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# The History and Evolution of Financial Markets

The first broker ... The evolution of financial markets dates back to twelfth-century France where the *courratier de change* managed and regulated the debts of the agricultural communities on behalf of the banks. The *courratier de change* was thus the first broker in the financial markets.

... to the first "bourse" ... In the late thirteenth century, the commodity traders of Bruges (now Belgium) gathered inside the house of a man called Van der Bourse for trading in commodities. In 1309, they institutionalized these informal meetings and called them the "Bruges Bourse". The idea quickly spread to neighboring counties and such bourses opened in Ghent and Amsterdam. The Bruges Bourse can technically be called the first exchange.

... and the first publicly issued security The first publicly issued security can be traced back to the fourteenth century in Venice where the government made the first known issue of bonds. These government securities were purchased by merchants and landowners as investments.

The Dutch later started joint stock companies, which permitted shareholders to invest in business ventures and obtain a share in the profits – or losses. In 1602, the Dutch East India Company issued the first shares on the

Amsterdam Stock Exchange. It was the first company to issue stocks and bonds.

By the eighteenth century, the first stock exchanges were formed in England, the Netherlands and France. In the American colonies, commerce was significant, but still heavily controlled by England.

Around the 1750s in England, traders in the shares of early companies would meet in Jonathan's Coffee House to trade shares and make business deals. Early share bids and offers were written on the Coffee House walls and the trading process was highly unregulated, with insider trading forming the basis for most investment decisions. By 1773, trading clubs had formed, and in 1801 a group of traders raised £20,000 to build the London Stock Exchange (LSE) in Capel Court.

A similar process occurred in America. By the early 1790s many brokers had begun trading in shares. These brokers too would meet informally in coffee houses. In 1792, 24 such brokers signed the Buttonwood Tree Agreement and paid \$400 for a "trading seat". The Buttonwood Tree Agreement formed the basis for trading rules that still exist today and led to the formation in 1817 of the New York Stock Exchange.

Over the years, stock exchanges have opened up across the globe and most important financial centers have at least one exchange. Modern stock exchanges have grown to have an unprecedented number of listed stocks as well as stockbrokers.

## **What is a Stock Exchange?**

A stock exchange is often the most important compo-

ment of a stock market. A stock exchange is a centralized and organized market for the trading of stocks and bonds. By providing a centralized market for the exchange of securities, stock exchanges greatly facilitate the financing of business through the flotation of stocks and bonds. Such markets were originally open to all, but over the years only members of a particular exchange can trade on that exchange. A stock can be traded on an exchange only if it is listed on that particular exchange. For a particular stock to be listed on an exchange, the stock should fulfil certain listing criteria. Apart from certain common listing requirements, specific listing requirements vary from exchange to exchange.

Evolution from  
"location" ...

Historically, exchanges have evolved from a "location" where buyers and sellers of securities congregated for transacting business. Slowly the exchange took on the function of settling disputes that arose during the course of the transactions. This led to the exchange formulating certain "regulations" to protect the innocents from the professionals, thereby making it attractive to the public to keep using the exchange for trading. To attract financially sound companies to the exchange, it began to develop "listing regulations". These listing regulations stipulated the minimum requirements a company must satisfy to enlist on that exchange. With the development of the stock ticker, exchanges were able to disseminate last sale information – "market data" – that served as advertisements for the market and provided transparency that made prospective investors comfortable with the fairness of the market. As the volume of transactions increased, the exchanges had to provide for "clearing and settlement" functions. The exchanges themselves began performing these functions or provided an agency to perform these two operations.

... to a congregation  
satisfying various needs  
of its members

Stock exchanges provided these services at minimal cost to their members as their existence was mainly to serve their members at the lowest cost possible. Historically, exchanges had the following main sources of revenue:

- Membership fees
- Listing fees
- Trading fees
- Clearing and settlement fees
- Fees from the provision of market data.

The stock market comprises two markets – the primary market and the secondary market.

#### Primary market

The primary market is the market for the initial issuance of securities. The primary market does not require a stock exchange. An organization that requires funds contacts its investment banker who typically assembles a syndicate of securities dealers who will sell the new stock issue. These securities that are sold to prospective investors are called initial public offerings (IPOs). An IPO is the company's first sale of common shares to the investing public.

