Introduction to Global Securities Market

国际证券市场简介

College of Software Technology, Zhejiang University
浙江大学软件学院

April 30, 2022

Edward Li, CFA, FRM

ecli_99@yahoo.com

Leaning Objectives

- **Gain a solid understanding of fundamental concepts related to stock markets including markets, participants, types, trading operations and basic valuation methods.**

Agenda

- International Financial Markets Overview
- The Time Value of Money: Math Mechanics
- International Stock Markets
  - Stock Basics
  - Stock Markets Trading Flow
- Stock Trade Operation
  - Terminals
  - Orders
- Stock Analysis
  - Fundamental Analysis
  - Technical Analysis

Theme 1

Economic Globalization and Community with a Shared Future for Mankind

主题 1：经济全球化与人类命运共同体

In-class Discussion: Financial Crisis and Us

课堂讨论: 金融危机和我们

Economic Globalization - Definition

- Globalization is the connection of different parts of the world.

- In economics, globalization can be defined as the process in which businesses, organizations, and countries begin operating on an international scale. Globalization is most often used in an economic context, but it also affects and is affected by politics and culture.

- Economic globalization refers to the increasing interdependence of world economies as a result of the growing scale of cross-border trade of commodities and services, flow of international capital and wide and rapid spread of technologies.

Economic Globalization – A Historical View

- Globalization is not new. Since the start of civilization, people have traded goods with their neighbors. As cultures advanced, they were able to travel farther afield to trade their own goods for desirable products found elsewhere.
- The Silk Road, about 4,000 miles, an ancient network of trade routes used between Europe, North Africa, East Africa, Central Asia, South Asia, and the Far East, is an example of early globalization. For more than 1,500 years, Europeans traded glass and manufactured goods for Chinese silk and spices, contributing to a global economy in which both Europe and Asia became accustomed to goods from far away.
- The rate of globalization has increased in recent years, a result of rapid advancements in communication and transportation.

Economic Globalization – Benefits

- Globalization provides businesses with a competitive advantage by allowing them to source raw materials where they are inexpensive.
- Globalization also gives organizations the opportunity to take advantage of lower labor costs in developing countries, while leveraging the technical expertise and experience of more developed economies.
- With globalization, different parts of a product may be made in different regions of the world.
- Globalization has long been used by the automotive industry, for instance, where different parts of a car may be manufactured in different countries. 30,000 parts for a car
- Globalization affects services too. Many businesses located in the United States have outsourced their call centers or information technology services to companies in India.
- Consumers benefit too. In general, globalization decreases the cost of manufacturing. This means that companies can offer goods at a lower price to consumers.

Economic Globalization – Downsides

- Not everything about globalization is beneficial. Any change has winners and losers, and the people living in communities that had been dependent on jobs outsourced elsewhere often suffer.

- The situation is more complex in the developing world, where economies are undergoing rapid change.

- Studies also suggest that globalization may contribute to income disparity and inequality between the more-educated and less-educated members of a society. This means that unskilled workers may be affected by declining wages, which are under constant pressure from globalization.

Community with a Shared Future for Mankind – Key Principles

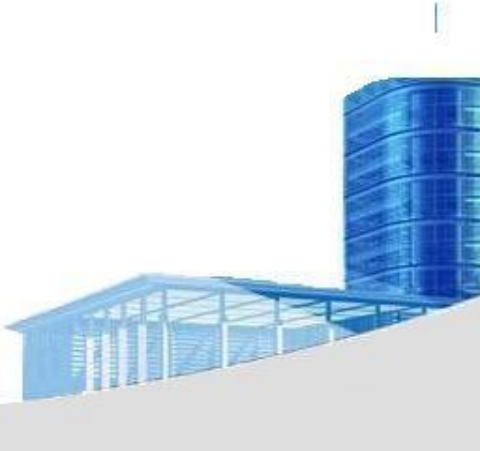
- A global family sharing the same earth
- Use of United Nations (UN) and multilateralism to solve global problems
- Follow a path of peaceful development
- All countries work together
- Cooperation and mutual benefit
- An open, inclusive, clean and beautiful world that enjoys lasting peace, universal security and common prosperity

Discussion: Financial Crisis and Its Impact on Us

- The worst U.S. economic disaster since the Great Depression
- Loss of stock value of $8 trillion between late 2007 and 2009
- Unemployment reached 10% in Oct 2009
- Americans lost $9.8 trillions in their home values
- Loss of more than $2 trillions from global economy
- The global financial crisis threatens to significantly slow China's economy. Several Chinese industries, particularly the export sector, have been hit hard by crisis, and millions of workers have reportedly been laid off.
- China's net exports (exports minus imports) contributed to one-third of its GDP growth in 2007.
- The Chinese government estimates that the foreign trade sector employs more than 80 million people, of which 28 million work in foreign-invested enterprises.

Session 1

International Financial Markets Overview



Financial Markets: Economic Background

- *Four groups of "actors" in a simplified picture of the economy:*
  - *Households*
  - *Businesses*
  - *Government*
  - *Financial Sector*
- *Households receive income from selling the factors of production (land, labor, capital) which they own.* Households spend their income on goods and services produced by businesses.
- Businesses buy the factors of production from households and sell the products they produce back to households.
- Government receives revenue and spends money providing government goods and services and transfer payments.
- Financial institutions receive savings from households, businesses, and the government and invest these savings.

The Cycle of Money (货币周转）

- **Financial intermediaries (金融中介) assist in the movement of money, from lenders (贷款者） to borrowers （借款方） and back again.**
  - This process is termed the *cycle of money* and its main objective is to make all the participants better off

