R33 Market Organization and Structure

Version 1.0

1. Introduction

This reading covers the functions of the financial system, the various assets used by financial analysts, the role of financial intermediaries, different positions one can take like short and long, various types of orders, market participants, primary and secondary markets and, finally, the characteristics of a well-functioning financial system.

2. The Functions of the Financial System

The financial system includes markets and financial intermediaries that help transfer financial assets, real assets, and financial risk between entities from one place to another, and from one point in time to another.

The six purposes people use the financial system for are as follows:

- to save money for the future.
- to borrow money for current use.
- to raise equity capital.
- to manage risks.
- to exchange assets for immediate and future deliveries.
- to trade on information.

Three main functions of the financial system are to:

- achieve the purposes for which people use the financial system.
- discover the rates of return that equate aggregate savings with aggregate borrowings.
- allocate capital to the best uses.

2.1 Helping People Achieve Their Purposes in Using the Financial System

People often use a single transaction to achieve more than one of the six purposes when using the financial system. For example, an investor who buys the stock of a bank may be saving for the future, or trading based on research that the stock is undervalued, or trying to benefit from the central bank's policy to slash interest rates in the medium term. Each of the six purposes listed earlier are discussed in detail below:

Saving

Saving is moving money from the present to the future. By saving, we choose not to spend now and make that money available in the future. One common example is people saving for retirement. The financial system offers various instruments such as bank deposits, stocks, and bonds for this purpose.

Borrowing

Entities like people, companies, and governments often want to spend money now but do not have money. People borrow to buy homes, cars, and education, while companies borrow to fund new projects. Governments borrow to provide better infrastructure, rural development, or other such benefits for its citizens. The financial system facilitates borrowing by aggregating from savers the funds that borrowers require. In simple terms,

these are known as loans.

Raising Equity Capital
Companies raise money for projects by selling equity ownership interests. Instead of taking a loan, they sell a certain percentage of ownership in the company to raise funds. The financial system brings together the companies in need of money and entities providing money in the form of investment banks. Investment banks help companies issue equities, analysts value the securities that companies sell, regulators and standards-setting bodies ensure meaningful financial disclosures are made.

Managing Risk
Entities face financial risks related to exchange rates, interest rates, and raw material prices and might want to hedge these risks.

Example of financial risk management:
Consider a sugarcane producer (typically farmers) and a sugar-refining firm. The sugar-refining firm purchases sugarcane from the farmers and processes them to produce sugar. The sugarcane season typically lasts 150 days in a year but is based on a variety of factors such as amount of rainfall, temperature, pests, etc. Both the farmer and refining firm are worried about what the prices will be when the sugarcane is ready. The farmer fears it will be lower due to overproduction or poor quality of crop, while the refining firm fears it will be higher because of demand, global commodity prices, and production worldwide. By entering in to a forward contract (discussed in detail in the derivatives reading), they eliminate the uncertainty related to changing prices.

Exchanging Assets for Immediate Delivery (Spot Market Trading)
People often trade one asset for another if the value of the other asset is more to them. Examples include currencies, carbon credits, and gold. The financial system facilitates these exchanges when liquid spot markets exist, which removes substantial transaction costs.

Information-Motivated Trading
Information-motivated traders aim to profit from information that they believe allows them to predict future prices. Unlike pure investors, information-motivated traders strive to leverage their information to earn extra return in addition to the normal return expected by investors.

Active investment managers are information-motivated traders who, after a thorough analysis, buy under-valued and sell over-valued securities. Pure investors and information-motivated traders differ in their motives and not so much in the risk they take. The primary motive of the latter is to profit from the superior information they possess.

2.2 Determining Rates of Return

Saving, borrowing, and selling equity are all means of moving money through time. While savers move money from the present to the future, borrowers and issuers of equity move

money from the future to the present.

Money can travel forward in time if an equal amount of money is traveling in the other direction. Think of it this way: the instruments in which savers invest are those created by the borrowers. For instance, a bond or a stock that a saver invests in is issued by a government or a company. The company is moving money to now, while the investor is saving it for later.

How much savers save or move consumption to the future is related to the expected return on investments. If the rates are high, investors will want to save more. Similarly, if the cost of borrowing is less for borrowers now, they will want to move more money from the future to the present, i.e., borrow more. The total amount of money saved must equal the total amount of money borrowed to achieve a balance. It will create an imbalance if either one of them is too high or low. If rate of return is low, savers will want to save less now than how much borrowers will want to borrow.

Equilibrium interest rate is the interest rate at which the aggregate supply of funds equals the aggregate demand for funds. Different securities have different equilibrium rates based on their characteristics which are usually a function of risk, liquidity, and time. For instance, investors demand a higher rate of return for equities than debt, long-term investments than short-term investments, or illiquid securities than liquid securities.

2.3 Capital Allocation Efficiency

Primary capital markets are the markets in which companies and governments raise capital. Economies are considered allocationally efficient when capital (money) is allocated to the most productive uses, i.e., projects with the highest NPV or internal rate of return (IRR). Investors actively seek information on the various investment opportunities available before making investment decisions.

3. Assets and Contracts

3.1 Classifications of Assets and Contracts

Classification criteria:		
Based on the underlying	**Financial assets:** Means by which individuals hold claim on real assets and future income generated by these assets, e.g., securities like stocks and bonds.	**Real assets:** Include physical assets like real estate, equipment, commodities, and other assets.
Based on the nature of claim by financial securities	**Debt securities:** Periodic interest payments made on borrowed funds that might be collateralized.	**Equity securities:** Represent ownership positions and claim on the future cash flows of the business.

Based on where the securities are traded	**Publicly traded:** These securities trade in public markets through exchanges or dealers and are subject to regulatory oversight.	**Privately traded:** These securities are not traded in public markets. They are often not subject to regulation.
Based on delivery	**Spot market:** Markets for immediate delivery of assets.	**Forward market:** Contracts that call for future delivery of assets and include forwards, futures, and options.
Based on the underlying of the derivative contract	**Financial derivative contract:** These contracts draw their value from financial assets like equities, equity indexes, debt, and other assets.	**Physical derivative contract:** These contracts draw their value from real assets like commodities.
Based on issuance of security	**Primary market**: Issuers sell securities directly to investors.	**Secondary market**: Investors buy and sell securities among themselves.
Based on maturity	**Money market:** Securities with maturities of one year or less.	**Capital market:** Securities that have more than one year maturity or equities that do not have any maturity.
Based on the type of investment markets	**Traditional investment markets:** Includes all publicly traded debt and equities.	**Alternative investment markets:** Includes hedge funds, private equity, commodities, real estate, and precious gems that are hard to trade and value.

