted on a formal exchange, but directly via telephone and screen-based displays. There is less likelihood of a central guarantor (like LCH.Clearnet) to ensure ultimate fulfilment of the contract, so the credit worthiness of both counterparties is extremely important.

OTC contracts bring additional problems in that they are less tradable, so it is difficult to value them and price information is not always available. Because OTC contracts are tailor-made, they are more difficult to trade than exchange-traded contracts. They also require substantial documentation to ensure that the terms of each contract are clear, accurate and agreeable to both sides of the trade. The International Swaps and Derivatives Association (ISDA) oversee the OTC derivatives market and produce standardised formats on which OTC documentation can be based.

They do represent, however, a product that can be designed to meet the exact requirements of market participants.

## Summary

**Table 9. OTC vs. exchanged-traded summary**

	OTC	Traded on Exchange
Contract terms	Bespoke: tailored to meet the needs of the investor	Contract specifications standardised by the exchange
Liquidity	Can be limited leading to slower execution	Excellent on major contracts
Margin	Normally no margin. Collateral process.	Margin normally required
Regulation	Less stringent regulation of products. More stringent restrictions on who may invest in them.	Exchanges subject to significant regulation
Counterparty risk	Typically exposed to default risk	No member default risk due to clearing house
Reporting	Confidentiality	Market transparency
Price	Negotiated or request for quote (RFQ) systems	Best execution
Hedging	Specific hedging requirements can be met	Hedges based on standardised contracts need to be actively managed

## 6. Settlement

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### 6.1. Settlement of securities

#### Euroclear UK and Ireland's CREST

Once a deal has been struck and the terms agreed, the transaction must then be settled.

Settlement is the process of organising payment and delivery of the security, and is the point at which legal title changes hands.

CREST is an electronic settlement and registration system operated by Euroclear UK and Ireland, and is used for the settlement of a wide range of corporate and government securities, including those traded on the London and Irish Stock Exchanges. CREST is the Central Securities Depository (CSD) for the UK and for Ireland. CREST also settles money market instruments and funds, plus a variety of international securities. In the CREST environment, investors are able to hold their securities in dematerialised (electronic) and certificated (paper) form.

CREST provides book entry transfer for dematerialised stock, as well as the ability to facilitate certificated transactions.

CREST operates a **delivery vs. payment** (DvP) settlement system. This means that it records changes in legal title and organises payment simultaneously. DvP lowers settlement risk.

CREST calculates **stamp duty reserve tax** on all relevant transaction on the settlement date and the tax authorities collect SDRT (on dematerialised transactions) via CREST.

CREST also has links to company registrars, allowing it to inform the registrar of any change in ownership of securities.

The standard settlement time for UK equities and corporate bonds held within CREST is three business days (T+2). Standard settlement for UK government gilts is T+1.

The use of CREST is not mandatory. Settlement can be achieved outside CREST by a paper based method. The seller would complete a **stock transfer form** and send it with the share certificate to the buyer. The buyer would then send these forms to the company registrar who will cancel the old share certificate and issue a new one. This process is lengthy.

### 6.2. LSEs central counterparty (CCP) service

All securities traded on the SETS order book must be routed through a central counterparty (CCP) to clear the trades.

Clearing involves an organisation becoming counterparty to both buyer and seller of the trade. This effectively breaks the initial trade into two separate trades.

In doing so the CCP is guaranteeing settlement of the trade and eliminating default risk for the buyer and seller. This also protects the anonymity of the investors involved as they will never know the identity of the participant on the other side of the trade.

The process is known as **novation**.

## Summary: novation

### 1. Initial trade



### 2. Novation



This element of risk management, obviously, does not come free of charge as CCPs charge for their services.

The LSE offers members the choice of two CCPs: LCH.Clearnet or X-Clear.

## 6.3. Clearing derivative trades

### Introduction

Clearing takes on its most important role in the derivatives markets. The derivatives markets are where the trading of futures (or forwards) and options occurs.

A derivative is so called as it derives its value from the price of an asset (the underlying) that an investor has the obligation or right to buy or sell.

A future is an agreement to buy or sell a specified quantity of a specified asset on a fixed future date at a price agreed today. A forward is a name for a future when it is not traded on an exchange or traded over-the-counter (OTC).

