Market Organization and Structure

Abstract

Keywords
Keyword1 — Keyword2 — Keyword3

Contents

12a	Calculate and interpret price, income and cross-price elasticities of demand and describe factors that affect each measure
12b	Compare substitution and income effects
12c	Distinguish between normal goods and inferior goods
12d	Describe the phenomenon of diminishing marginal returns
12e	Determine and interpret breakeven and shutdown points of production
12f	Describe how economies of scale and diseconomies of scale affect costs

1. The Functions of the Financial System

Historically, the main functions of the financial system is (i) to serve the people who use them and (ii) to serve the financial institutions which facilitate the system.
That being said, the main three functions of financial systems are:

- Allow savings to meet investment needs
- Determine the ideal rates of return (the rates of return which determine the equilibrium between aggregate savings and aggregate investment)
- Capital Allocation Efficiency (allocate capital to its best uses)

1.1 Helping the people

The private sectors uses financial systems for 6 main purposes:

- save money for the future
- borrow money for current consumption
- raise equity
- manage risks
- exchange assets for present and future deliveries
- trade on information

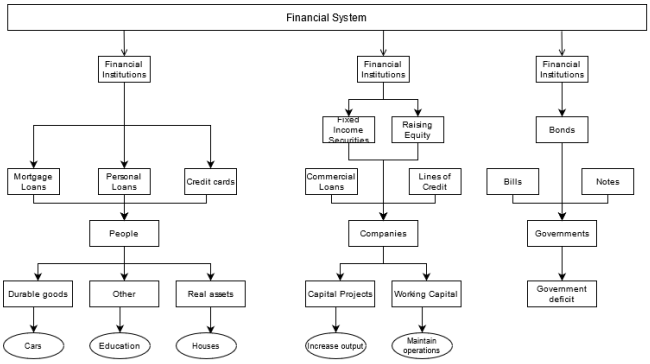

Figure 1. Overview of the Financial System

1.1.1 Savings

People who want to save current for future consumption often buy bonds, stocks, certificates of deposit or real assets. The financial system and financial institutions such as mutual funds and deposit banks allow people to acquire or sell those assets without incurring in substantial transaction costs.

1.1.2 Borrowing

People, companies and governments are keen to spend money they don't have. People may borrow to pay for education, homes and cars; companies borrow to fund current operations and capital projects and governments borrow to fund its deficits.
People generally borrow through mortgages and personal loans, or by using credit cards. Companies borrow through loans, lines of credit, selling fixed income securities or even by selling ownership interests. Governments borrow by selling bills, notes or bonds.
Either way, lenders expect a piece of people's future cash flows (salaries), part of the revenues from companies and governments.

1.1.3 Raising Equity Capital

Another mechanism of raising money and effectively shifting money from the future to the present is through issuing (selling) ownership interests. These equity instruments legally represent ownership in companies rather than loans.
The financial system facilitates raising equity capital through analysts valuations and regulatory bodies analysis, such as ensuring reporting requirements and accounting standards.

1.1.4 Managing Risks

Many people, companies and governments face financial risks including default risk, risk of changes in interest rates, exchange rates, change in costs of production inputs, energy costs, among other industry specific risks.
Risks can be settled through forward, future, option and insurance contracts. The fundamental of risk management is that the hedger and the hedged often face opposed risks, so the transfer not only makes sense for each one but creates economic welfare.
In the case of insurance, insurance contracts shift the risks from "good to bad days". In this scenario, the insurance entity is more willing to bear the risks than the insured.

1.1.5 Exchanging Assets for Immediate Delivery (Spot Market Trading)

1.1.6 Information-Motivated Trading

Information-motivated traders trade for profit from information which they believe would allow them to predict future prices. Unlike pure investors, they expect to earn a return on their information rather than the normal economic profits expected for bearing risk through time.
Essentially, information motivated traders are active investment managers who collect and analyze information looking for market inefficiencies and investment opportunities. This process is called active portfolio management.

1.2 Determining Equity Rates of Return

The other function of markets is to determine the equilibrium rates of return which equate to a balance between aggregate investment and savings. This rate can be considered the price for moving money through time and is the only interest rate that would exist if all securities were equally risky, had equal returns and were equally liquid.