4. Securities

Securities can be broadly classified into: fixed income, equities and shares in pooled investment vehicles.

4.1 Fixed Income

Refers to debt securities where the borrower is obligated to pay interest and principal at a pre-determined schedule. They might be collateralized, i.e., investors have claim of certain physical assets in case of a default.

The different types are:

- Bonds: Long-term debts.
- Notes: Intermediate-term debts.
- Bank borrowings: Long- to short-term involving revolving credit lines and other debt instruments.

- Convertible: Debt can be exchanged for a specified number of equity shares.

4.2 Equity

Refers to ownership claims by investors in companies.

The different types are:

- Common shareholders: They have a residual claim over any assets and income after all the senior securities have been paid.
- Preferred shareholders: They are paid scheduled dividends before the common shareholders.
- Warrants: They give the holder a right to buy the firm's security at a price, called the exercise price, within a specified time period. (similar to options)

4.3 Pooled investments

Pooled investments include mutual funds, trusts, exchange traded funds (ETFs), and hedge funds. They issue securities to represent the shared ownership in the assets. Money from several investors is pooled together to be managed by a professional money manager according to a specific investment strategy. The advantage of investing in pooled vehicles is to benefit from the investment management services of managers and from diversification opportunities. Pooled vehicles may be open-ended or close-ended.

5. Currencies, Commodities, and Real Assets

Currencies

Currencies are monies issued by national monetary authorities. Reserve currencies such as dollar and euro are currencies that national central banks around the world hold in large quantities. Currencies trade in foreign exchange markets, spot markets, forward markets, or futures markets.

5.1 Commodities

Commodities include precious metals, energy products, industrial metals, agricultural products, and carbon credits. They trade in spot, forward, and futures markets. They are traded in spot markets for immediate delivery and in forwards and futures markets for future delivery.

5.2 Real Assets

Real assets are tangible assets such as real estate, machinery, and airplanes which are normally held by operating companies. Real assets are unique, illiquid, and costly to manage. They are attractive to investors for two reasons:

- Low correlation with other investments.
- Income and tax benefits to investors.

Real estate investment trusts (REITs) and master limited partnerships (MLPs) securitize real

assets and facilitate indirect investment in real assets. Since these securities are more homogeneous and divisible than the real assets they represent, they are often more liquid and more suitable as investments.

6. Contracts

A **contract** is an agreement between traders to perform some action in the future that can either be settled physically or in cash.

Based on the underlying asset, contracts can be further classified into:

- Physical contract: If contracts are based on physical assets like crude oil, wheat, gold, or any other commodity, then it is a physical contract.
- Financial contract: If contracts are based on financial assets such as indexes, interest rates, and currencies, then they are called financial contracts.

Contracts for Difference (CFD) allow people to speculate on the price of an underlying asset. The buyer benefits if the price of the underlying asset increases. These are derivative contracts because their value is derived from the underlying asset. They are generally settled in cash.

The major types of contracts (also termed as derivatives) are:

6.1 Forward Contracts

A forward contract is an agreement to trade the underlying asset at a future date at a pre-specified price. It is not standardized and is not traded on exchanges or in dealer markets.

6.2 Futures Contracts

A futures contract is a standardized forward contract for which amount, asset characteristics and delivery date are the same. Standardization ensures higher liquidity.

6.3 Swap Contracts

A swap contract is an agreement to swap payments of one asset for the other. The different types are:

- Interest rate swap: Floating rate payments are swapped for fixed-rate payments for a specified period.
- Currency swap: Currency amount swapped for another currency for a specified period.
- Equity swap: Returns earned on one investment are swapped for the other.

6.4 Option Contracts

Contracts that give the holder a right, but not the obligation, to buy/sell an underlying security at a specified price at or before a specific date. The different types are:

- Call options: Buyer gets the right but not the obligation to buy the underlying security. The seller of the call option gets the premium upfront but has to the sell the

security if the buyer exercises his option to buy.

- Put options: Buyer gets the right but not the obligation to sell the underlying security. The seller of the put option gets the premium upfront but has to the buy the security if the buyer exercises his option to sell.

6.5 Other Contracts

Credit default swaps:
Contracts that offer insurance to bondholders. They make payments to a bondholder if a borrower defaults on its bonds.

7. Financial Intermediaries

Financial intermediaries help entities achieve their financial goals. They provide products and services which help connect buyers to sellers. There are several types of intermediaries:

7.1 Brokers, Exchanges, and Alternative Trading Systems

Brokers:

- They find counterparties for transactions (other entities willing to take the opposing side in a transaction) and do not indulge in trade with their clients directly.

Block brokers:

- Provide similar services as brokers, except that their clients have large trade orders that might potentially impact the security prices if the trade is executed without proper care.

Investment banks:

- They provide advice for corporate actions like mergers and acquisitions and help firms raise capital by issuing securities such as common stock, bonds, preferred shares, etc.

Exchanges:

- They provide places where traders can meet.
- They regulate traders' actions to ensure smooth execution of the trades.

Alternative trading systems (ATS):

- They serve the same trading function as exchanges but have no regulatory oversight.
- ATS where client orders are not revealed are also known as dark pools.

7.2 Dealers

- They trade directly with their clients by taking the opposite side of their trades.
- They provide liquidity by buying or selling from their own inventory and earning profits on the spread between the transactions.

7.3 Arbitrageurs

Arbitrageurs trade when they can identify opportunities to buy and sell identical or

essentially similar instruments at different prices in different markets.

Example of an arbitrage opportunity:
Consider a stock of HLL Corp. that trades on two exchanges in a country. If a trader buys the stock from one exchange at a lower price and sells on another at a higher price, then an arbitrage opportunity exists as you can profit at the same time due to differences in prices. If the same instrument (like HLL in the example above) is bought and sold in different markets at different prices, it is pure arbitrage.

If markets are efficient, pure arbitrage opportunities rarely exist. When it does happen, the arbitrageur will engage in transactions that will quickly eliminate this arbitrage. However, buying an instrument in one form and selling it in another form is called **replication**. It is common for arbitrage opportunities to exist between similar instruments. Example: Buy stock and sell overpriced calls for the same stock.