An option is a right to buy (a call option) or a right to sell (a put option) a specified quantity of a specified asset on a fixed future date at a specified price.

Any detail on these investments is covered in the IMC Unit 2: Investment Practice, but a passing reference is needed here to understand the process and relevance of clearing.

We have seen throughout the regulatory sections of this course that these investments are considered risky or 'complex' investments by regulators such as the FCA. One of the reasons for this added risk is that they are highly geared or leveraged.

Derivatives are considered highly geared investments as the profit or loss made occurs at a much greater rate than if the investor had invested in the asset to which the derivative relates.

For example, with a future an investor can agree to buy a particular asset, let's say a bond, on a fixed future date for an agreed price, let's say £100. This agreement becomes a contractual obligation, but in its purest sense no money actually exchanges hands until the fixed future date. This leaves the seller on the other side of the agreement exposed to the risk of the buyer not paying (counterparty default risk or credit risk).

If the price of the bond falls to £90, this makes it even less attractive for the buyer to fulfil their obligation of paying £100 and exposes the seller to further risk.

If, however, the price of the bond rises to £110 it now becomes unattractive for the seller to deliver at £100, exposing the buyer to the risk of counterparty default.

To help manage this exposure to counterparty default risk, exchanges will appoint a central counterparty to novate these trades and collect guarantees, in the form of margin, from the participants. The margin collected ensures that the participants involved can meet the obligations they face, and protects the other side of the agreement from loss if the default occurs.

## Counterparty risk

Counterparty risk is the risk that, once a contract has been agreed between two parties, at least one of the parties will not meet their obligations.

In most exchange-traded contracts, the risk of counterparty default is managed by a **clearing house** acting as a central counterparty.

The role of the clearing house is two-fold:

- To become the legal counterparty to both sides of the original transaction
- To guarantee the performance of both sides of the contract

The main clearing house in the UK is LCH.Clearnet.

## Clearing house as registrar

Clearing houses act as registrars to the marketplace by recording details of all matched trades. Details of trades are passed electronically to a clearing house via some form of electronic communication system; for example, Euronext.liffe uses the Trade Registration System (TRS) for derivative contracts.

## Clearing house as guarantor

### Principal to principal

A clearing house guarantees its members' obligations to the clearing house. However, this guarantee does not extend to any clients of a member. If a client of a clearing member defaults, the member has no recourse to the clearing house. This guarantee structure is known as **principal to principal**.

Understandably, the clearing house does not want just any firm becoming a clearing member as it will be exposed to losses if a clearing member defaults. The clearing house therefore imposes minimum criteria on capital adequacy and systems requirements for its clearing members.

### Risk management

As the clearing house acts as central counterparty to everyone in a particular derivative market, it is exposed to the risk of investors defaulting. The clearing house therefore will put mechanisms in place to safeguard itself.

These mechanisms may include a default fund provided by members (as in the case of LCH.Clearnet), default insurance through, for example, the Society of Lloyd's and the requirement for its members to pay **margin**.

## 6.4. Margin

Margin covers the clearing house against the risks it faces when acting as central counterparty to a transaction.

Margin is **always** payable on 'contingent liability' transactions. For example, on derivative transactions, these are transactions where investors can lose more than their initial investment: **long** and **short** futures positions and **short** option positions.

The rules on margin are different for long option positions as the potential loss is limited to the premium which is paid by the investor on the agreement.

Again the features of these investments are not the concern of IMC Unit 1: Investment Environment, but they will be explained in more detail in Unit 2: Investment Practice.

There are different types of margin including:

- Initial margin
- Variation margin

Both of these types of margin will now be explained in turn.

### Initial margin

Initial margin is described as a **returnable good faith deposit**. It represents the worst **probable** loss that could be made on a bad day (as opposed to the worst possible loss, which could be unlimited).

The clearing house holds initial margin to cover the risk of a clearing member failing to meet a variation margin payment. If the clearing member defaults, the clearing house should have enough initial margin to cover the shortfall.

As the prices of underlying assets are constantly changing, the risk to the clearing house of a member defaulting also changes.

As a result, members may receive additional initial margin bills even if they have not opened any new positions. It is simply that their existing open positions have become more risky.

For example, we have seen in recent years sudden increases in volatility in a particular investment or in the market as a whole. Sometimes, however, this is seen as a short-term change. If the change is deemed by the clearing house to be short-term, instead of increasing the initial margin it will call intra-day margin to cover this volatility.