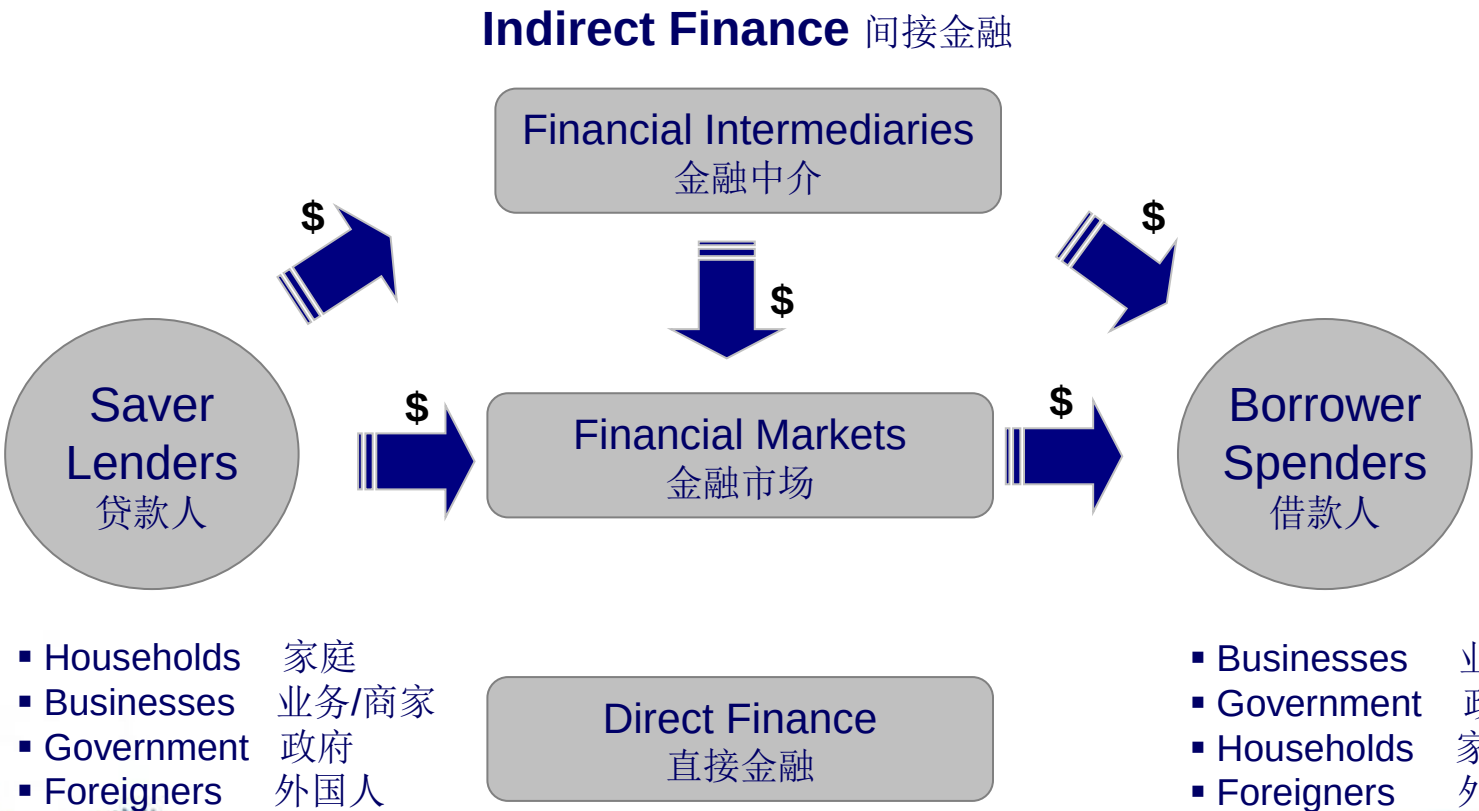
The Cycle of Money (Cont'd)

The Cycle of Money - Example

- **Example: A mutual fund issues shares which are bought by individuals**
- **The pooled funds are invested by the mutual fund company in shares that are issued by firms**
- **The firms pay dividends periodically which are received by the mutual fund and passed through to their shareholders (股东), or reinvested in additional shares and the cycle of money starts again.**
  - The mutual fund managers earn fees;
  - the firms whose securities are bought are able to raise capital for growth and future returns; and
  - the mutual fund shareholders earn dividends and capital gains(资本利得).
- **Thus, all participants are generally better off.**

Financial Markets: Flow of Funds

Flow of funds from saver-lenders to borrower-spenders



Source: Wall Street – The Economist

Financial Markets (Cont'd)

Fundamental function:

- *the transfer of funds from individuals or institutions with surplus funds (savers-lenders) to those who require funds (borrowers-spenders).*
- *It channels funds from parties that do not have productive use for them to those that do.*
- **Indirect finance:** via financial intermediaries – banks, savings institutions, and investment intermediaries
- **Direct finance:** via financial markets – the purchase of securities (debt and equity) issued by borrowers-spenders by saver-lenders themselves or by financial intermediaries
- **Pricing Setting**: trading thru supply and demand of financial assets. If demand exceeds supply price will rise, and vice versa.

Financial Markets (Cont'd)

- **Asset Valuation**: market price provides a detached basis for determining the value of individual assets and corporations
- **Fund Raising**: IPO (Initial Public Offering)
- **Income & Savings**: earn a return on their funds, to accumulate assets that will provide future income
- **Arbitrage** （套利）: transparency of market prices leads to reduction of price discrepancies, making for greater economic efficiency
- **Risk Management**: futures, options, and other derivatives contracts: hedging （避险）
- **Watchdog**（监管机构）: make sure the investors' investment safe, like SEC

Characteristics of a Good Market

- **Provide timely and accurate information**
- **Provide liquidity (流动性）**
- **Have good internal and external efficiency**
- **Good markets provide:**
  - Liquidity
  - Continuous information

Market Participants

- There are two basic financial market participant categories:
  - **Investor vs. Speculator**
  - **Institutional vs. Retail**
- An investor is any party that makes an investment.
- A speculator, involves in the buying, holding, selling and short selling of stocks, bonds, commodities, currencies, real estate, derivatives, or any valuable financial instrument to profit from fluctuations in its price as opposed to buying it for use or for income via methods such as dividends or interest.
- An institutional investor is an investor, such as a bank, insurance company, retirement fund, hedge fund, or mutual fund, that is financially sophisticated and makes large investments, often held in very large portfolios of investments. Because of their sophistication, institutional investors may often participate in private placements of securities, in which certain aspects of the securities laws may be inapplicable.
- A retail investor is an individual investor possessing shares of a given security.

Buy Side vs. Sell Side

- Buy side comprises the investing institutions (asset owners) such as mutual funds, pension funds and insurance firms that tend to buy large portions of securities for money-management purposes.
- Sell side refers to banks and brokerages who are required to be market makers in a given security.

Financial Instruments (金融工具)

- Equity Markets
- Bond Markets
- Money Markets
- Foreign-exchange (Forex) Markets
- Securitization (e.g. ABS, MBS)
- Commodities & Futures Markets
- Options & Derivatives Markets

Session 2

The Time Value of Money (货币的时间价值）

Future Value and Compounding Interest（复利）

- **The value of money at the end of the stated period is called the future or compound value of that sum of money.**
  - Determine the attractiveness of alternative investments
  - Figure out the effect of inflation on the future cost of assets, such as a car or a house.

The Single-Period Scenario

FV = PV + PV x interest rate, or
FV = PV(1+interest rate)

(in decimals)

Example 1: Let's say Jay deposits $200 for a year in an account that pays 6% per year. At the end of the year, he will have:

FV = $200 + ($200 x .06) = $212
= $200(1.06) = $212

The Multiple-Period Scenario

$$FV = PV \times (1+r)^n$$

Example 2: If Jay closes out his account after 3 years, how much money will he have accumulated? How much of that is the interest-on-interest component? What about after 10 years?

$FV_3 = \$200(1.06)^3 = \$200*1.191016 = \$238.20,$

where, 6% interest per year for 3 years = \$200 x.06 x 3=\$36

Interest on interest = \$238.20 - \$200 - \$36 =\$2.20

$FV_{10} = \$200(1.06)^{10} = \$200 \times 1.790847 = \$358.17$

where, 6% interest per year for 10 years = \$200 x .06 x 10 = \$120

Interest on interest = \$358.17 - \$200 - \$120 = \$38.17

Methods of Solving Future Value Problems

- ***Method 1: The formula method***
  - Time-consuming, tedious
- ***Method 2: The financial calculator approach***
  - Quick and easy
- ***Method 3: The spreadsheet method***
  - *Most versatile*
- ***Method 4: The use of Time Value tables:***
  - Easy and convenient but most limiting in scope

Present Value and Discounting

- Involves discounting the interest that would have been earned over a given period at a given rate of interest.
- It is therefore the exact opposite or inverse of calculating the future value of a sum of money.
- Such calculations are useful for determining today's price or the value today of an asset or cash flow that will be received in the future.
- The formula used for determining PV is as follows:

$$PV = FV/ (1+r)^n$$

The Single-Period Scenario

When calculating the present or discounted value of a future lump sum to be received one period from today, we are basically deducting the interest that would have been earned on a sum of money from its future value at the given rate of interest.

i.e. PV = FV/(1+r)➔ since n = 1

So, if FV = 100; r = 10%; and n =1;

➔PV = 100/1.1=90.91

The Multiple-Period Scenario

When multiple periods are involved…

The formula used for determining PV is as follows:

$$PV = FV \times 1/(1+r)^n$$

where the term in brackets is the present value interest factor for the relevant rate of interest and number of periods involved, and is the reciprocal of the future value interest factor (FVIF)

Present Value and Discounting (Cont'd)

Example: Discounting Interest

Let's say you just won a jackpot of $50,000 at the casino and would like to save a portion of it so as to have $40,000 to put down on a house after 5 years. Your bank pays a 6% rate of interest. How much money will you have to set aside from the jackpot winnings?