8. Securitizers, Depository Institutions and Insurance Companies

Securitizers

Securitization is the process of buying assets, placing them in a pool, and then selling assets that represent ownership of the pool. One common example is that of mortgage-backed securities or mortgage pass-through securities.

Securitization example:
Take the example of a mortgage bank that gives mortgage loans to a thousand homeowners. Each mortgage loan is like an asset on the bank's balance sheet. If the mortgage bank combines the thousand individual mortgage loans into a pool and sells shares of the pool to investors as securities, then this process is called securitization. The mortgage bank acts as the intermediary as it connects investors who want to buy mortgages with homeowners who want to borrow money. The interest and principal payments from the homeowners are paid to the investors of these securities.

Benefits of Securitization

- Improves liquidity in the mortgage markets as it allows investors to indirectly invest in mortgages that they would otherwise not buy. The risks associated with MBS are more predictable than that of individual mortgages, therefore MBS are easier to price and sell when investors need to raise cash.
- Reduces cost of borrowing for homeowners. Higher liquidity means that investors are willing to pay more for securitized mortgages. This results in higher mortgage prices and lower interest rates.
- Diversification of portfolio for individual investors who wish to invest in mortgages but cannot service it efficiently.
- Losses from default and early prepayments are more predictable.

Besides mortgages, other assets that are securitized include car loans, credit card

receivables, bank loans, airplane leases etc.

8.1 Depository Institutions and Other Financial Corporations

Depository institutions include commercial banks, savings and loan banks, credit unions and similar institutions that raise funds from depositors and other investors and lend it to borrowers. The diagram below explains the function of a depository institution as a financial intermediary.

Depositors (or investors) deposit their money in the banks. Banks pay interest to the depositors for using their money and offers services, such as check writing. The banks, in turn, lend this money to borrowers in need of the money. The borrowers pay an interest to the bank. The interest a bank earns from borrowers is usually higher than the interest it pays to the depositors, that is how the bank makes money. The bank is a financial intermediary here as it connects depositors with borrowers. Banks also raise funds by selling equity or issuing bonds of the bank.

8.2 Insurance Companies

Insurance companies help people and companies offset risks by issuing insurance contracts. The contracts make a payment to the party that buys the contracts in case an event occurs. Examples of insurance contracts include life, auto, home, fire, medical, theft, and disaster.

Example of an insurance contract:
Assume you own a car and wish to insure the car against any damages. You buy car insurance from an insurance company and pay a premium at periodic intervals (annually). By doing this, you have transferred the risk of car ownership to the insurance company. In case the car is involved in an accident, the insurance company pays for the damages.

9. Settlement and Custodial Services

A **clearinghouse** helps clients settle their trades. In futures markets, they guarantee contract performance and, hence, eliminate counterparty risk. By requiring participants to post an initial margin and maintain the margin, the clearinghouse ensures there are no defaults. In other markets they may act as escrow agents, transferring money from the buyer to the seller while transferring securities from the seller to the buyer.

Depositories or **custodians** hold securities for their clients so that investors are insulated from loss of securities through fraud or natural disasters.

10. Positions and Short Positions

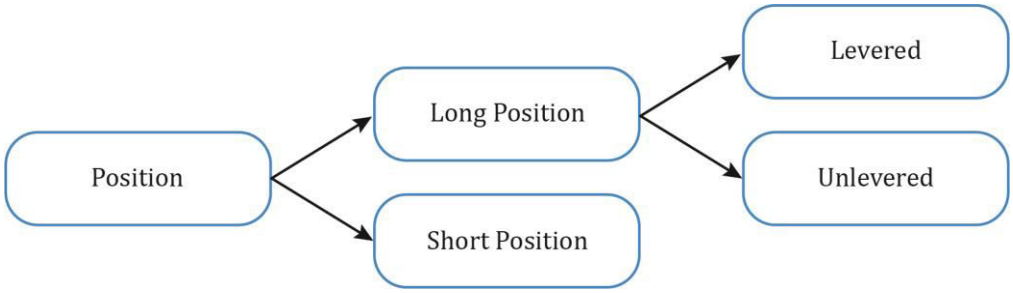
An investor's position in a security may either be a long position or a short position.

Long positions

- These are created when a trader owns an asset or has a right or obligation under a contract to purchase an asset.
- Investors who are long benefit from an increase in price of the security.
- A long position can be levered or unlevered.

Short positions

- These are created when traders borrow an asset and sell it, with the obligation to replace the asset in the future.
- Investors who are short benefit from a decrease in price of the security.

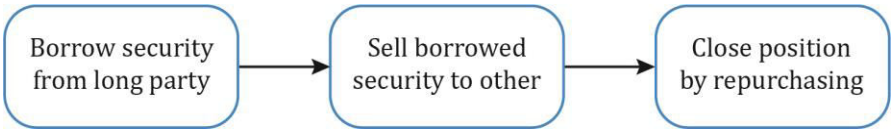


We will now look at each of these positions in detail.

10.1 Short Positions

Short positions are created when traders sell contracts or stocks they do not own. It is similar to borrowing an asset you do not own.

How to create a short position in a security:



Example of a short position:
Assume you research a stock – XYZ Corporation – and forecast its price to go down in the short term. The holder of a short position benefits when the security price goes down. To profit from this view, you borrow securities from a long party and sell the borrowed XYZ stock to other traders when it is trading at $50. The stock falls to $40 in line with your forecast. You then close the position by repurchasing and delivering it to the long party, profiting $10 per share in the process.

The potential gain is bounded, in our example, to a maximum of $50. That is, the maximum profit you can earn is $50 if the stock falls from $50 to $0. Conversely, the potential loss is unbounded. If the stock's price increases instead of falling, then the short seller incurs a loss and theoretically, there is **no maximum limit** to the loss. This makes a short position very

risky. For a long position, the reverse happens. If you own XYZ stock and the stock's price increases, there is no limit to the maximum profit you can make. However, the loss if the stock falls is limited to $50.

To secure the security loans given to short sellers, security lenders require that proceeds of the short sale be posted as collateral ($50 in the example above). The security lender then invests the proceeds in short term securities and pays interest on collateral to short sellers at rates known as **short rebate rates**. Security lenders lend their securities because the short rebate rates they pay on the collateral are lower than the interest rates they receive from investing the collateral.