#### Secondary market

Once the company makes its first sale of common shares to the public, it has to ensure liquidity for the investing public. To ensure liquidity, the company has to enlist itself on one or more exchanges. Enlistment on a stock exchange ensures a secondary market for the company. In the secondary market, investors purchase securities from other investors rather than the issuers, subsequent to the original issuance in the primary market.

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## Trading Instruments

Typically a stock exchange permits its member brokers to deal in equities (shares issued by companies), gilts (bonds issued by the government) and derivatives.

### *Equities*

When an investor buys shares in a company, the investor becomes a partial owner of that company. The principal benefit to the shareholder is to receive a share of the profits – usually in the form of dividends. Apart from regular dividend payments, a rise in the profitability or prospects of mergers or acquisitions drive the share prices upwards. Likewise, the prospect of falling profits depresses the market price of the particular equity. Since companies issue a fixed number of shares, the market-driven forces of supply and demand increase or depress the share price of a stock. Investors with a high risk appetite should invest in equities.

### *Gilts*

Gilts are sold by the government to the investing public to fund the shortfall in its expenditure over its tax collection. The investor in this case earns a fixed rate of return on a predetermined redemption date. Normally, the interest on a gilt is fixed throughout its life, no matter how low general interest rates fall. The price of gilts can however rise or fall in the market depending on the outlook for interest rates and inflation changes, providing possible opportunities to sell at a profit before redemption. For risk-averse investors, gilts offer a good opportunity for investments.

### *Derivatives*

In the past two decades, derivatives have become increasingly important as a trading instrument. Futures and options are actively traded throughout the world. Forward contracts, swaps and many different types of options are regularly traded outside exchanges by financial institutions, fund managers and corporate treasurers in the “over-the-counter” market. Derivatives are also sometimes added to a bond or stock issue.

A derivative can be defined as a financial instrument whose value depends on (or derives from) the values of other more basic underlying variables. Very often the variables underlying derivatives are the prices of traded assets. For example, a stock option is a derivative whose value is dependent on the price of the stock. However, derivatives can be dependent on almost any variable, from the price of cotton to the amount of rainfall expected.

## Exchange Traded Markets

### Futures contract

A derivatives exchange is a market where investors trade standardized contracts that have been defined by the exchange. Derivatives exchanges have existed for a long time. The Chicago Board of Trade (CBOT) was established in 1848 to bring farmers and merchants together. Initially its main task was to standardize the quantities and qualities of the grains that were traded. Within a few years, the first futures-type contract was developed, known as a “to-arrive” contract. Speculators preferred to trade in this type of contract as it was an attractive alternative to trading the grain itself. In 1919, the Chicago Mercantile Exchange (CME) was

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established. Currently, futures exchanges exist in all parts of the world.

#### Options contract

The Chicago Board Options Exchange (CBOE) started trading call options contracts on 16 stocks in 1973. Options had traded prior to 1973, but the CBOE was successful in creating an orderly market with well-defined contracts. Put option contracts started trading on the exchange in 1977. The CBOE now trades options on over 1200 stocks and many different stock indices. Like futures, options contracts have also been very popular and are traded globally. The underlying assets include foreign currencies and futures contracts as well as stocks and stock indices.

Traditionally, derivatives traders used the open outcry system for trading in derivative products. However, in recent years, exchanges have increasingly moved from the open outcry system to electronic trading. Eventually, as exchanges change to electronic trading systems, derivatives trading will also shift to electronic platforms.

#### Over-the-counter Markets

As in stock trading, derivatives trading is done outside the exchange using the telecommunication network. Traders do not meet physically but use the telephone and the computer network via the internet for trading in derivatives. The over-the-counter market is normally restricted to institutional investors and corporate clients. Financial institutions often act as market makers for the commonly traded instruments. This means that they are always prepared to quote both a bid price (a price at which they are prepared to buy) and an offer price (a price at which they are prepared to sell).