Present Value and Discounting (Cont'd)

Example (Answer)

FV = amount needed = $40,000

N = 5 years; Interest rate = 6%;

- **PV = FV x 1/ $(1+r)^n$**
- **PV = $40,000 x 1/$(1.06)^5$**
- **PV = $40,000 x 0.747258**
- **PV = $29,890.33➔ Amount needed to set aside today**

One Equation and Four Variables

- **Any time value problem involving lump sums -- i.e., a single outflow and a single inflow--requires the use of a single equation consisting of 4 variables i.e. *PV, FV, r, n***
- **If 3 out of 4 variables are given, we can solve the unknown one.**

$FV = PV \times (1+r)^n$ ➔solving for future value

$PV = FV \times [1/(1+r)^n]$ ➔solving for present value

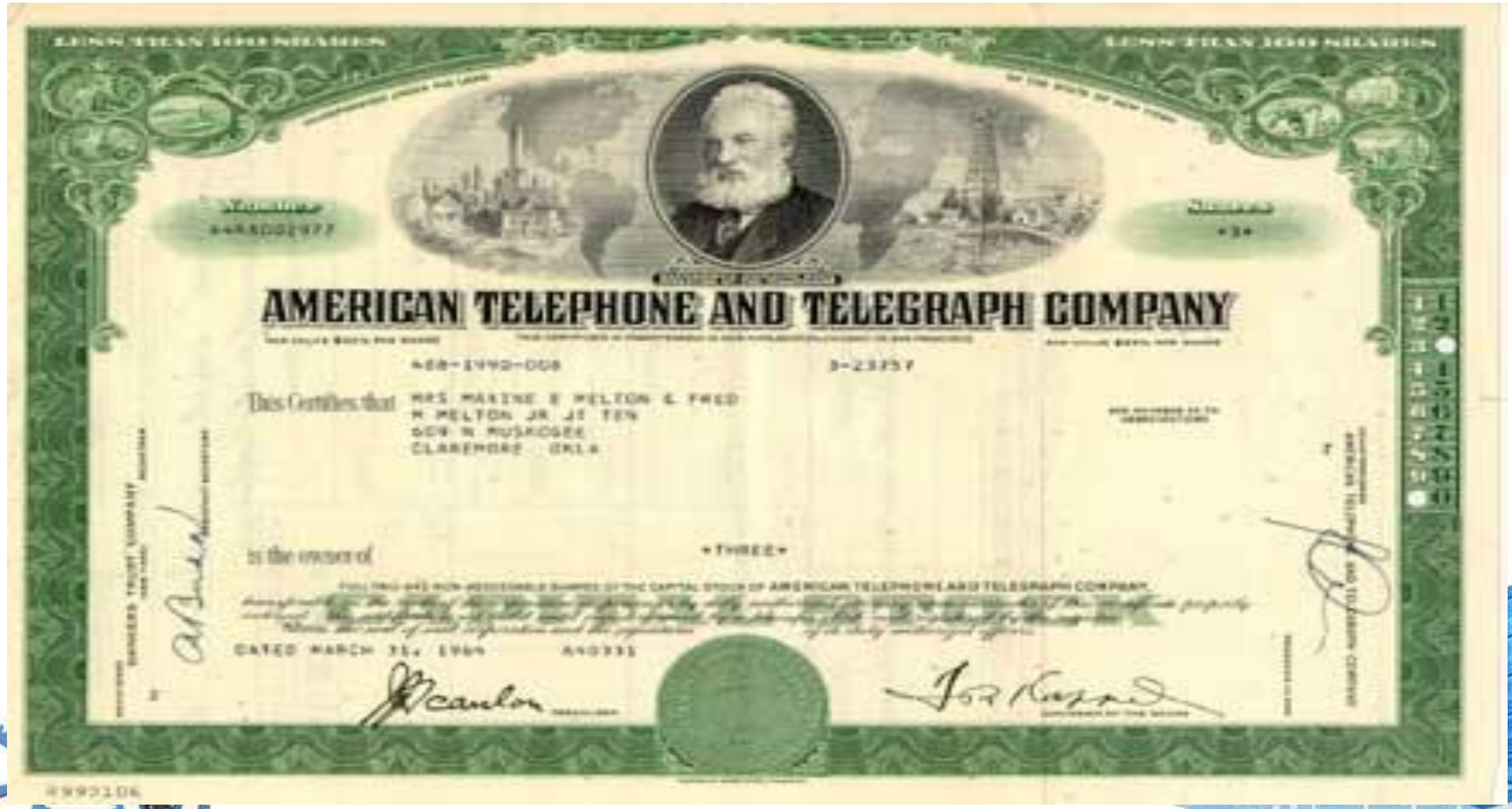
$r = [FV/PV]^{1/n} - 1$ ➔solving for unknown rate

$n = [\ln(FV/PV)/\ln(1+r)]$ ➔solving for # of periods

Session 3

International Stock Markets

Sample Stock



Definition

- A share in the ownership of a company. Stock represents a claim on the company's assets and earnings.
- Profits are sometimes paid out in the form of dividends.
- Without dividends an investor can make money on a stock only through its appreciation in the open market.
- A corporation is a form of business enterprise that is a legal entity.
- A stock certificate constitutes physical evidence of ownership
- The governing authority of the corporation is the Board of directors

How a corporation raises capital?

- Debt financing
- Equity financing

Stock Type

- **Preferred Stock**

  Described as equity ownership of a corporation's shares where the owners are entitled to regular fixed dividend before a dividend can be paid to common stock holders.

  Intended for investors who are more interested in income than capital appreciation

  Preferred stockholders usually do not have voting rights

- **Common Stock**

  Security representing (partial) ownership of a company's assets, generally with the right to participate in dividends and in most cases to vote on major matters affecting stockholder interests.

- **Convertible Bond**

Stock Type (cont.)

- **Class A Stock**
  - It is the stock issued for public trading from an IPO or if a company issues new stock at a later date.

- **Class B Stock**
  - It is a special category of stock usually retained by company founders at the time a company goes public. It carries certain rights not granted to stock available to the public. One of those rights is one share of Class B stock has 10 votes while regular shares have only one vote.

- The portion of a company's profit paid to shareholders is called:Dividend

Stock Type (cont.)

- **Warrants （认股权证）**
  - Give stockholders the right to buy stock at subscription price
  - It has a value of its own and can be traded on the open market

Stock Type (cont.)