Short Position: sell the stock (owe the asset)
Maximum gain = 100 % of investment
Maximum loss = unbounded

Long Position: buy the stock (own the asset)
Maximum gain = unlimited
Maximum loss = 100% of investment

11. Leveraged Positions

In some markets, traders are allowed to buy securities by borrowing some percentage of the purchase price. The leverage ratio is a measure of the amount borrowed relative to the total value of the asset. It shows how many times larger a position is than the equity that supports it.

$$\text{Leverage ratio} = \frac{\text{Value of the position}}{\text{Value of the equity investment in it}}$$

The borrowed money is called the margin loan and the interest paid is called the call money rate. Traders who buy securities on margin are subject to margin requirements. The **initial margin requirement** is the minimum percentage of the purchase price that must be paid by the trader (called trader's equity).

Traders usually borrow money from their brokers. The advantage of buying securities on margin is that it increases the amount of profit a trader makes if the share price goes up. If the share price falls to a certain level (the margin call price) the trader will receive a call from the broker (lender) and will be asked to add more money to his account. The minimum amount of equity to be maintained in the positions is called the **maintenance margin requirement**. Traders receive a **margin call** when equity falls below the maintenance margin requirement.

$$\text{Margin call price} = P \times \left(\frac{1-\text{Initial Margin}}{1-\text{Maintenance Margin}}\right)$$

Example

Your broker allows you to purchase stocks on margin. The initial margin requirement is 40% and the maintenance margin requirement is 25%. You purchase a stock for $50 using $20 of

your money and you borrow the rest from the broker. The interest rate on borrowed money is 5%. What is the leverage ratio? At what rate will you receive a margin call?

Solution:

You borrow $30, your equity is $20 and the total value of the asset is $50.

The leverage ratio is $\frac{50}{20} = 2.5$.

Margin call price = Price x $\frac{1 - \text{Initial margin}}{1 - \text{maintenance margin}}$ = 50 x $\frac{1-0.4}{1-0.25}$ = 40.

If the stock price comes down to 40, you still owe the $30 and your equity has come down to $10. This is 25% of $40 (the asset price). If the stock price falls below $40 the equity becomes less than 25%, the maintenance margin. In this situation, the broker (lender) will ask you to add money to your account such that your equity is at least 25%.

Example

We continue with the earlier example where your initial margin requirement is 40%. You believe stock X will go down in price and decide to short sell 500 shares at the current price of $30. How does the margin requirement impact you?

Solution:

Proceeds from short sale = 500 * $30 = $15,000. Just like long buyers buy on margin, even short sellers are required to post a margin amount as a security. If the price goes up, then it is a loss for the short seller (you); to mitigate this risk of loss, the broker requires margin traders to maintain a minimum amount of equity in their positions called the **maintenance margin** requirement. The margin amount required here is 0.4 * 15,000 = $6,000.

The total return to the equity investment in a levered position considers:

Profit or loss on the position
- Margin interest paid
+ Dividends received
- Sales commission

To calculate the return percentage on a leveraged position, we need to divide the total profit by the initial investment. This is illustrated below:

Example

What is the overall return in percentage terms given the following data?
Purchase price = 30
Sales price = 32
Shares purchased = 500
Leverage ratio = 2
Call money rate = 5%

Dividend = $0.50 per share
Commission = $0.02 per share

Solution:

Trader's equity = $\frac{Total\ amount\ of\ investment}{Leverage\ ratio} = \frac{30}{2}$ = 15 per share i.e. the remaining 15 is borrowed.

Initial investment: (Equity + Commission) x (Number of shares purchased) = 15.02 x 500 = 7,510

Trader's remaining equity after the sale can be computed as:

Proceeds from the sale:	16,000 (32 x 500)
Payoff loan	-7,500 (15 x 500)
Margin interest paid	-375 (0.05 x 15 x 500)
Dividends received	250 (0.5 x 500)
Sales commission paid	-10 (0.02 x 500)
Remaining equity	8365

Total profit = equity at end – initial investment = 8,365 – 7,510 = 855

Total return = $\frac{Total\ profit}{Initial\ investment} = \frac{855}{7510}$ = 11.38%

12. Orders and Execution Instructions

Brokers, dealers and exchanges arrange the trades between buyers and sellers by issuing orders.

All orders specify the following basic information:

- What instrument to trade (name of the stock, ETF, bond, etc.)
- How much to trade (quantity such as 500 socks of Microsoft Corp.)
- Whether to buy or sell (example: sell Oracle stock)

Most orders have additional instructions:

- Execution instruction: How to fill the order.
- Validity instruction: When the orders may be filled.
- Clearing instruction: How to arrange the final settlement.

In many markets, dealers are willing to buy/sell from traders. The dealer creates the market. Some important terms:

- Bid and ask price: The prices at which dealers are willing to buy are called bid prices. The prices at which dealers are willing to sell are called ask prices. The ask prices are usually higher than the bid prices.
- Bid and ask size: Traders often trade various quantities of a stock at various prices. The quantities for a bid offer are called bid sizes and the quantities for an ask offer are called ask sizes.
- The highest bid in the market is called the best bid and lowest ask in the market is called the best ask. The difference between the best bid and best offer is the market

bid-ask spread.

- Bid-ask spreads are an implicit cost of trading. Small bid-ask spread imply lower trading costs and vice-versa.

12.1 Execution Instructions

Execution instructions types are:

Market Orders:

- The order is immediately executed at the best price available.
- It executes the order quickly. However there can be substantial slippages in execution price if a stock is thinly traded.

Limit Orders:

- Sets a minimum execution price on sell orders and maximum execution price on buy orders.
- The order ensures that an investor never exceeds his price limit on a transaction.
- However, there is a possibility that the order may not execute at all if the markets are fast moving or there isn't enough liquidity.

All-or-Nothing Orders:

- These orders will be executed only if the entire quantity can be traded.
- Are beneficial when the trading costs depend on the number of executed trades and not on the size of the order.

Hidden Orders:

- These are large orders that are known only to the brokers or exchanges executing them until the trades are executed.

Iceberg Orders:

- A small visible portion of a large hidden order is executed first to gauge the market liquidity before the entire order is executed.

From a testability perspective, it is important to note the difference between a market order and a limit order.

	Market order	**Limit order**
Execution	Executed at the best available market price.	Sets a minimum execution price on sell orders and maximum execution price on buy orders.
Advantages	Quick execution when a trader believes that the prices are volatile.	Avoids slippages as the orders are executed at the pre-determined or better prices.
Disadvantages	Quick execution can lead to unfavorable trade prices and has trade price uncertainty.	In a volatile market, the order might be partially filled or not filled at all, making the possibility of missing out on trade.