1.3 Capital Allocation Efficiency

One of the most important functions of the financial system is to ensure that only the best projects obtain scarce capital funds - the funds available from savers should only be allocated to

the most productive uses - these economies are said to be **allocationally efficient**.

2. Assets and Contracts

2.1 Asset Classification

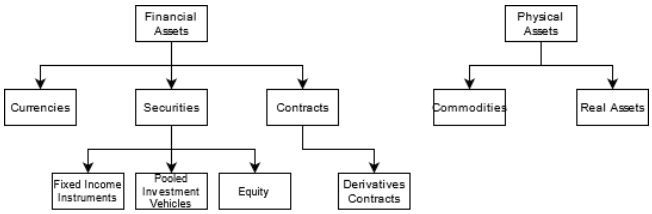

Figure 2. Overview of Financial and Physical Assets

Securities, currencies and contracts are classified as financial assets whereas commodities and real assets are classified as physical assets. Securities include debt instruments, equity and shares in pooled investment vehicles. Contracts are agreements to exchange securities, currencies, commodities or other contracts in the future. Commodities include precious metals, energy products, industrial metals and agricultural products.

2.1.1 Securities

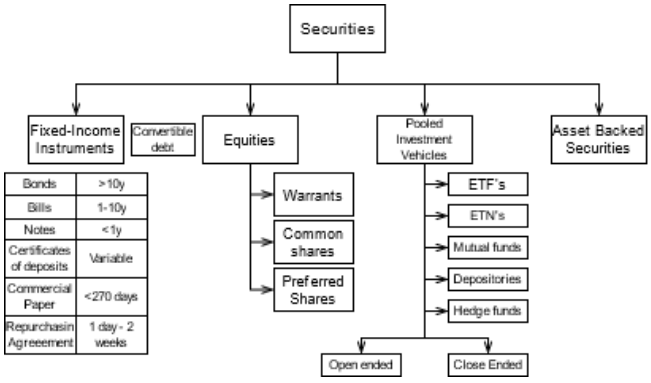

Figure 3. Securities Overview

Securities comprehend Fixed-income instruments, equities and pooled investments.

Fixed-income investments contractually include predetermined payment schedules that usually include interest and principal payment. Practitioners distinguish between *short term* ($< 1y$), *intermediate term* (1-5y) and *long term* ($> 5y$). Depending on the maturities of the debt, instruments can be traded in the Money Markets (short term) or Capital Markets (intermediate and long term)

Equities represent ownership rights in companies. These include common and preferred shares. Common shareholders own residual rights to the assets of the company and have the right to received any dividends declared. Common shareholders have voting rights and have limited claims in the event of liquidation.
Preferred shareholders have preferred rights relative to common shares to the cash flows and assets of the company. Preferred shareholders generally have the right to receive a spe-

cific dividend on a regular basis and have higher claim rights to assets in the event of liquidation.
Warrants are securities issued by a corporation which allows the holders to buy a security issued by that corporation, if they so desire. Usually the security that warrant holders can buy is common stock and are limited to the warrants expiration date and subject to the warrant exercise price (the price the holder must pay).

Pooled Investments are securities created by pooled investment vehicles such as mutual funds, trusts, depositories and hedge funds and are respectively called *shares*, *units*, *depository receipts* and *limited partnership interests*.
Mutual funds are investment vehicles that pool money from many investors for investment in a portfolio of securities. Pooled investment vehicles can be **open-ended** and **close-ended**: open-ended funds issue new shares and redeem existing shares on demand (refund them back to investors case they want to exit position); close-ended funds issue shares in primary market offerings and once issued, investors can't redeem their shares, instead they must trade them in secondary markets.
Exchange-traded funds (ETF's) and *exchange-traded notes* (ETN's) are open-ended funds that investors can trade among themselves in secondary markets. There is a class of *authorized investors* (AP's) which can trade directly with ETF's. Many ETF's permit only in-kind deposits and redemptions - buyers how buy directly from such a fund pay for their shares with a porftolio of securities rather than in cash - similarly, sellers receive a portfolio of securities back. These funds are also called *depositories* because of its nature of issuing depository receipts for the portfolios traders deposit with them.
Hedge funds are investment funds with limited partnerships, generally. The limited partners are qualified investors who are wealthy enough and well informed and run a special management compensation scheme. Another characteristic if that many hedge funds use leverage more than other funds to increase risk exposure and returns.