- Blue-chip stocks are those that are high-grade issues of major companies that have long and unbroken records of earnings and dividend payments
- Income stocks pay higher than average dividends and are purchased by those who buy stock for current income
- Foreign stocks traded in U.S. markets are called American Depository Receipts (ADRs)

Stock Type (cont.)

- The classification of stock:
  - Blue-chip (high-grade issues of major companies that have long and unbroken records of earnings and dividend payments; e.g. IBM and GE)
  - Growth (faster-than-average gains in earnings over the last few years and is expected to continue to show high levels of profit growth; usually with high price/earnings ratios and little or no dividend payments to shareholders)
  - Defensive (has a resistance to a recession; e.g. food companies, utilities, and tobacco companies)
  - Cyclical (sensitive to business cycles – expansion, peak, recession and recovery) (restaurants, hotel chains, airlines, furniture, high-end clothing retailers, and automobile manufacturers. These are also the goods and services that people cut first when times are tough)

Stock Split

- A stock split does the following:
  - Decrease par value
  - Make the stock more marketable
  - Reduce the market price of the stock

- A stock split will NOT change the net dollar value in a stock

- Stock split example: 2-for-1; 1,000 shares and $50 per share (after split, you'll have 2,000 shares and $25 per share)

- A reverse stock split creates a smaller number of shares and increase the market price; example: 1-for-5; 10,000 shares and $1 per share (you'll have 2,000 shares and $5 per share)

Market Players

- Institutional Investors
  - Organization whose function is to invest assets on behalf of others
  - *Central Banks, Pension Funds (e.g.: CalPERS, NCSSF), Mutual Funds, …*
- Fund Managers
  - Any individual firm which has responsibility for managing a fund or investment portfolio
  - Fidelity, Vangurard
- Brokers/Dealers
  - Any individual or firm acting as an agent for buyers & sellers & charging a commission
  - *-Goldman Sachs, Morgan Stanley*
- Global Custodians
  - The keeper of international securities & other assets on behalf of investor
  - *-Bank of New York, JP Morgan Chase, Northern Trust*
- Sub-Custodians
  - Local equivalent of global custodians
  - *Standard Chartered Bank, HSBC, Citibank, Bank of China，。。。*

Stock Exchange

- The New York Stock Exchange (NYSE)
- The American Stock Exchange (AMEX)
- The London Stock Exchange (LSE)
- NASDAQ Stock Market (National Association of Securities Dealers Automated Quotations)
- Boston Stock Exchange (BSE)

Stock Markets Type

- **Primary Market (IPO)**
  - The primary market is that part of the stock markets that deals with the issuance of new stocks.
  - Initial Public Offering (IPO), referred to simply as a "public offering," is the first sale of stock by a private company to the public. IPOs are often issued by smaller, younger companies seeking capital to expand, but can also be done by large privately-owned companies looking to become publicly traded.
- **Secondary Market**
  - The secondary market is the financial market for trading of securities that have already been issued in an initial private or public offering. Once a newly issued stock is listed on a stock exchange, investors and speculators can easily trade on the exchange, as market makers provide bids and offers in the new stock.
- **OTC Market**
  - An *over-the-counter market* is a financial market where products are traded over-the-counter. It is contrasted with exchange trading, which occurs via corporate-owned facilities constructed for the purpose of trading

Over the Counter Markets

- **To be traded on the over the counter markets, a stock must have: a market maker**

Third Market

- **Stocks listed on a registered exchange may also be traded in the Over the Counter market**
- **Non-member investment firms can make markets in and trade registered securities without going through the exchange.**
- **This segment of the OTC market is called the Third Market.**

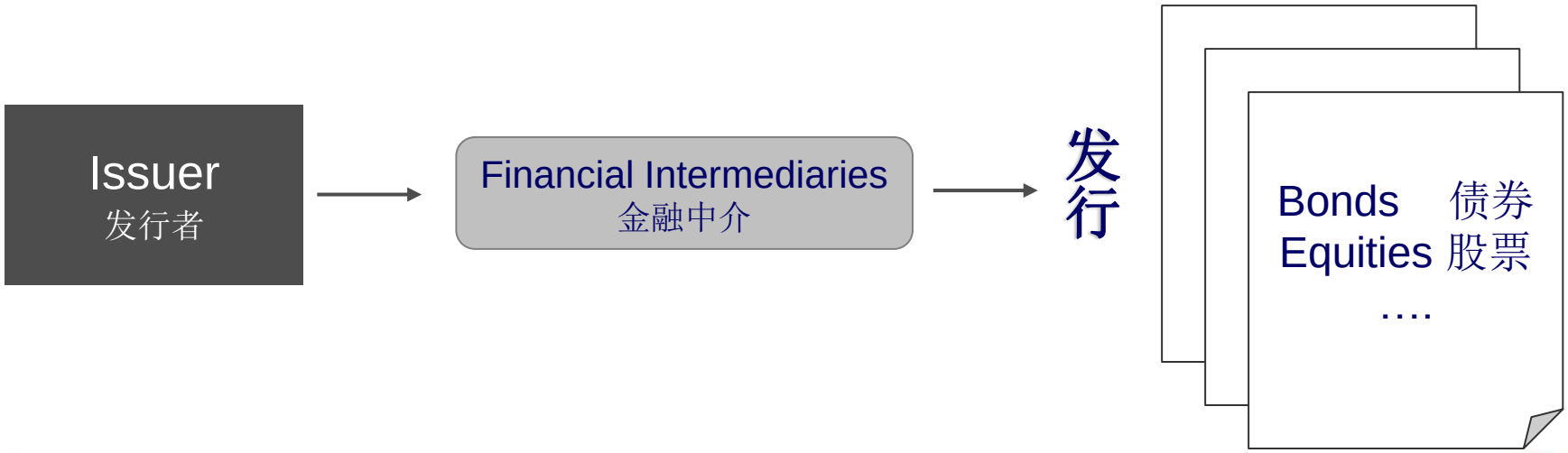
Fourth Market

- The sale of shares between two institutions is called: Fourth market
- Directly negotiated sales are done by investors to save transaction costs

New Shares

- **New shares of firms already trading on the exchange are called: seasoned issues**