Additional information	Trader sacrifices price certainty for immediate liquidity.	Types of limit orders: • Marketable or aggressively priced**:** Limit buy order above the best ask or a limit sell order below the best bid. It will be immediately executed. • Making a new market or inside the market**:** Limit price is between the best bid and the best ask.
		• Behind the market**:** Limit buy order with limit price below the best bid, and limit sell order with limit price above the best ask. If the limit prices are way behind the market, they are termed as far from the market limit orders.

13. Validity Instructions and Clearing Instructions

Validity instructions types are:

- **Day orders**: Orders that expire if unfilled for the trading day on which they are submitted.
- **Good-till-cancelled orders:** Orders that last until the buy or sell order is executed.
- **Immediate or cancel (fill or kill) orders:** These orders are to be immediately filled, i.e., when they are received by the broker or exchange. If it fails to execute, the order is canceled from the system.
- **Good-on-close (market-on-close):** These orders can only be filled at the close of trading. Mutual funds often rely on this order type.

13.1 Stop orders

Also called stop-loss orders, this order comes with a trigger price. Stop-sell order executes only if the price is at or below the stop price or trigger price. Stop-buy order executes only if the price is at or above the stop price or trigger price.

13.2 Clearing Instructions

Clearing instructions tell brokers and exchanges how to arrange final settlement of trades. These instructions convey who is responsible for clearing and settling the trade.

14. Primary Security Markets

Primary markets are where issuers first sell their securities to investors. For example, when a private company goes public, its shares are issued first to the investors in the primary market before it starts trading in the secondary market.

14.1 Public Offerings

Issuers generally contract with an investment bank to help them sell their securities to the public. The investment bank builds the list of subscribers who will buy the security. This process is known as book building. Investment banks attract investors by providing investment information and opinion about the issuing company.

In an accelerated book build**,** issuers may issue securities with the help of an investment bank in only one or two days.

The two major types of offerings provided by investment banks are the underwritten offering and the best efforts offering.

- **Underwritten offering:** The investment bank guarantees the amount of shares and the price at which they will be sold (think of it as though the issuer has sold the entire issue to the investment bank, who then sells it to other investors through the book building process). This price is called the offering price. Assume the investment bank promises to sell 1,000,000 shares at $20 and only 800,000 are sold. If the entire issue is not sold, the investment bank buys the remaining securities at the offering price, in this case it buys the remaining 200,000 shares. The issuer pays an underwriting fee of about 7% to the bank for these services.
- **Best efforts offering:** Unlike underwritten offering, in this case the investment bank only serves as a broker to bring investors to the issuer. Any securities not sold in an undersubscribed issue will remain as is.

An **IPO (Initial Public Offering)** is where issuers sell securities to the public for the first time.

- IPO could be oversubscribed or undersubscribed. If the offering price is low, more investors will be interested in subscribing than the number of shares issued (oversubscribed). Similarly, if the price is high, less number of investors will be interested, leading to the issue being undersubscribed.
- Investment banks have a conflict of interest in their dual role as agents and underwriters in choosing the right offering price. As an underwriter, it is in the interests of the investment bank to have the offering price as low as possible. But as agents for issuers, the offering price should be right to raise the required amount of money for the issuer.

A seasoned or secondary offering is where an issuer sells additional units of a previously issued security. As an example a company might have raised $10 million through an IPO and four years later wants to raise another $15 million through a secondary offering. Note that the secondary offering is a transaction between the issuer and investors.

14.2 Private Placements and Other Primary Market Transactions

A **private placement** is where corporations sell securities directly to a small group of qualified (sophisticated) investors as opposed to the public. Private placement requires

relatively low disclosure requirements because qualified investors are aware of the risks involved. It is less costly than a public offering.

In a **shelf registration**, corporations sell seasoned securities directly to the public on a piecemeal basis over time instead of selling it in a single transaction. They are sold in secondary markets. Consider a publicly traded company that announces the sale of 700,000 shares to a small group of qualified investors at €0.75 per share. This is an example of a private placement and not shelf registration because the company is not selling on a piecemeal basis.

In a **rights offering**, companies distribute the right to buy new stock at a fixed price to existing shareholders in proportion to their holdings. For example, a publicly traded Italian company is raising new capital. Its existing shareholders may purchase three shares for €3.07 per share for every 10 shares they hold.

14.3 Importance of Secondary Markets to Primary Markets

Primary markets are where entities raise money. Secondary markets are markets where investors trade (buy/sell) in securities. The cost of raising capital in primary markets is lower for corporations and governments whose securities trade in liquid secondary markets. In a liquid market, the transaction costs are low to buy/sell a security. Since investors value liquidity, they are willing to pay more for liquid securities. These high prices result in lower costs of capital for issuers.

15. Secondary Security Market and Contract Market Structures

Trading in securities takes place in a variety of structures. We will consider three aspects of market structure:

- Trading Sessions
- Execution Mechanisms
- Market Information Systems

15.1 Trading Sessions

The two categories of securities market based on when they are traded are as follows:

1. **Call markets:**
    - Trade takes place only at specific times of the day where all the traders are present and all bid-ask quotes are used to arrive at one negotiated price.
    - Markets are highly liquid when the market is in session and illiquid when the market isn't in session.
    - Usually used for smaller markets or to determine the opening and closing prices at stock exchanges.
2. **Continuous markets:**
    - Trades can occur at any time the market is open where the prices are either

quote-driven or auction-driven.

The example below illustrates how a large order is filled in a continuous trading market.

Example

At the start of the trading day, the limit order book for stock X looks as follows:

Buyer	Bid Size	Limit Price ($)	Offer Size	Seller
John	150	30		
Joe	80	31		
Jill	100	32		
		33	40	Sam
		34	60	Simon
		35	120	Sue

Tom submits an order to buy 150 shares, limit $34. What is the impact on the limit order book?

Solution:

Tom has placed a marketable limit order. He will buy 40 shares from Sam and 60 shares from Simon as these satisfy the limit price criteria of at or below $34. He will not buy from Sue as hers is a limit order of $34. Only 100 shares are filled; 50 remain unfilled.