Asset-backed securities are securities whose values and income payments derive from an underlying pool of assets. These securities typically pass interest and principal payments to holders on a monthly basis. These payments also depend on the formulas and rights that give some classes of securities within the same pool of assets - called *tranches*.
Tranches are segments created from a pool of securities with different maturities, risks and claim rights (seniority). So for the same pool of assets, there can be dissimilar forms of investments from investment grade (AAA) to *speculative grade* or *toxic waste* (BBB and Unrated).

2.1.2 Currencies

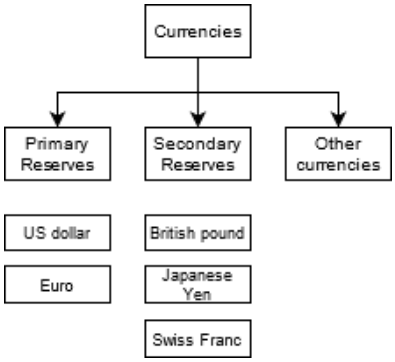

Figure 4. Currencies Overview

2.1.3 Contracts

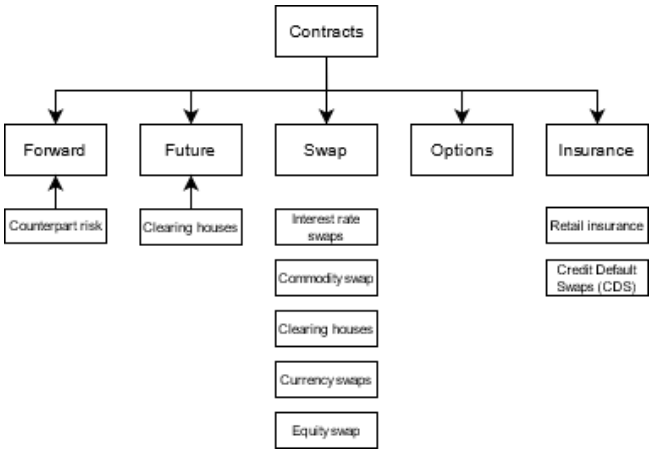

Figure 5. Contracts Overview

A contract is an agreement among traders to do something in the future. Contracts include *forward, futures, swap, option* and *insurance contracts*. Contracts derive its value on an underlying asset, that asset being a commodity, security, index, currency pair or even other contracts. Contracts can be of *physical* or *financial* nature.

Forward Contracts A *forward contract* is an agreement to trade the underlying asset in the future at a price agreed upon today. Forward contracts are very common but its usefulness is limited for many market participants due to (a) *counterparty risk* and (b) *liquidity constraints*. The first is the risk of the other party in a contract failing to honer the terms in the contract, and the second issue arises from the fact forward contracts tend to be executed only among participants for whom delivery is economically efficient, and that can be tough, specially with long maturity contracts and high values.

Futures Contracts are standardized forward contracts for which a *clearinghouse* guarantees the performance of all traders. That being said, clearing houses remove the counterparty risk and ensure liquidity by standardizing maturity dates

and contract values.
To protect against default, clearinghouses post an amount of money known as initial margin as prerequisite to enter the contract. Then the margins accounts are settled on a daily basis; when clients lose their losses are deducted from their margin; when clients win their gains are increased to the margins. When margins accounts drop below the required *maintenance margin* they must replenish their accounts or the broker will immediately trade to offset the participant's position.

Swap Contracts A swap contract is an agreement to exchange payments of periodic cash flows that depend on future asset prices or interest rates.
For example, the *interest rate swap* trades fixed cash payments in return for variable cash payments from the counterparty. *Commodity swap* involves fixed payments in exchange for payments that depend on future prices of commodities. In a *currency swap*, the parties exchange payments denominated in different currencies. In an *equity swap*, the parties exchange fixed cash payments for payments that depend on the returns on a stock or stock index.

Option Contracts An option contract allows the holder of the option to buy or sell depending on the type of option, an underlying asset at specified price (*strike price*) before the expiration date. Those who do that are *exercising* their contracts before expiration date.
An option to buy is called a **call** option, an option to sell is called **put** option. If holders can exercise contracts only when they mature they are called **European-style contracts**. If they can exercise contracts earlier, they are called **American-style contracts**.
The price traders pay for option contracts is called *option premium*. Options can be expensive because, unlike forward and future contracts, they do no impose any liability on the holder.