Primary Market Trade Flow

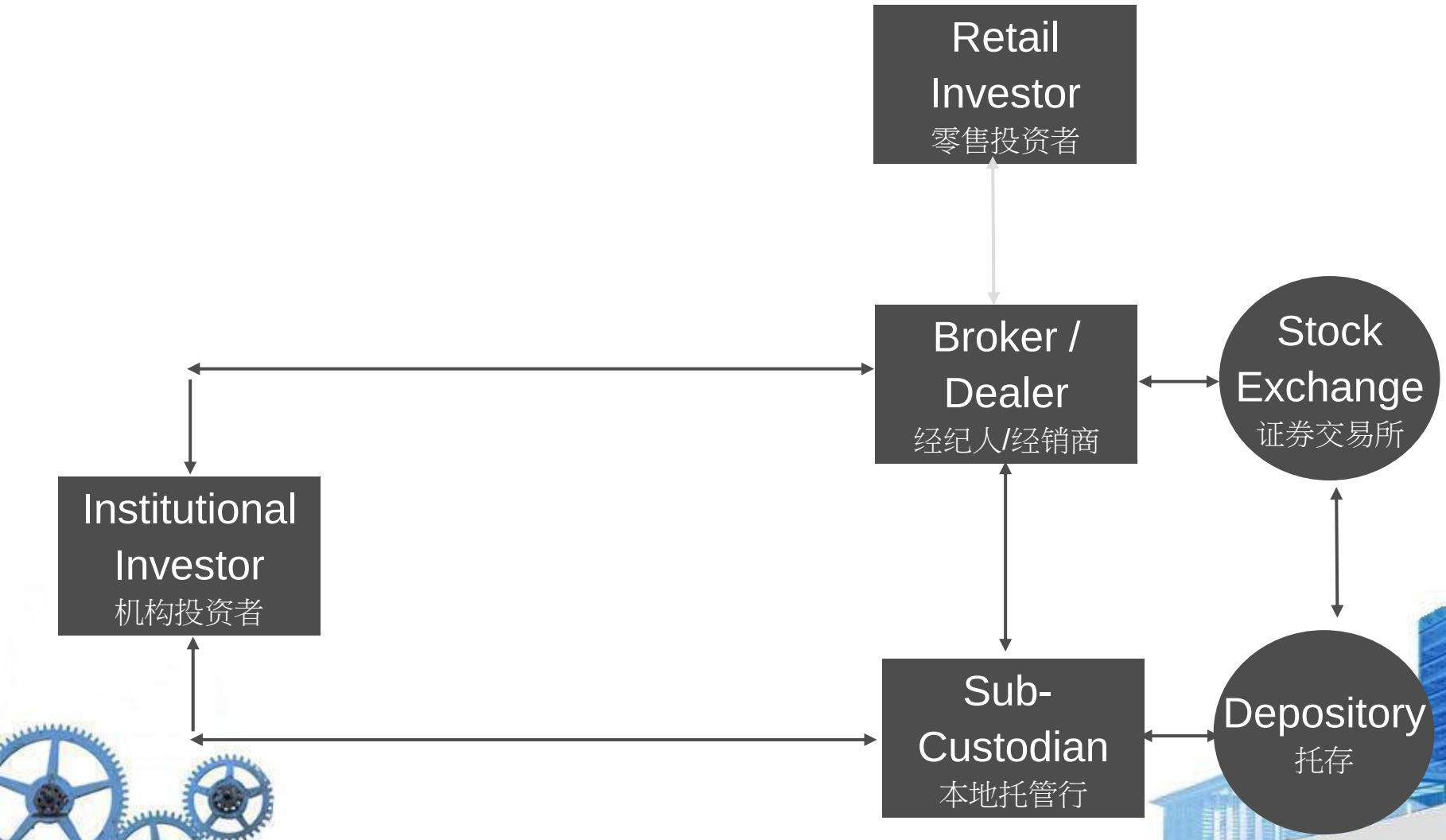


Role of an Underwriter

An underwriter （承销人） provides:

- **Origination**
- **Risk bearing**
- **Distribution**

Secondary Market Trade Flow (Exchange Trading)



NYSE

- Largest, the most prestigious security exchange in the world
- Floor Exchange
- Auction
- Specialist (Market makers)

A retail trade in a NYSE

Floor Broker & Specialist

Client

Broker

Market Indexes

- The use of security market indexes are:
  - To measure portfolio performance over various time periods
  - To help in the construction of index portfolios
  - To examine the factors that influence aggregate security price movements
  - To aid market technicians in their investment decisions
  - To help in the calculation of beta and portfolio theory studies

- Factors in Constructing Market Indexes:
  - The sample must be representative of the population
  - Decide the weighting to give the individual items in the sample
  - Decide on the mathematical or computational procedure to combine the individual items into the whole index

Market Indexes

- Two major series types:
  - Price Weighted Series
  - Market Value Weighted Series

- A price weighted series is an arithmetic average of current prices, thus price movements are influenced by the differential prices of the components
- Formula: Adds together the market price of each stock in the index and then divides this total by the number of stocks in the index
- E.g. sum(P1, P2, P3, …PN)/N
- The Dow Jones Industry Average is a price weighted index that used 30+ stocks

Market Indexes

- A Market Value Weighted Series is calculated by summing the total value (current stock price times the number of shares outstanding) of all stocks in the index. This sum is then divided by a similar sum calculated during the selected base period. This ratio is then multiplied by the index's base beginning value (e.g. 100).
- 100*(Sum of Current MVs/Sum of Base MVs)
- The value weighted index assumes you make a proportionate market value investment in each company in the index.
- The major problem with a value weighted index is that firms with greater market capitalization have a greater impact on the index than do firms with lower market capitalization.
- Major indexes:
  - Standard & Poor's 500
  - New York Stock Exchange Index
  - NASDAQ Series
  - International Indexes (e.g. MSCI)

Roles in Trading

- **Broker:**
  - Execute orders for floor brokers
- **Catalyst**
  - Bring buyers and sellers together enabling a transaction to take place that otherwise would not have occurred.
- **Dealer**
  - Provide capital to minimize the imbalance.
- **Auctioneer**
  - Manage the auction process
  - Establish the opening price for his security every day.

Roles in Trading (cont.)

- **Specialist (专业证券商)**
  - Have to quote firm two-sided markets during trading hours.
  - Have an obligation to smooth price by intervening to prevent large price reversals (provide price continuity).
  - Many specialists are forced to hold an inventory of shares themselves to minimize the imbalance of buy and sell orders
  - Revenue
    - Commission
    - Profits from dealing
  - Privileges
    - Access to information about order flows
    - the ability to create the market quote
    - the right to collect brokerage commissions from executing system order flow

An institutional trade in a NYSE

Portfolio manager

Trader

POSIT

The world's largest equity crossing system, matches institutional buyers and sellers anonymously

NASDAQ

- National Association of Security Dealers Automated Quotations
- OTC
- Computer and telecommunications network
- Market Maker Trading System
- Listing requirements are less stringent than those of the registered exchange

A retail trade in a NASDAQ

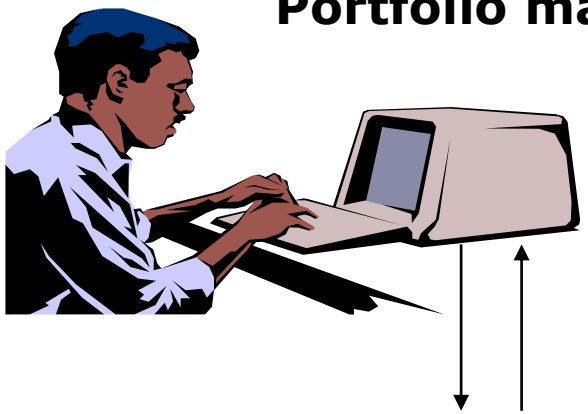
Client

Market Maker

Broker

An institutional trade in a NASDAQ

Portfolio manager

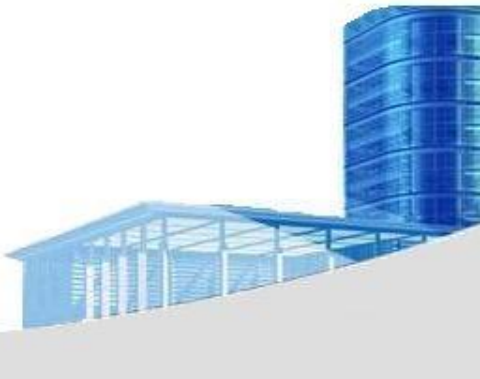


Market Maker

Trader

Session 4

Stock Trading Operation



> *Terminals*

Terminologies on Terminal

- Order
- Trade
- Share
- Share Price
- Sell/Buy
- Ask/Bid
- Spread
- T+1, T+0
- Short Sell
- Commission