Telephone conversations in the over-the-counter market are usually taped. If there is a dispute about what was agreed, the tapes are replayed to resolve the issue. Trades in the over-the-counter market are typically larger than trades in the exchange traded market. A key advantage of the over-the-counter market is that the terms of the contract do not have to be those specified by an exchange. Market participants are free to negotiate any mutually attractive deal. A disadvantage is that there is usually some credit risk in an over-the-counter trade (that is, there is a small risk that the contract will not be honored).

## Forward Contracts

A forward contract is a particularly simple derivative. It is an agreement to buy or sell an asset at a specified future time for a certain price. It can be contrasted with a “spot contract”, which is an agreement to buy or sell an asset today. A forward contract is traded on the over-the-counter market – usually between two financial institutions or between a financial institution and one of its clients.

One of the parties to a forward contract assumes a long position and agrees to buy the underlying asset on a specified future date for a specified price. The other party assumes a short position and agrees to sell the asset on the same date for the same price.

Forward contracts on foreign exchanges are very popular. Most large banks have a “forward desk” within their foreign exchange trading room that is devoted to the trading of forward contracts. Forward contracts can be used to hedge foreign currency risk.

Forward price and  
delivery price

It is important to distinguish between the forward price and the delivery price. The forward price is the market price that would be agreed to today for delivery of the asset on a specified maturity date. The forward price is usually different from the spot price and varies with the maturity date.

## Futures Contracts

Like a forward contract, a futures contract is an agreement between two parties to buy or sell an asset at a certain time in the future for a certain price. Unlike forward contracts, futures contracts are normally traded on an exchange. To make trading possible, the exchange specifies certain standardized features of the contract. As the two parties to the contract do not necessarily know each other, the exchange also provides a mechanism that gives the two parties a guarantee that the contract will be honored.

The largest exchanges on which futures contracts are traded are the CBOT and the CME. On these and other exchanges worldwide, a wide range of commodities and financial assets form the underlying assets in the various contracts. The commodities include pork bellies, live cattle, sugar, wool, lumber, copper, aluminum, gold and tin. The financial assets include stock indices, currencies and Treasury bonds.

The only difference between a futures contract and a forward contract is that an exact delivery date is not specified. The contract is referred to by its delivery month and the exchange specifies the period during the month when delivery must be made. For commodities, the delivery period is usually the entire month. The holder of the short position has the right to choose the time during the delivery period when it will make

delivery. Usually, contracts with several different delivery months are traded at any one time. The exchange specifies the amount of asset to be delivered for one contract and how the futures price is to be quoted. In the case of a commodity, the exchange also specifies the product quality and the delivery location.

## Options

### American and European-style options

Options are traded on exchanges and in the over-the-counter market. There are two basic types of options. A “call option” gives the holder the right to buy the underlying asset by a certain date for a certain price. A “put option” gives the holder the right to sell the underlying asset by a certain date for a certain price. The price in the contract is known as the “exercise price” or strike price; the date in the contract is known as the “expiration date” or maturity. *American options* can be exercised at any time up to the expiration date. *European options* can be exercised only on the expiration date itself. In the exchange traded equity options market, one contract is usually an agreement to buy or sell 100 shares. European options are generally easier to analyze than American options and some of the properties of an American option are frequently deduced from those of its European counterpart.

There is a significant difference between an options contract and a futures contract. In an options contract, the holder of the contract has the right to exercise the contract. But he need not exercise that right. In a futures contract, the holder has to exercise the underlying contract – that is, he is obligated to buy or sell the underlying asset. Another difference between an options and a futures contract is that whereas it costs nothing to enter into a forward or futures contract, there is a cost for acquiring an options contract.

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## Other Derivatives

There is virtually no limit to the innovations that are possible in the derivatives area. Some of the options traded in the over-the-counter markets have payoffs dependent on the maximum value attained by a variable during a period of time; some have payoffs dependent on the average value of a variable during a period of time; some have exercise prices that are functions of time; some have features where exercising one option automatically gives the holder another option; some have payoffs dependent on the square of a future interest rate and so on.