Initial margin is paid when the contract is opened and return when the obligations in the contract are met, or the contract is closed out.

### Variation margin

Variation margin accounts for the previous day's gains and losses made on open derivative positions.

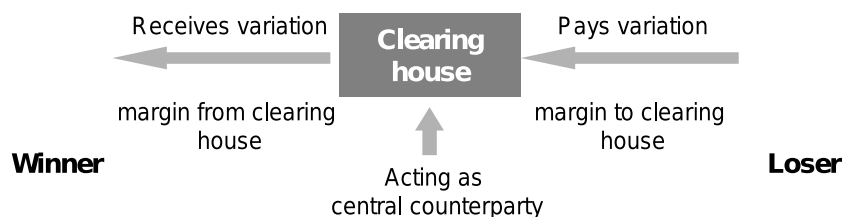
Variation margin is paid by the loser of one open position and received by the winner of another open position. The payment is made by the next business day through a protected payment system.

This means that the 'losers' pay variation margin to the clearing house each day. In turn, the clearing house forwards the margin onto the day's 'winners'.

As all clearing members have accounts with the clearing house, the transfer is made simply by debiting the loser's account and crediting the winner's account. This requires each clearing member to hold an account with a clearing house approved bank so that funds can be securely paid into or withdrawn from the margin account.

Failure to pay variation margin by the due time will result in the clearing house closing out the member's positions and using their initial margin to cover the previous day's losses. Any surplus will be returned to the clearing member.

## Summary



All members have accounts with the clearing house. The loser's account is debited and the winner's account is credited with the variation margin, which is then paid across. Variation margin must be paid each business day based on the previous day's market movement.

## 6.5. Regulation of derivatives markets

We have looked at the process of clearing trades on exchange-traded derivatives, using a central counterparty such as LCH.Clearnet. However, a large number of derivatives trades occur over-the-counter (OTC).

OTC trades are typically done bilaterally between two parties who negotiate and agree terms with each other. This eliminates the need for an exchange, potentially lowering the cost and giving much more flexibility in what details can be written into the contract.

However, one of the major disadvantages of OTC contracts is not having access to an exchange's risk management systems such as the clearing house and its margining and settlement systems. There has been a great effort in recent years by regulators to improve the risk management in this particular market. Some of the regulations are introduced below.

### European Markets Infrastructure Regulation (EMIR)

As discussed in the first chapter, EMIR imposes three new requirements on those who trade OTC derivatives:

1. To clear OTC derivatives that have been declared subject to the clearing regulation through a central counterparty (CCP)
2. To put in place risk management procedures for those OTC derivatives that are not centrally cleared
3. To report derivatives to a trade repository

All three obligations apply to financial counterparties. The clearing and risk management obligations apply to certain non-financial counterparties while the reporting obligation applies to all of them.

In the US, the Dodd Frank Wall Street Reform and Consumer Protection Act 2010, building on the Commodities Exchange Act 1936 and the Commodity Futures Modernisation Act 2000, imposes similar requirements. These will be enforced by the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC).

### The use of a central counterparty in OTC markets

Although bilateral agreements can expose the investors involved to counterparty risk, there are systems available to eliminate this. The vast majority of OTC trades arrange collateral processes themselves, but central counterparties do hold an appeal to some.

Clearing systems, offering the same services to OTC derivatives as they do for exchange-traded derivatives, are accessible. Most trade capture and confirmation systems have links to a clearing system.

Once a trade has been completed and the conditions agreed, the counterparties to the trade will report the trade to a clearing system. The system will then novate the trade, allowing a clearing house to become central counterparty to the trade.

This benefits the original counterparties in the following ways:

- Netting off transactions and margin to reduce credit risk
- Creating a central and standardised process to reduce operational risk
- The role of central counterparties in the derivatives markets will be looked at in more detail later on in this chapter.

## 6.6. International Accounting Standards (IAS 39)

International Accounting Standard (IAS 39) dictates how financial instruments, such as derivatives, are valued and recognised in the company's financial statements. This is particularly relevant to derivatives as, particularly in the case of futures, there is no initial outlay involved.