Other contracts Other contracts include insurance contracts such as retail contracts

2.1.4 Commodities

Commodities include precious metals, energy products, industrial metals, agricultural products and carbon credits. Commodities can be traded in spot and forward and futures markets.
Commodities markets are specially helpful for producers who want to manage inventories and hedge operational risks.

2.1.5 Real Assets

Real assets include tangible properties such as real estate, airplanes, machinery, lumber. Real assets have unique properties in the sense that no two assets are alike (real estate). Real assets generally differ in their conditions, remaining useful lives, locations, etc. For those reasons, real assets tend to trade in very iliquid markets and have substantial costs of managing.

2.2 Market Classification

3. Financial Intermediaries

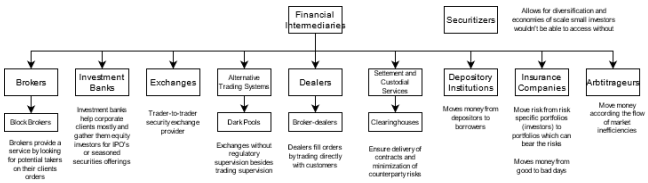

Figure 6. Financial Intermediaries

Financial intermediaries help connect buyers with sellers through different channels and connections and involve complex financial structures.

3.0.1 Brokers

Brokers are agents who fill orders for their clients - they do not trade with their clients. They search traders who are willing to take the other side of their client's orders.
Block brokers provide brokerage services to large orders. Large orders are harder to fill and usually are trade at discount or premium, depending whether if its a sale or buy order.

3.0.2 Investment Banks

Investment banks provide advice to mostly corporate clients and help them arrange transactions such as IPO's or seasoned securities offerings (issuance of additional securities). They can also help with mergers and acquisitions, by identifying targets and facilitating the process.

3.0.3 Exchanges

Exchanges provide places where traders can meet to arrange their trades. Exchanges essentially act as brokers: clients place eletronic orders and brokers use eletronic order matching systems to arrange trade among clients.
Examples of exchanges include NYSE, Eurex, Frankfurt Stock Exchange, Chicago Mercantile Exchange and Tokyo Stock Exchange.
Additionally, many exchanges regulate the issuers that list their securities on the exchange. These regulations are usually an addition to statutory regulations which increase the informations available and decrease funding costs. Some exchanges also prohibit issuers from creating capital structures that would concentrate voting rights in the hands of a few.

3.0.4 Alternative trading systems

Alternative trading systems (ATS's), also know as **electronic communications networks** (ECN's) or **multilateral trading facilities** (MTF's) are trading venues that function like exchanges but do not exercise regulatory authority over their users except with respect to trading. ATS operate eletronic systems similar to trading systems operated by exchanges.
Many TS's are known as dark pools because they do not display the orders that their clients send to them. Large investment managers like these systems because their are discretionary and prevent large orders to move markets.

Examples of ATS's include MATCHNow (Canada), BATS (United States), POSIT (United States), Turquoise (Europe).

3.0.5 Dealers

Dealers fill their clients orders by trading with them. When their clients want to trade, dealers buy or sell instruments for their own accounts. After completing transactions, dealers hope to reverse the transaction by trading with another client on the other side of the market.

The service dealers provide decreases the transaction costs by increasing liquidity in markets. Some dealers have traditional human systems in the sense that individuals make their transactions and some have computerized trading to make all trading decisions. *Primary dealers* are dealers with whom central banks trade when conducting monetary policies

Examples of large dealers are Deutsche Bank, RBC Capital Markets (Canada), Nomura Securities (Japan), Timber Hill (United States), Goldman Sachs (United Staes).

3.0.6 Securitizers

Some banks and investment companies create new financial products by buying assets and placing them in a pool and then selling securities that represent ownership of that pool of assets. This process is called **securitization**.

Securitization allows other investors which are not large enough to buy the pool of assets to obtain the benefits from diversification and economies of scale in loan servicing. It not only benefits investors by diving risks but also customers by allowing lower loan rates.