Traditionally, the variables underlying options and other derivatives have been stock prices, stock indices, interest rates, exchange rates and commodity prices. However, other underlying variables are becoming increasingly common. For example, the payoffs from credit derivatives depend on the creditworthiness of one or more companies; weather derivatives have payoffs dependent on the average temperature at particular locations; insurance derivatives have payoffs dependent on the dollar amount of insurance claims of a specified type made during a specified period; and electricity derivatives have payoffs dependent on the spot price of electricity.

## Types of Derivatives Traders

There are broadly three types of derivatives traders. They are hedgers, speculators and arbitrageurs. Hedgers use futures, forwards and options to reduce the risk that they face from potential future movements in a market variable. Speculators use them to bet on the future direction of a market variable. Arbitrageurs take offsetting positions in two or more instruments to lock in a profit.

## Trading Systems

Congregation of buyers and sellers openly shouting out their orders

**Open outcry** – Traditionally stock exchanges have been a centralized location where buyers and sellers meet physically and, depending on the demand and supply of a particular equity, prices are set. This is the “open outcry” system where the prices of the different stocks are set by openly calling out aloud. The centralized location is usually the “trading floor” or “trading pit”. “Specialists” are physically present on the exchanges’ trading floors. Here each specialist specializes in a particular stock, buying and selling in a verbal auction.

Buyers and sellers connected by a telecommunication network

**Electronic exchanges** – The traditional open outcry system is slowly giving way to electronic exchanges. These electronic exchanges eliminate the need for specialist traders, while drastically reducing the execution time of a trade and thus lowering the cost of trading. Electronic trading systems are screen-based and buyers and sellers need not be physically present on the trading floor. Buyers and sellers are connected by computers over a telecommunications network. Market makers, also known as “dealers”, carry their own inventory of stocks and are required to post their bid and ask prices on the network.

Trading takes place in a ubiquitous computer network ...

**Alternative trading systems (ATSs)** – These have evolved in recent times. Trading takes place in a ubiquitous computer network. ATSs trade listed stocks, but they connect buyers and sellers directly. ATSs usually deal in bulk orders and therefore are used increasingly by institutional investors. Since the ATSs are in direct competition with stock exchanges, trading costs are substantially lower. Moreover, they provide real-time execution as well as access to equity markets worldwide and innovative investment categories. However, ATSs do not service retail investors. Both stock exchanges and ATSs bring securities buyers and sell-

... and is not governed by any market supervisory authorities

ers together. The key distinction between them is that transactions via the ATSS are based on private law contracts, not on stock exchange law. In addition, stock exchanges have to meet stricter regulatory requirements. Off-exchange markets have neither admission procedures for securities nor a market supervisory authority.

Cross-border trading and extended trading hours widen scope for investors to trade on ATSS

ATSS offer investors wider trading opportunities by providing extended trading hours, access to equity markets worldwide and innovative investment types such as financial instruments from the private equity segment. Moreover, ATSS facilitate after-hours trading and well-informed traders can benefit immensely. ATSS draw on the advantages their specialization gives them over conventional stock exchanges in order to provide investors with customized market models. However, the ATSS do not offer clearing and settlement functions. This function is the exclusive domain of the stock exchanges. With ATSS offering lower trading costs, most stock exchanges will be compelled to lower their trading costs. However, since the stock exchanges cover the entire value chain of business from trading to clearing and settlement, they will have to cover their costs out of revenues from clearing and settlement.

## Clearing and Settlement

The penultimate stage of the secondary market operation

Historically, stock exchanges have performed the function of clearing and settlement of transactions that have taken place on the exchange. The buying or selling of equities is only the initial function in a transaction. For the transaction to be fully executed, the exchange has to perform the clearing and settlement functions too. The first stage of the clearing

and settlement function is that the actual deliveries of the shares concerned have to be taken from the seller, whilst the buyer of the shares has to make payment for the shares purchased. In the second stage, the seller will receive the payment due whilst the buyer takes physical delivery of the shares.

With regulators in most countries enforcing quicker clearing and settlement norms, trading cycles in most exchanges are shortening. Moreover, with most exchanges shifting to electronic trading systems, it is becoming increasingly possible for exchanges to have shorter trading cycles. Currently, most exchanges across Europe, America and the Asia-Pacific region follow a T+3 trading cycle and many of them are trying to reduce the trading cycle to T+1.