### Fair value through profit and loss

Derivatives, and often investments with embedded derivatives, should be valued on fair value through profit or loss (FVTPL). In this way they are marked-to-market at the time of producing the financial statements and any profit or loss, realised or unrealised, is reflected in the profit and loss account.

If the derivative is non-exchange traded and a marked-to-market price is not available, the company should compare its investment with an equivalent exchange-traded investment. In cases where this is not possible, the investments should be valued at an amount that the asset would be exchanged between knowledgeable and willing parties in an arm's length transaction; except in rare circumstances when estimates of fair value are so disparate as to preclude this.

### Where FVTPL does not apply

It is worth pointing out that derivative positions used as a hedge are not covered under IAS39, because, in general, a derivative used as a hedge will be held to delivery and therefore to its realisable value. For this reason, the price that was agreed on the creation of the contract will be the value printed on the financial statements.

## 7. International markets

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### 7.1. International bonds (Eurobonds)

#### Introduction

An international bond (eurobond) is a security where the denomination of the bond and the country of issue are all different. For example, a company issuing dollar bonds in Paris and Tokyo, or a company issuing yen bonds in Frankfurt and Dublin.

Commonly, eurobonds are issued in the currency and country where the issuer finds it cheapest to raise the finance, and then swapped into the currency the issuer wants.

#### Features

Eurobonds are bearer bonds i.e. anonymous, freely-transferable securities. Due to the risks of holding bearer documents, many eurobonds are kept in international central securities depositaries (ICSDs) such as Euroclear or Clearstream. This is referred to as **immobilisation**.

Interest is usually paid on eurobond issues (fixed or floating) once per year. Interest is also paid gross of withholding tax. This feature makes eurobonds very attractive to international investors.

#### Issuance

Most Eurobonds are issued like corporate bonds, using either a **bought deal**, where the underwriter buys up the full issue and sells them to interested parties, or a **fixed price re-offer**, where a syndicate issues the bond.

#### Trading

Most trading in the eurobond market is conducted OTC via the telephone rather than on domestic exchanges, although exchange-traded eurobonds are becoming increasingly common.

#### Settlement

Once a deal is struck, it is reported to ICMA (the International Capital Market Association) before it is processed for settlement. Reporting to ICMA takes place T+1, ready for settlement of the Eurobond trade T+2.

Euroclear and Clearstream settle Eurobond transactions. ICMA also regulates the international bond market.

### 7.2. International markets trading

International markets are becoming increasingly attractive to investors, both institutional and individual, as it adds to diversification benefits. The access to these markets is also becoming easier. As exchanges adopt electronic order books systems, interconnectedness of these exchanges becomes possible. Also, investments such as depositary receipts, exchange traded funds (ETF) and eurobonds allow investors to get exposure to overseas markets in their own currency.

#### European

Trading in the EEA is considered less risky for UK investors from a regulatory perspective, as many of the regulations in the financial services have been harmonised through various directives, such as MiFID, EMIR, etc.



This means the mechanisms for trading and settlement and delivery will be very similar to those in the UK. The main exchange in France is Euronext and in Germany, Deutsche Borse. However, many of the stock trading on these and other European exchanges can be accessed through European Quoting System on the LSE.

## US

Trading in the US is also very similar to the UK, in that it is a very liquid and heavily regulated market.

Trading of equities takes place on three main markets in the US: the New York Stock Exchange (NYSE), the National Association of Securities Dealers Automatic Quote System (Nasdaq) and the American Stock Exchange (AMEX).

The NYSE is the largest US equity market. Trading is undertaken by member firms' floor brokers and local brokers, who trade through **designated market makers (DMM)**. Specialists are assigned specific stocks and act in a way which maintains an orderly market. They quote two-way prices throughout the day. Orders are passed to specialists for matching using the Universal Trading Platform (UTP).

The NYSE is primarily a domestic market. International trading is confined to American depositary receipts (ADRs), which facilitate the trading in the US of shares in non-US companies.

Nasdaq is an electronic market for second line stocks.

AMEX is a floor-based physical exchange. It is where most trading in international equities takes place in the US.

## Emerging markets

Emerging markets are considered to be those that are not fully developed, including much of Asia, Africa and South America. The key benefits of these markets is the potential for economic growth and the fact that the economic cycles of these nations tend to differ greatly from the developed nations – often referred to as decoupling.