Banks buy mortgage or other assets and sell pass-through securities. The mortgages appear on the bank accounts as assets and asset-backed securities as liabilities. In many securitizations, financial intermediaries create special entities to which they trust the assets and liabilities. These entities are called **special purpose vehicle** (SPV) or **special purpose entities** (SPE).

Besides mortages, financial intermediaries securitize many assets such as car loans, credit card or other receivables, bank loans, leases, etc. They also often create several classes of securities called tranches that pose different rights to the cash flows from the asset pools. Senior tranches have the first rights to the cash flows from the pool and consequently bear reduced risk, while junior tranches bear significantly more risk. The most junior tranches are often called *toxic waste*.

3.0.7 Depository Institutions

Depository institutions include commercial banks, savings and loan banks, credit unions and similar institutions that raise funds from depositors to lend it to borrowers. These banks are financial intermediares because they transfer funds from depositors to borrowers.

Brokers also act as financial depositories when they lend funds to clients who want to buy securities on margin. They generally obtain those funds from other clients which deposit them in their accounts. Brokers who provide these leveraging services to hedge funds and similar institutions are called *prime brokers*.

The ability of these companies to cover their credit losses is limited by the capital deposited and therefore they must pay close attention to how much money they have at risk and in reserve (capitalization).

3.0.8 Insurance Companies

Insurance companies help create insurance contracts that provide payments in the event that some loss occurs. Insurance contracts transfer risk from those who buy the contracts to those who sell them. Insurance companies also often transfer risks that they do not wish to bear by buying reinsurance from other reinsurers.

3.0.9 Arbitrageurs

Arbitrageurs trade when they can identify opportunities to buy and sell identical or similar instruments at different price levels - they profit from *arbitrage* trading. They are considered financial intermediaries because they provide liquidity - each buy must be opposed to a subsequent profitable sale.

Another strategy is to buy a risk in one form and sell it in another form - this process is called *replication*.

3.0.10 Settlement and Custodial Services

Clearinghouses arrange for final settlement of trades. They guarantee contract performances by ensuring each member has adequate capital and post-performance bonds (margins) to perform the contract. Brokers and dealers who are not members of the clearinghouse must arrange a clearinghouse member to settle their trades. Clearinghouses are thus responsible to guarantee that their members have adequate capital and margins, and monitor their customers trading to ensure they do not arrange trades they cannot settle.

If a clearinghouse member fails to settle the trade, the clearinghouse settles the trade using its own capital or capital drafted from other members. This ensures reliability of the financial system by erasing *counterparty risks*.

4. Positions

A position in an asset is the quantity of the instrument that an entity owns or owes. **Long positions** imply *ownership*, such as the ownership of stocks, bonds, currencies and they benefit from an *appreciation* in the prices of those assets.
People have **short positions** when they have sold assets that they do not own or when they write and sell contracts. Short positions benefit from a *depreciation* in the prices of the underlying and represent a *liability* rather than an asset.

4.1 Option contracts

For option contracts, the long side is the side that holds the right to exercise the contract and the short side writes the option. The holder of a put contract has an indirect short position in the underlying instrument - short exposure to the underlying.

Type of Option	Option Position	Exposure to Underlying Risk
Call	Long	Long
Call	Short	Short
Put	Long	Short
Put	Short	Long

Figure 7. Option positions and their exposure to underlying risks

- The holder of the call is long position relative to the contract and long in the exposure to the underlying risk (holder profits as long as the underlying appreciates)
- The writer of the call is short position relative to the contract and short in the exposure to the underlying risk (the writer profits as long as the underlying depreciates)
- The holder of the put is long position relative to the contract and short in the exposure to the underlying risk (holder profits as long as the underlying depreciates)
- The writer of the put is short position relative to the contract and long in the exposure to the underlying risk (the writer profits as long as the underlying appreciates)

4.2 Swap contracts

The identification of the long side in swap contracts is often arbitrary. Generally, the thumb rule is the long side of a swap is the side that benefits from the appraisal in quoted price.