### What is the T+3 Trading System?

The T+3 trading system means that when you buy shares, your payment must be received by your brokerage firm no later than three business days after the trade is executed. And if you sell securities, your brokerage firm must receive your share certificate no later than three business days after you authorized the sale.

### What is the Best Trading System?

At the outset it is difficult to conclude which is the best trading system. While open outcry had the advantage of setting a market price according to supply and demand, electronic trading systems eliminate the need for a market maker, thereby reducing the cost of trading. With information freely available, investors will

Competition among trading systems leads to fragmentation of business ...

choose the trading system they feel is best. Investors prefer to use the exchange or trading system where they believe their orders have the greatest chance of being executed. Exchanges and trading systems in turn try to offer various incentives to attract customers by offering a low price, including transaction, clearing and listing services. To attract more customers to their trading system, exchanges compete among themselves. This may lead to fragmentation of business as investors may choose to trade on a number of trading venues instead of a single trading venue. This fragmentation of trading reduces the liquidity in each of the trading venues, thereby increasing the volatility of transaction prices.

... but later fosters consolidation and consequently improves liquidity

However, market structures are constantly evolving, and activities move in response to innovations in trading and the development of financial instruments. In the long run, unfettered competitive pressures will foster consolidation, as liquidity tends to centralize in the system providing the narrowest bid–ask spreads at volume. Two or more venues trading the same security or commodity will naturally converge towards a single market. One market offering marginally narrower bid–ask spreads at volume will attract the business of others, further improving its liquidity and reducing that of its competitors. This in turn will create an even greater competitive imbalance, eventually leading to full consolidation. Of course, this process may not be fully realized if there are impediments to competition or if markets are able to establish and secure niches by competing on factors other than price.

Internalization

Under the electronic trading systems, not all trades are reported in the market due to internalization (a process whereby certain transactions may be internally crossed off) by the intermediaries and consequently the investor does not get the best possible deal. Secondly, internal-

ization diverts “uninformed”, low risk trades away from the primary exchange, leaving only the more “informed” and higher risk orders on the primary exchange. This may lead dealers to set wider spreads on the primary exchange in order to protect themselves from being picked off by investors with better information. However, internalization also benefits investors if they choose to trade on the ATSS, since ATSSs compete directly with the primary exchange, leading to investors getting a better deal by way of a better price as well as lower dealing costs than on the primary exchange.

Fragmentation and internalization together drive down transaction costs

Considering the above two trends of fragmentation and internalization, exchanges will be compelled to drive down their transaction costs as well as ensure liquidity. To recapture their market share which has been moving towards the ATSSs, many exchanges worldwide have cut trading costs. But for the exchanges’ existence, liquidity is more important and sustaining value from customers through value-added services and market practices and brand-building activities are the key factors. To ensure liquidity, exchanges have to provide better connectivity to their customers at lower costs, and also make membership procedures simpler.

Technological advancement ensures cross-border trades and consequently enhances liquidity

Better connectivity will ensure cross-border trades, and the exchanges’ revenue stream could be expanded across borders if exchanges can ensure better liquidity. However, the ATSSs may be a better option for cross-border trades since most ATSSs trade across several exchanges across countries. Primary exchanges will have to make significant improvements like providing single screens for multiproduct cross-border trading to retain and add to their customer base. Bigger exchanges have set up trading hubs across nations to facilitate cross-border trading activities and also offer after-hours trading options.

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A fully transparent market ensures best execution

The level of transparency in a market ensures the level of competition between the trading systems. Greater transparency improves informational efficiency, thereby facilitating arbitrage between different systems, thus ensuring price priority and enhancing the price discovery process. This in turn enhances best execution.

However, sometimes bigger investors may not be willing to expose their orders publicly and would prefer to use ATNs. This would decrease the liquidity in the system. Transparency is however a double-edged sword, whereby under certain circumstances it may help to stabilize speculation and absorb order flow imbalances and reduce volatility. At other times, it may exacerbate market participants' strategic behavior towards each other, with the possibility of increasing volatility.

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