Key disadvantages are the potential volatility in the markets, as much of the value is based on expectation, and the less rigorous regulation of the participants and the infrastructure. This is one of the key reasons many investors choose to access these markets via ETF and depositary receipts.

## 7.3. International markets settlement

### International central securities depositaries

Euroclear UK and Ireland is the central securities depositary for the UK. However, for those investors investing internationally, using a local depositary in each country will give the investor a market expert, but can be problematic. These difficulties could include:

- Domestic exchanges and securities only
- Communication problems due to language
- Local regulations governing custody may differ

Many investors that have large international investment portfolios may use an international central securities depositary (ICSD). These ICSDs, such as Euroclear, Clearstream and the DTCC, offer:

- A one-stop shop for all activities
- Global membership

- Consolidated reporting
- Economies of scale

### Settlement summary

We should assume for the exam that settlement in the UK and rest of Europe will be T+2 for most asset classes. There are, however, some exceptions to this. These are listed in the table below.

**Table 10.**

Country/Region	Instruments Settled	Settlement Period	System Name
UK	Listed equities and corporate bonds	T+2	Euroclear UK and Ireland
	Government bonds (gilts)	T+1 (cash settlement)	Euroclear UK and Ireland
EU (Particularly Germany)	Listed German Equities	T+2	Clearstream
	International Bonds	T+2	Clearstream/Euroclear
US	Listed Equities	T+3	Depository Trust Clearing Corporation (DTCC)
	Government bonds	T+1	DTTC
Japan	Listed equities and convertible bonds	T+3	Japan Securities Depository Center (JASDEC)

## 8. Summary

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### 8.1. Key concepts

#### The role of the financial market

- 1.2.1 Differentiate between a financial security and a real asset
- 1.2.2 Identify the key features of: -a common equity share, a bond, a derivative contract, a unit in a pooled fund, and a foreign exchange transaction
- 3.4.1 Explain the role of an investment exchange
- 1.2.3 Identify the functions of securities markets in providing price transparency and liquidity
- 1.2.7 Define liquidity risk and identify why it is important
- 1.2.4 Identify the reasons why liquidity and price transparency are thought to be important for the efficient allocation of capital costs when trading in securities markets
- 1.2.5 Calculate round trip transaction costs incorporating bid-ask spreads, dealing commission and transaction taxes, both in percentages and in absolute amounts
- 1.2.6 Identify the types of securities and the market conditions where price transparency, liquidity and depth are likely to be high / low

#### Trading

- 3.4.5 Identify and distinguish the roles of LSE, NYSE Liffe, and LCH.Clearnet
- 1.3.1 Identify the main dealing systems and facilities offered in the UK equities market
- 1.3.2 Identify the nature of the securities that would be traded on each of the main dealing systems and facilities
- 1.3.8 Explain the roles of the various participants in the UK equity market
- 1.3.7 Distinguish between a quote-driven and an order-drive market
- 1.3.6 Distinguish between the following alternative trading venues: Multilateral Trading Facilities, Systematic Internalisers and Dark Pools
- 1.3.9 Explain high-frequency trading, its benefits and risks

#### Bond markets

- 1.3.3 Explain the structure and operation of the primary and secondary UK markets for gilts and corporate bonds

#### Derivatives markets

- 3.4.6 Identify the features of trading systems for derivatives
- 3.4.9 Explain the arrangements for market transparency and transaction reporting in the main derivative markets

- 3.4.7 Identify the main features of the regulation of derivatives

## Settlement

- 1.4.1 Explain the clearing and settlement procedures for UK exchange traded securities
- 3.4.8 Identify the main features of clearing and settlement for trading on derivatives exchanges, and when trading over-the-counter (OTC)
- 3.4.10 Explain the impact of MiFID and International Accounting Standards on the regulation of derivative markets
- 1.3.5 Compare and contrast exchange traded and over-the-counter (OTC) markets

## International markets

- 1.7.2 Explain the structure and operation of the primary and secondary markets for Eurobonds
- 1.7.1 Explain the structure, features, regulatory and trading environment of international markets, including developed markets and emerging markets
- 1.7.3 Explain the settlement and clearing procedures overseas, including the role of international central securities depositories, and the different settlement cycles and challenges in managing global assets

**Now you have finished this chapter you should attempt the chapter questions.**