4.3 Implications of short positions

Short sellers derive their positions from liabilities. They create short positions from securities they do not own through contracts. In a sense, they become the issuers of a contract whereby they create the liabilities associated with their contracts. In analogy, corporations create short positions in their bonds when they issue bonds in exchange for cash.
Short sellers create their liabilities by borrowing securities from lenders who are long holders. The short sellers profit from selling these securities and repurchase them at the lower cost and returning them to the security lenders.
The potential losses on long positions is 100% whereas in short positions losses are unbounded - stocks can crash only 100% but can move up indefinitely. This makes short positions very risky and volatile.
During the periods of short selling, security lenders give up the ownership of these securities and in return get promises (a liability) - **security lending agreements**.

4.4 Leveraged Positions

Some traders can borrow some of the purchase price of securities. They usually borrow from their brokers - the borrowed money is called **margin loan** and the interest rate traders pay for their margin loan is called the **call money rate**.
Traders who buy securities on margin are subject to minimum margin requirements - the **initial margin requirement** is the minimum fraction of the purchase price that must be traders equity. For stocks, the minimum initial margin requirement is 50% while for other securities such as forex it can be much more.
The relation between risk and borrowing is called **financial leverage** (or leverage). The *leverage ratio* is the ratio between the value of the position and the value of the traders equity. The leverage ratio indicates how many times larger a position is than the equity that supports it.
The **maintenance margin requirement** is the minimum amount of equity traders must hold in order to maintain their positions. FINRA set this value at 25% but it may depend on the volatility on the underlying instrument. If the value of equity falls below the maintenance margin requirement, the buyer will receive a **margin call**. A margin call is a request for additional equity to keep the maintenance margin requirements at all time, otherwise the broker will close the position to prevent further losses. When buying securities on margin, it is important to know the price at which you get a margin call.

5. Orders

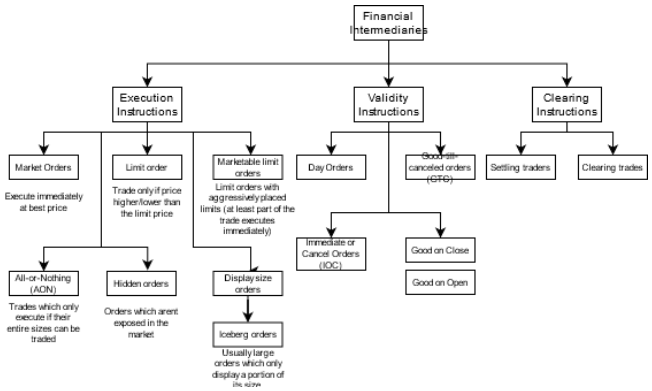

Figure 8. Overview of order instructions

Each trading orders have explicit or implicit instructions attached. These include *execution instructions*, *validity instructions* and *clearing instructions*.

5.1 Execution Instructions

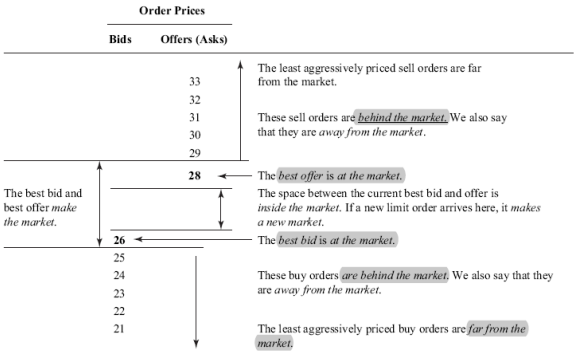

Figure 9. Market microstructure

- **Market orders** instruct orders to obtain the best price immediately available.
- **Limit order** instructs orders to obtain the best price only if it is under the specified limit price (when buying) or above (when selling)
- **Marketable limit orders** are limited buy/sell orders which are placed as best bid/offers and at least part of the order can be traded immediately.
- **All-or-nothing orders** (AON) are orders that only execute if their entire sizes can be traded.
- **Hidden Orders** are exposed only to the intermediaries that trade them. These orders are only disclosed when other traders can fill them.
- **Display size orders** are orders that intermediaries only display part of the size of the offer
- **Iceberg orders** are large orders which only display a small portion of its size

5.2 Validity Instructions

Validity instructions indicate when an order may be filled.