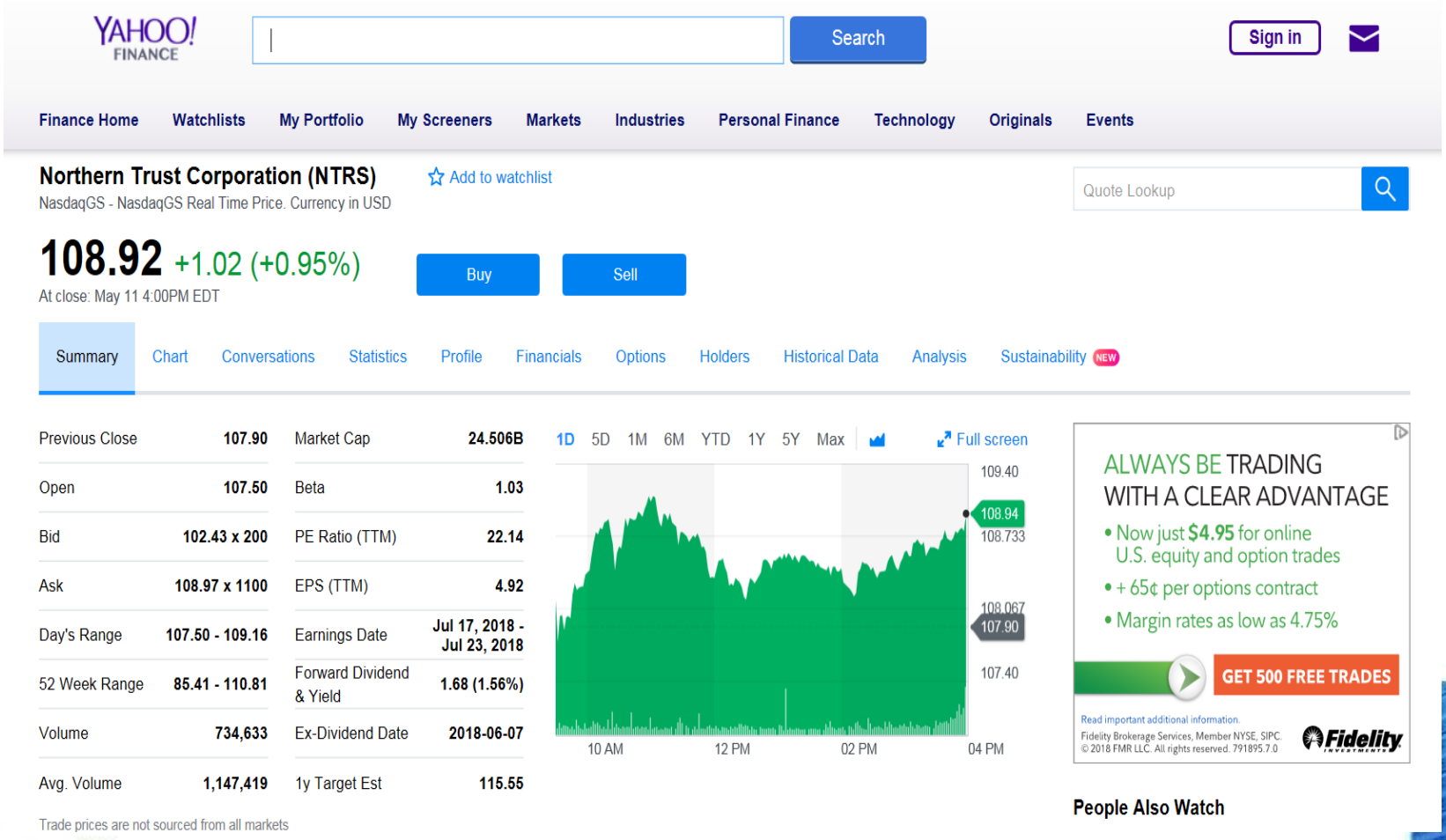
Terminologies on Terminal (cont.)