Average price = 0.4 x 33 + 0.6 x 34 = 33.6

In the limit order book, Tom is a buyer with bid size of 50 at a price of $34. Sam and Simon's orders are removed from the limit order book as they are filled. It looks like this:

Buyer	Bid Size	Limit Price (in $)	Offer Size	Seller
John	150	30		
Joe	80	31		
Jill	100	32		
Tom	50	34		
		~~33~~	~~40~~	~~Sam~~
		~~34~~	~~60~~	~~Simon~~
		35	120	Sue

15.2 Execution Mechanisms

The three categories of the securities market based on how they are traded are as follows:

1. **Quote-Driven Markets:**
   - Trade takes place at the price quoted by dealers who maintain an inventory of the security.
   - Dealers provide liquidity in these markets and gain from the difference in bid-ask spread (high in opaque market).

- They are also called over-the-counter markets, price-driven, or dealer markets.

2. **Order-Driven Markets:**
   - Trading rules match buyers to sellers, thus making them supply liquidity to each other.
   - Trading rules uses two sets of rules:
     - Order matching rules: This establishes the order precedence based on price, their arrival time, and other factors.
     - Trade pricing rules: This determines the price of the transaction.
3. **Brokered Markets:**
   - Brokers arrange trades between counterparties.
   - Used for instruments that are unique or illiquid, like real estate or art pieces.

15.3 Market Information Systems

The two categories of the securities market based on when the information is disclosed are as follows:

1. **Pre-trade transparent:** Here trade information on quotes and orders is publically available prior to the trades.
2. **Post-trade transparent:** Here trade information on quotes and orders is publically available after the trade.

16. Well-Functioning Financial Systems

Why do we need a well-functioning financial system?

- So that investors can save (move money from the present to the future) and obtain a fair rate of return.
- Borrowers can borrow money easily (move money from the future to the present).
- Hedgers can offset their risks.
- Traders can trade currencies for commodities.

Four characteristics of a well-functioning financial system include:

- Well-developed markets trade instruments that help people solve their financial problems.
- Liquid markets with low cost of trading (operationally efficient markets) where commissions, bid-ask spreads and order price impacts are low.
- Timely and accurate financial disclosures that allow market participants to forecast the value of securities (support informationally efficient markets).
- Prices that reflect fundamental values (informationally efficient markets).

17. Market Regulation

The role of a market regulator is to ensure fair trading practices. The objectives of market regulation are to:

- Prevent fraud.

- Control agency problems by setting minimum standards of competence for agents.
- Promote fairness.
- Set mutually beneficial standards such as IFRS or U.S. GAAP.
- Prevent undercapitalized firms from exploiting their investors by making excessively risky investments.
- Ensure that long-term liabilities are funded.

Summary

LO.a: Explain the main functions of the financial system.

The curriculum outlines six purposes for why people use the financial system:

- To save money for the future.
- To borrow money for current use.
- To raise equity capital.
- To manage risks.
- To exchange assets for immediate and future deliveries.
- To trade on information.

Three main functions of the financial system are to:

- Achieve the purposes for which people use the financial system.
- Discover the rates of return that equate aggregate savings with aggregate borrowings.
- Allocate capital to the best uses.

LO.b: Describe classifications of assets and markets.

Classification criteria:		
Based on the underlying	Financial assets	Real assets
Based on the nature of claim by financial securities	Debt securities	Equity securities
Based on where the securities are traded	Publicly traded	Privately traded
Based on delivery	Spot market	Forward Market
Based on the underlying of the derivative contract	Financial derivative contract	Physical derivative contract
Based on issuance of security	Primary market	Secondary market
Based on maturity	Money market	Capital market
Based on the type of investment markets	Traditional investment markets	Alternative investment markets

LO.c: Describe the major types of securities, currencies, contracts, commodities, and real assets that trade in organized markets, including their distinguishing characteristics and major subtypes.

Securities can be broadly classified into:

- Fixed Income
- Equity

- Pooled investments

A contract is an agreement among traders to do something in the future. Contracts can be settled physically or in cash. Contracts can be further classified into physical or financial contracts based on the underlying asset. Examples of contracts are:

- Forward contract
- Futures contract
- Swap contract
- Options

Currencies are monies issued by national monetary authorities. Currencies trade in foreign exchange markets in the spot market, forward markets, or futures markets.

Commodities include precious metals, energy products, industrial metals, agricultural products, and carbon credits. They trade in spot, forward, and futures markets.

Real assets are tangible assets that are normally held by operating companies.

LO.d: Describe types of financial intermediaries and services that they provide.

Brokers, Exchanges, and Alternative Trading Systems:

- Brokers are agents who fill orders for their clients; they do not trade with their clients but search for traders who are willing to take the other side of their clients' orders.
- Investment banks provide advice and help companies raise capital by issuing securities such as common stock, bonds, preferred shares, etc.
- Exchanges provide places where traders can meet to arrange their trades.
- Dealers trade with their clients, i.e., by taking the opposite side of their clients' trades. One of the primary services a dealer provides is liquidity.
- Alternative trading systems (ATS) serve the same trading function as exchanges but have no regulatory oversight.

Depository institutions include commercial banks, savings and loan banks, credit unions and similar institutions that raise funds from depositors and other investors and lend them to borrowers.

Insurance companies help people and companies offset risks by issuing insurance contracts; the contracts make a payment to the party that buys the contracts in case an event occurs.

A clearinghouse helps clients settle their trades.

Depositories or custodians hold securities for their clients so that investors are insulated from loss of securities through fraud or natural disaster.

LO.e: Compare positions an investor can take in an asset.

Long positions are created when a trader owns an asset or has a right or obligation under a contract to purchase an asset.

Short positions are created when traders borrow an asset and sell it, with the obligation to replace the asset in the future.

In general, investors who are long benefit from an increase in the price of an asset and those who are short benefit when the asset price declines.

LO.f: Calculate and interpret the leverage ratio, the rate of return on a margin transaction, and the security price at which the investor would receive a margin call.

Leverage ratio = Value of the position / value of the equity investment in it

Margin call price = P * (1 - Initial Margin) / (1 - Maintenance Margin)

The total return to the equity investment in a levered position considers:

Profit or loss on the position
- Margin interest paid
+ Dividends received
- Sales commission

To calculate the return percentage on a leveraged position, we need to divide the total profit by the initial investment.

LO.g: Compare execution, validity, and clearing instructions.