- **Day Order** is only good for the day it is submitted
- **Good-till-canceled orders** (GTC) should stay indefinitely until they are traded. To prevent customers from forgetting them, most agencies limited them to a few months.
- **Immediate or cancel orders** (IOC) or **fill or kill** are orders that are canceled immediately if they cant be at least partially filled immediately.
- **Good-on-close** or orders that can only be filled at market close. They are useful for traders (mutual funds) which evaluate their performances at closing prices.
- **Good-on-open**
- **Stop Orders** is an order which executes at a specific price condition. For a sell order, it executes the trade if price drops below the *stop price* (***stop-loss orders***). Similarly, buy orders with stop conditions only trade after the price rises above a specified *stop value*.

5.3 Clearing Instructions

Clearing instructions aren't generally explicitly provided by traders. These instructions provide information on how brokers and exchanges shall arrange the final settlement of orders. These instructions indicate who is responsible for clearing the trades and who is responsible for settling traders.

When clients use one broker to arrange traders and another to settle trades, the first broker gives up the trad to a prime broker.

6. Primary Security Markets

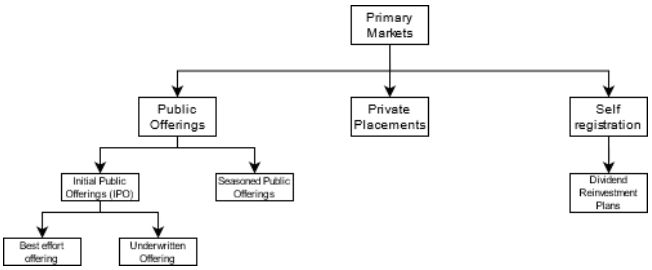

Figure 10

The **primary markets** are markets where issuers sell their securities to investors.

6.1 Public Offerings

Corporations generally contract with an investment bank to help them sell their securities to the public. The investment bank is responsible for gathering willing investors - this process is called **book building**. The book building is a book of orders to which they can sell the offering. The book building process is aided by the support of investment banks through their analysis and impressions on the underlying securities, opinions and meetings between investors and issuers. These meetings and reports make detailed disclosures about its business and risks, strategic plans and how the new funds will be placed.

In Europe, some securities may be issued in one or two days when time is scarce - **accelerated book build**.

6.1.1 Underwritten offering

In an **underwritten offering** - the most common type - the investment bank guarantees the sale of the issue at an offering price it negotiates with the issuer. If the issue is undersubscribed, the banks will buy whatever securities are left at the offering price contracted. The underwriter also compromises with market making in the security for about 1 month to ensure the secondary markets are liquid and provide price support. For large issues, a syndicate of investment banks and broker-dealers helps the *lead underwriter* build the book (essentially the lead underwriter subcontracts the underwriting services of other banks).

6.1.2 Best effort offering

In a **best effort offering** the investment bank acts only as a broker. If the offering is undersubscribed, the issuer will not sell but the bank will not be contractually obligated to buy them.

6.1.3 Considerations

For both types of offerings, the issuers and banks negotiate offering prices. If the consider a price which buyers consider too high, the offering will be undersubscribed. If they set the price too low, the offering will be oversubscribed.

Banks and issuers have a conflict of interests regarding the price of the issuance. Issuers select the offering price that will raise more money while investment banks prefer the price that decreases the costs of market making and potentially benefit the clients of the bank (the lower the price they get, the more profitable position they are in).

Because investment banks want to ensure they won't have to buy overvalued shares from underwritten unsubscribed offerings nor they spent too much money on market making afterwards, they generally set a discounted initial offering prices. This means that prices in secondary markets often rise immediately following an IPO.

6.2 Other Primary Market Transactions

6.2.1 Private Placements

In a **private placement** corporations sell securities directly to a small group of qualified investors, usually with the assistance of an investment bank. Private placements are cheaper than public offerings as they generally do not require as much public exposure and disclosure as IPO's but investors also take more risk and demand higher returns/lower purchasing prices because they cannot subsequently trade the securities in a secondary market.

6.2.2 Self registration

Self registration is the process in which corporations issue new seasoned securities directly in secondary markets over time when it needs to raise more capital.

An alternative of self registration is the share issuance via *dividend reinvestment plans* (DRP's) that allow their shareholders to reinvest their dividends into newly created shares. In DRP's corporations issue new shares rather than repurchasing.