- Last Price
- Change
- Currency
- % Change
- Open
- Day Low
- Day High
- Volume

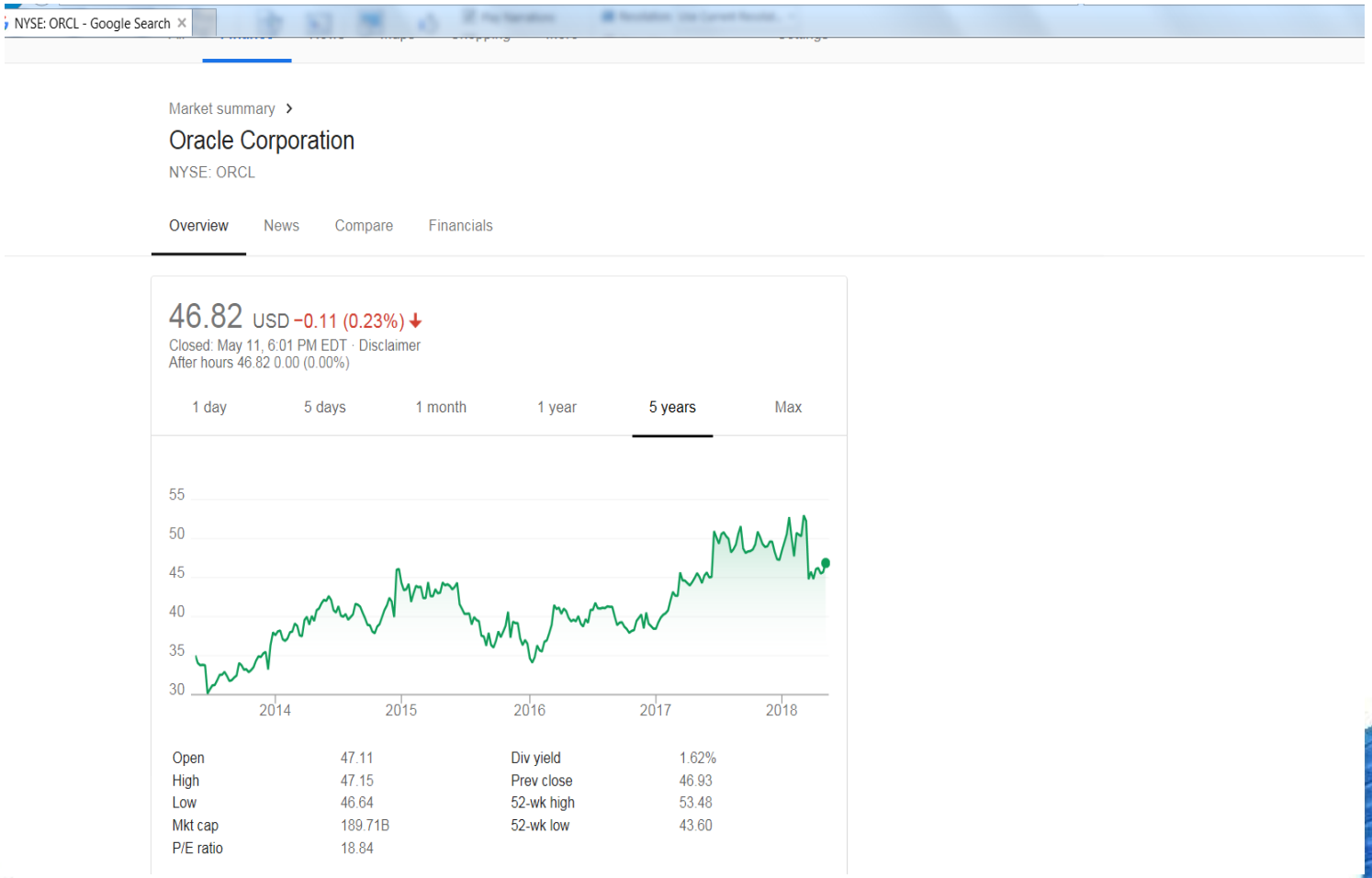
Short Sale

- **The requirements that a short sale can only occur at a higher price than the last previously changed price is called:**
  - The up tick rules

Web-based Stock Information--Yahoo

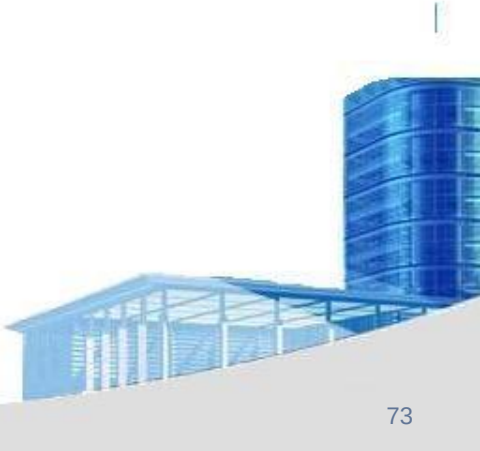


Web-based Stock Information--Google



Web-based Research and Trading – Fidelity

> *Stock Identifiers*



Asset Identifiers

- Numbering systems have been implemented which serve to identify specific classifications of a security.
- With the complex structure of various markets, asset identifiers facilitate global trading, clearing and settlement activities.
- There are various asset identifier numbering systems in use by various markets.

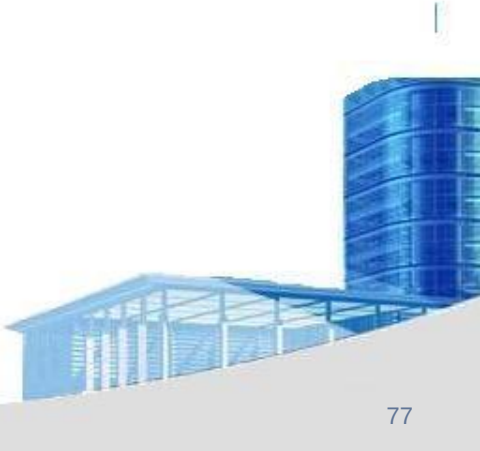
Asset Identifiers (cont.)

- **CUSIP (Committee on Uniform Security Identification Procedures)**
  - An identifier which is used for most US and Canadian securities.
  - The nine alphanumeric code that reflects three different aspects of security. (Apple Inc.: 037833100)
- **CINS**
  - An acronym standing for the "CUSIP International Numbering System," which provides identification of international securities.
- **ISIN (International Securities Identifying Number)**
  - One universal security system worldwide.
  - 12-character alpha-numerical code (Apple Inc.: ISIN US0378331005)
- **SEDOL (Stock Exchange Daily Official List)**
  - Identify securities trading on the International Stock Exchange in London

Asset Identifiers (cont.)

- Numbering systems have been implemented which serve to identify specific classifications of a security.
- With the complex structure of various markets, asset identifiers facilitate global trading, clearing and settlement activities.
- There are various asset identifier numbering systems in use by various markets.

> *Orders*



Types of Orders

- **Market Order:** a market order will always be executed immediately, but customers cannot be sure of what the execution price will be

- **Limit Order:** When customers wish to buy or sell securities at a specific price, they enter limit orders. A limit order can only be executed at the specific price or better.
  - Buy Limit Order: executed at the limit price or lower
  - Sell Limit Order: executed at the limit price or higher

Limit Risks

- **Stop Order**
  - A Stop order becomes a market order to buy or sell securities or commodities once the specified stop price is attained or penetrated.
  - A **Sell Stop order** is always placed below the current market price. It is typically used to limit a loss or protect a profit on a long stock position.
  - A **Buy Stop order** is always placed above the current market price. It is typically used to limit a loss or protect a profit on a short sale.
- **Stop Limit Order**
  - A Stop Limit order becomes a limit order once the specified stop price is attained or penetrated.
  - A STOP-LIMIT order eliminates the risk of a stop order where the investor is not guaranteed an execution price, but exposes the investor to the risk that the order may never be filled even though the stop price has been reached. The investor could "miss the market" in the security or commodity altogether.

Speed of Execution

- **Market**
  - A market order is an order to buy or sell an asset at the bid or offer price currently available in the marketplace.
- **Market If Touched**
  - An MIT (market-if-touched) is an order to buy (or sell) an asset below (or above) the market. This order is held in the system until the trigger price is touched, and is then submitted as a market order. An MIT order is similar to a stop order, except that an MIT sell order is placed above the current market price, and a stop sell order is placed below.
- **Market On Open**
  - A market order executed at the market's open at the market price.
- **Market On Close**
  - A market order executed at the market's close at the market price.

Speed of Execution (cont.)

- **Pegged to Market**
  - An order that is pegged to buy on the best offer and sell on the best bid.

- **VWAP (Volumes Weighted Average Pricing)**
  - The VWAP for a stock is calculated by adding the dollars traded for every transaction in that stock ("price" x "number of shares traded") and dividing the total shares traded. A VWAP is computed from the open of the market to the market close, and is calculated by volume weighting all transactions during this time period.

Price Improvement

- **Limit**
  - A limit order is an order to buy or sell a contract at a specified price or better.

- **Limit If Touched**
  - An LIT (limit-if-touched) is an order to buy (or sell) an asset below (or above) the market, at the defined limit price or better. This order is held in the system until the trigger price is touched, and is then submitted as a limit order. An LIT order is similar to a stop limit order, except that an LIT sell order is placed above the current market price, and a stop limit sell order is placed below.

Discretion

- **Discretionary**
  - A Discretionary Order is a limit order for which you define a discretionary amount (which is added to or subtracted from the limit price) that increases the price range over which the order is eligible to execute. The original limit price is displayed to the market.

- **Hidden**
  - A Hidden order (generally a large volume order) shows no evidence of its existence in either the market data or the deep book

- **Iceberg**
  - An Iceberg order allows you to submit an order (generally a large volume order) while publicly disclosing only a portion of the submitted order.