Execution Instructions indicate how to fill orders. The most common execution orders are:

- Market Orders
- Limit Orders
- All-or-Nothing Orders
- Hidden Orders
- Iceberg Orders

Validity instructions specify when an order should be executed. Different types of validity instructions include:

- Day orders
- Good-till-cancelled orders
- Immediate or cancel (fill or kill) orders
- Good-on-close (market-on-close)
- Stop orders (also called stop-loss orders)

Clearing instructions tell brokers and exchanges how to arrange final settlement of trades. These instructions convey who is responsible for clearing and settling the trade.

LO.h: Compare market orders with limit orders.

	Market order	Limit order
Execution	Executed at the best available market price.	Sets a minimum execution price on sell orders and maximum execution price on buy orders.

Advantages	Quick execution when a trader believes that the prices are volatile.	Avoids slippages as the orders are executed at the pre-determined or better prices.
Disadvantages	Quick execution can lead to unfavorable trade prices and has trade price uncertainty.	In a volatile market, the order might be partially filled or not filled at all, making the possibility of missing out on trade.

LO.i: Define primary and secondary markets and explain how secondary markets support primary markets.

Primary markets are where issuers first sell their securities to investors. The two major types of offerings are underwritten offering and best efforts offering.

- IPO (Initial Public Offering) is where issuers sell securities to the public for the first time.
- Seasoned or secondary offering is where an issuer sells additional units of a previously issued security.

Private placement is where corporations sell securities directly to a small group of qualified (sophisticated) investors as opposed to the public.

Secondary markets are where investors trade (buy/sell) in securities. The companies do not raise money from secondary markets. The cost of raising capital becomes low in primary markets when securities trade in liquid secondary markets.

LO.j: Describe how securities, contracts, and currencies are traded in quote-driven, order-driven, and brokered markets.

Quote-Driven Markets: Customers trade at the price quoted by dealers. They are also called over-the-counter markets, price-driven or dealer markets. Dealers provide liquidity in these markets.

Order-Driven Markets: Trading is based on the rules to match buyers to sellers. In order-driven markets, traders supply liquidity to each other. Orders are matched using an order-matching system run by the trading system such as exchange, or broker.

Brokered Markets: Brokers arrange trades between customers; used for instruments that are unique or illiquid.

LO.k: Describe characteristics of a well-functioning financial system.

Four characteristics of a well-functioning financial system include:

- Well-developed markets trade instruments that help people solve their financial problems.
- Liquid markets with low cost of trading (operationally efficient markets) where commissions, bid-ask spreads and order price impacts are low.
- Timely and accurate financial disclosures that allow market participants to forecast the value of securities (support informationally efficient markets).

- Prices that reflect fundamental values (informationally efficient markets).

LO.l: Describe objectives of market regulation.

Markets are regulated to prevent fraud, control agency problems, promote fairness, set mutually beneficial standards, prevent undercapitalized firms from exploiting their investors by making excessively risky investments, and ensure that long-term liabilities are funded.

Practice Questions

1. Which of the following is *least likely* a function of the financial system?
   A. Determines rate of return that will equate aggregate savings to aggregate borrowing.
   B. Prevents entities from utilizing information.
   C. Enables efficient allocation of capital.

2. Which of the following is *most likely* a purpose of the use the financial system?
   A. To prevent entities to trade on information.
   B. To prohibit to borrow money for current use.
   C. To exchange assets for immediate and future deliveries.

3. Which of the following is *most likely* correct?
   A. Financial systems facilitate people to manage risks.
   B. Financial systems allow people to borrow money for future use.
   C. Financial systems restrict people to trade based on available information.

4. Which of the following asset classification is *least* accurate?

	Financial Assets	**Real Assets**
A.	Commodities	Securities
B.	Derivatives	Real Estate
C.	Currencies	Equipment

5. Which of the following asset classifications is *least likely* to be correct?

	Fixed Income	**Equity**	**Pooled Investment**
A.	Warrants	Commercial Paper	Convertible Debt
B.	Bonds	Common Stock	Mutual Funds
C.	Notes	Preferred Stock	Asset-backed Securities

6. Jacob invests in government securities with maturities of 1 month to 12 Months. His holdings are *best* described as:
   A. capital market instruments.
   B. money market instruments.
   C. cash market instruments.

7. Which of the following statements regarding financial intermediaries is *least likely* to be accurate?
   A. Brokers, exchanges, and alternative trading systems connect buyers and sellers at a centralized location for trading.
   B. Dealers provide liquidity and facilitate trading by buying for, and selling from, their own inventory.

C. Insurance companies create a diversified pool of assets and sell interests in it.

8. The financial intermediary that is *most likely* responsible for promoting market integrity in the futures market is:
   A. Securities and Exchange Commission.
   B. Clearing House.
   C. Futures Exchange.

9. Which of the following are *most likely* help find counterparties for transactions?
   A. Brokers.
   B. Dealers.
   C. Clearing house.

10. Which of the following statements is *least* accurate?
   A. A long position in an asset signifies current or future ownership and benefits from an increase in the price of an asset.
   B. A short position in an asset signifies borrowing an asset and selling it or an agreement to sell an asset in future and benefits from a decrease in the price of an asset.
   C. Covering the short position signifies simultaneous borrowing and selling of securities through a broker.

11. John Doe buys 100 shares of ABC Company on margin. John has evaluated his investment in ABC and has come up with the following forecast assumptions:

Purchase price	$100
Sale price after one year	$150
Margin	30%
Call money rate	5%
Dividend per share	$2
Transaction commission/share	$0.2

The forecasted annual return that John is likely to make after one year is *closest* to:
   A. 150.0%.
   B. 153.9%.
   C. 159.3%.

12. Clare has gathered the following information on a stock investment that she made.

Initial purchase price	$50.00
Leverage ratio	2
Margin call price	$31.25

The maintenance margin is *most likely* to be:

A. 15%.
B. 20%.
C. 25%.

13. Which of the following statements regarding order type is *least* accurate?
    A. Stop sell orders can be used to limit losses on a short position.
    B. A limit order might or might not be filled, exposing the owner to risks.
    C. Day orders expire if they are unfilled by the end of the trading day.