National governments generally issue their bonds, notes and bills in public auctions organized by a governments agency. They can sell directly to dealers too.

7. Secondary Security Market

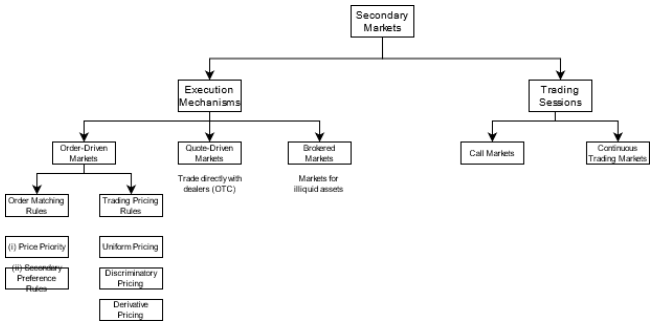

Figure 11. Secondary Market Structure

7.1 Trading Sessions

Markets are divided into **call markets** and **continuous trading markets** regarding the organization of trading sessions. Call markets are called at a particular time and place (like auctions) while continuous trading markets can be arranged and executed anytime the market is open.
Call markets have the property of being very liquid when they are called but completely illiquid between trading sessions. Most call markets construct order books based on the traded price that will maximize the total volume of trade: they pair the supply and demand schedules with the closest acceptable prices.

7.2 Execution Mechanisms

There are three main types of market structures: **quote-driven markets** (also called price-driven or dealer markets), **order-driven markets** and **brokered markets**.

7.2.1 Quote-Driven Markets

Most trading takes place in quote-driven markets. Almost all bonds and currencies and most spot commodities trade in quote-driven markets. In quote driven markets traders trade with dealers.
Quote-Driven Markets are often called OTC (over the counter) markets because securities used to be literally traded over the dealers counter in the dealers office.

7.2.2 Order-Driven Markets

Order-driven markets arrange trades using rules to match buy orders to sell orders. Order driven markets have specific matching rules and trade pricing rules which ensure that buyers and sellers perform on their trade contracts.

Order Matching Rules ensure that the highest ranking buy order matches the highest ranking sell order through a system of **order precedence hierarchy** : (i) first the *price priority* - the highest bid to lowest offer and (ii) *secondary preference rules* such as the order of arrival of the orders; hidden orders are generally executed last; pay per order flow systems

Trading Pricing Rules are used to determine the trade price. There are 3 rules of order-driven markets: *uniform pricing rule*, *discriminatory pricing rule* and *derivative pricing rule*. The *uniform pricing rule* (call markets) states that every and all trades execute at the same price. *Discriminatory pricing rule* limit the price of order to the first standing order (instruction). Large orders are then traded in pieces to discriminate the intended price, otherwise large orders would begin to transact at a price and would only stop at a more unfavorable price. The *derivative pricing rule* derives its price from another market.

7.2.3 Brokered Markets

Brokered markets are used when the trade is difficult, assets are unique and markets illiquid. Because instruments are hard to commercialize, brokers invest much time and money in finding the markets for these products, spending much time on the telephone and meetings.

8. Well-Functioning Financial Systems

A well functioning financial systems solves the problems explained before:

- investors can easily shift money from the present to the future while obtaining a fair rate of return
- borrowers can obtain the funds they need to undertake current projects
- hedgers can trade away risks that concern them
- traders can trade currencies, commodities or real assets they need

A market is complete if the assets and contracts needed to solve these problems are available to trade. If the costs of arranging them are low, the financial system is said to be operationally efficient.
Well functioning markets are characterized by:

- liquid markets in which costs of trading including commissions and spreads are low
- timely financial disclosures (informationally efficient markets)
- equity and debt prices that reflect the fundamental values (informationally efficient prices)

Well functioning markets depend on financial intermediaries that:

- organize exchanges, brokerages and alternative trading systems
- provide liquidity
- securitize assets to produce investment instruments
- run insurance companies that pool uncorrelated risks
- provide investment advisory services (such as investment banks)

9. Market Regulation

- control fraud
- control agency problems
- promote fairness
- set standards which benefit everyone
- prevent undercapitalized financial firms from exploiting investors
- ensure long term liabilities are funded

References

[cfa, 2019] 2019. *CFA program curriculum*. CFA Institute.