14. Below is the limit orders book for Pritchet Corporation's stock.

Buyer	Bid Size (# of shares)	Limit Price ($)	Seller	Offer Size (# of shares)	Limit Price ($)
1	200	27.55	1	100	29.15
2	100	27.65	2	300	29.35
3	200	27.80	3	200	29.75
4	300	28.20	4	200	30.05
5	400	28.50	5	400	30.20

Stuart places an immediate-or-cancel limit buy order for 500 shares at a price of $29.75. The *most likely* average price that Stuart would pay is:

A. $29.75.
B. $29.39.
C. $29.42.

15. Which of the following orders *most likely* lasts until the buy or sell order is executed?
    A. Fill-or-kill orders.
    B. Good-on-close orders.
    C. Good-till-cancelled order.

16. ClearTech is a biotechnology research company that is planning to sell 5 million of its shares to the public. It has approached an investment banker who has guaranteed a price for the issuance. This transaction is *most likely*:
    A. Public sale of security in the primary capital market with the investment banker executing an underwritten offering.
    B. Public sale of security in the secondary capital market with the investment banker executing a best-efforts offering.
    C. Public sale of security in the secondary capital market with the investment banker executing an underwritten offering.

17. Which of the following statements is *least* accurate?

A. In a quote-driven market, investors trade directly with the dealer that maintains inventories of assets.
B. In order-driven markets, orders are executed using order matching and trade pricing rules – which are necessary because traders are usually anonymous.
C. In call markets, trades occur at any time the market is open.

18. Country A has financial markets that have high costs of trading while Country B has financial markets where prices reflect underlying fundamentals quickly. The financial markets of both these countries are *best* characterized by:

	Country A	**Country B**
A.	allocation inefficiency	operational efficiency
B.	informational inefficiency	allocation efficiency
C.	operational inefficiency	informational efficiency

19. Which of the following is *least* likely an objective of market regulation?
A. Promote trading with as low as capital requirements to ensure greater market participation.
B. Prevent trading on inside information.
C. Protect unsophisticated investors.

Solutions

1. B is correct.
   A financial system has the following main functions:
   - allows entities to save, borrow, exchange assets, issue capital, trade on information and manage risks
   - helps determine the rate of return that will equate aggregate savings to aggregate borrowing
   - Enables efficient allocation of capital

2. C is correct. The six purposes people use the financial system for are as follows:
   - to save money for the future.
   - to borrow money for current use.
   - to raise equity capital.
   - to manage risks.
   - to exchange assets for immediate and future deliveries.
   - to trade on information.

3. A is correct.

The six purposes people use the financial system for are as follows:
- to save money for the future.
- to borrow money for current use.
- to raise equity capital.
- to manage risks.
- to exchange assets for immediate and future deliveries.
- to trade on information.

Three main functions of the financial system are to:
- achieve the purposes for which people use the financial system.
- discover the rates of return that equate aggregate savings with aggregate borrowings.
- allocate capital to the best uses.

4. A is correct. Financial assets include securities, currencies, derivatives, etc., while real assets include real estate, equipment, commodities, etc.

5. A is correct. Fixed income securities include commercial paper, bonds, notes, convertible debt, etc. Equity securities include warrants, common stock, preferred stock, etc. Pooled investments include mutual funds, exchange-traded funds, hedge funds, asset-backed securities, etc.

6. B is correct. Securities with maturity of one year or less are money market instruments. Securities that have more than one year maturity or equities that don't have any maturity are capital market securities. C is incorrect because there is no such term.

7. C is correct. Insurance companies create a diversified pool of risks and manage the risk inherent in them by providing insurance contracts. Securitizers and depository institutions create a diversified pool of assets and sell interests in it.

8. B is correct. Clearing houses arrange for financial settlement of trades. In futures markets, they guarantee contract performance and reduce counterparty risk, thereby promoting market integrity.

9. A is correct. Brokers help find counterparties for transactions (other entities willing to take the opposing side in a transaction) and do not indulge in trade with their clients directly. The service that dealers provide is liquidity. Clearing houses arrange for financial settlement of trades.

10. C is correct. Covering the short position signifies the repayment of borrowed security or other asset.

11. C is correct.
    Initial purchase amount = 100 x 100 = 10,000
    Proceeds on sale = 150 x 100 = 15,000
    Less Borrowed funds = 10,000 x (1 – 0.30) = 7,000
    Less Margin interest paid = 0.05 x 7,000 = 350
    Plus Dividends received = 2 x 100 = 200
    Less Sales commission paid = 0.2 x 100 = 20
    Remaining equity = 7,830
    Initial investment = (100 x 100 x 0.30) + (0.2 x 100) = 3,020
    Therefore, return on investment = (7,830 – 3,020) / 3,020 = 159.3%

12. B is correct. The initial purchase price is 50 and the leverage ratio is 2. So equity (amount actually contributed by investor) 50/2 = 25. Hence the initial margin is 25/50 = 0.50. Now we can use the following formula: Margin Call Price = Initial Price x (1 – Initial Margin) / (1 – Maintenance Margin). So, 31.25 = 50 (1 – 0.50) / (1 – MM). Solve for MM. You will get 0.20.

13. A is correct. Stop loss orders are used to restrict losses to a certain predetermined amount. Stop buy orders can be used to limit losses on a short position. Stop sell orders can be used to limit losses on an open position.

14. B is correct. The limit buy order with price of $29.75 will only be executed if the stock can be bought at that price or lower. In the question, the order of 500 shares will be first filled with the lowest priced limit sell order and will be followed by filling with the higher priced limit sell orders that are needed to fill the entire 500 shares.
    Average price = [(100 x $29.15) + (300 x $29.35) + (100 x $29.75)] / 500 = $29.39

15. C is correct. Good-till-cancelled orders are order that lasts until the buy or sell order is executed. Fill-or-kill orders are also known as immediate-or-cancel orders. They are cancelled unless filled (in part or in whole) immediately. Good-on-close orders can only be filled at the close of trading.

16. A is correct. Since new securities are issued to public, they would be sold in the primary market. The investment banker guaranteeing a price for the issuance of security is a type of underwritten offering. In a best-effort offering, the investment banker acts only as a broker and makes no guarantees.

17. C is correct. In call markets, orders are accumulated and securities trade only at specific times with prices set either by the auction process or by dealer bid-ask quotes.

18. C is correct. Cost of trading determines the operational efficiency of a financial market. If a market has high cost of trading in terms of dealer's commissions, bid-ask spreads and order price impacts, it is operationally inefficient. If the prices of securities reflect the underlying fundamentals, then the financial markets have informational efficiency.

19. A is correct. Market regulation ensures that a minimum level of capital is maintained by market participants so that counter-party risk is minimized and participants are careful about their risk exposures.