Market Timing

- **All or None**
  - An AON (all or none) order will remain at the exchange (or in the IB system) until the entire quantity is available to be executed.
- **Fill or Kill**
  - A FOK (Fill or Kill) order must execute as a complete order as soon as it becomes available on the market, otherwise the order is canceled.
- **GTD**
  - A GTD (Good-till-Date) order valid until the date specified.
- **GTC**
  - A GTC (Good-till-Canceled) order is an order to buy or sell a security at a specific or limit price that lasts until the order is completed or cancelled. A GTC order will not be filled until the limit has been reached, no matter how many days or weeks it takes.
- **IOC**
  - An IOC (Immediate or Canceled) order requires that all or part of the order be executed as soon as it is brought to the market, whereby the portion not executed is automatically canceled.

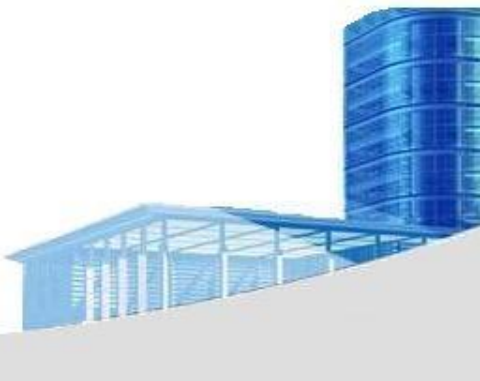
Limit Order

- **Example 1:**
- **A stock is selling at $100. Your valuation model says it should be selling at $80. If you believe your model, you should: Short the stock at $100**

- **Example 2:**
- **The current market price of the XYZ Company stock is $50. An order to sell at $55 would be a: Limit order (Sell Limit Order)**

Session 5

Analyzing Stocks



Price Changing

- **Stock prices change according to supply and demand. There are many factors influencing prices, the most important being earnings.**
- **Earnings are the profit a company makes, and in the long run no company can survive without them.**
- **Nobody really knows for sure why stock prices change.**

Stock Investment Features

- Long term
- Clear investing goal and self-acceptance of risk
- Emphasize the risk control and have accurate risk budget
- Take eyes on the whole portfolio management
- Large orders to affect the whole market

Stock Correlation

- The correlation between US stock exchanges is relatively high
- The correlation between US equity and foreign equity exchange is relatively low

Two Analysis Models

- **Fundamental Analysis (Buying a Business)**
  - fundamental analysis is a technique that attempts to determine a security's value by focusing on underlying factors that affect a company's actual business and its future prospects.
  - It maintains that markets may mis-price a security in the short run but that the "correct" price will eventually be reached. Profits can be made by trading the mispriced security and then waiting for the market to recognize its "mistake" and reprice the security.
- **Technical analysis (Buying the Numbers)**
  - It maintains that all information is reflected already in the stock price,
  - Investors' emotional responses to price movements lead to recognizable price chart patterns.
  - Their price predictions are only extrapolations from historical price patterns.

> *Fundamental Analysis*

Approaches

- **Top-down**
  - Investor starts his/her analysis with global economics, and then narrows his/her search down to regional/industry analysis. Finally, he/she narrows his search to the best business in that area.
  - Three-step analytical process:
    - Economic analysis
    - Industry analysis
    - Stock analysis
- **Bottom-up/Stock-picking**
  - Investor starts his analysis with a specific business.
  - Pick stocks that you believe are underpriced regardless of the direction of the economy and state of the industry
- The fundamental difference between these two approaches is how investors perceive the importance of economic and industry influences on individual stock returns

Top-down

- **Step1: General Economic Influences**
  - Fiscal policy
  - Monetary policy
  - Inflation
  - Political changes
  - Global factors

- **Step 2:Industry Influences**
  - Identify those industries that will prosper or suffer during the time frame of your economic forecast
  - Consider the cyclical nature of the industry under study
  - Account for foreign economic shifts

Top-down

- **Step 3: Company Analysis**
  - Compare the individual firm's performance within the entire industry using financial ratios and cash flow values
  - Your goal is to identify the best company in a promising industry
  - Not only examine the firm's past performance, but also its future prospects

Factors

- **Company's History and Current Status**
  - Earning
  - Sales
  - Management
  - Governance
  - Balance Sheet/Income Statement/Cash-flow Statement
  - Strength of Products in Marketplace
- **Industry Status**
  - Market Shares
  - Industry Growth
  - Competition
  - Regulation

Measurements

- Price/Book Ratio
- Price/Free Cash Flow Ratio
- Price/Earning Ratio
- Price/Sales Ratio
- Revenue/Share
- Operation Income/Share
- EPS
- Equity/Share

Equity Pricing Models

- P/E Ratio Pricing Model
- Dividend Discount Model (DDM)
- Capital Asset Pricing Model (CAPM)
- Arbitrage pricing theory (APT)

Stock Valuation

- **Value of a share of stock ➔the present value of its expected future cash flow…**
  - Cash dividends paid (if any).
  - Future selling price of the stock.
  - The discount rate i.e. risk-appropriate rate of return to be earned on the investment.
- **No guaranteed cash flow information.**
- **No maturity date.**
- **Valuation is more of an “art” than a science.**

Stock Valuation (Cont'd)

***4* variations of a dividend pricing model have been used to value common stock**

1. **The constant dividend model with an infinite horizon**
2. **The constant dividend model with a finite horizon**
3. **The constant growth dividend model with a finite horizon**
4. **The constant growth dividend model with an infinite horizon**

The Constant Dividend Model with an Infinite Horizon

Assumes that the firm is paying the same dividend amount in perpetuity.

i.e. $Div_1 = Div_2 = Div_3 = Div_4 = Div_5 = Div_\infty$

For perpetuities,

$$PV = PMT/r$$

where *r* the required rate and *PMT* is the cash flow.

Thus, for a stock that is expected to pay the same dividend forever,

Price = Dividend/Required rate of return

The Constant Dividend Model with an Infinite Horizon (Cont'd)

Example 1: Quarterly dividends forever

Let's say that the Peak Growth Company is paying a quarterly dividend of $0.50 and has decided to pay the same amount forever. If Joe wants to earn an annual rate of return of 12% on this investment, how much should he offer to buy the stock at?

Answer

Quarterly dividend = $0.50

Quarterly rate of return = Annual rate/4= 12%/4 = 3%

PV = Quarterly dividend/Quarterly rate of return

Price = 0.50/.03 = $16.67

The Constant Growth Dividend Model with an Infinite Horizon (Gordon Model)

- **With some algebra, this can be simplified to….**

$$\text{Price}_0 = \frac{\text{Div}_0 \times (1+g)}{(r-g)}$$

- **And since Div_0 x (1+g) = Div_1**

$$\text{Price}_0 = \frac{\text{Div}_1}{(r-g)}$$

- **Or more generally $P_n = \text{Div}_{n+1}/(r-g)$**

The Constant Growth Dividend Model with an Infinite Horizon (Gordon Model) (Cont'd)

Example 2: Constant growth rate, infinite horizon (with growth rate given).

Let's say that the Peak Growth Company just paid its shareholders an annual dividend of $2.00 and has announced that the dividends would grow at an annual rate of 8% forever. If investors expect to earn an annual rate of return of 12% on this investment how much would they offer to buy the stock for?

The Constant Growth Dividend Model with an Infinite Horizon (Gordon Model) (Cont'd)

Example 2 Answer

Div_0 = $2.00; g=8%; r=12%

Div_1=Div_0*(1+g)

➔Div_1=$2.00*(1.08)➔$Div_1$=$2.16

P_0 = Div1/(r-g)➔$2.16/(.12 - .08)➔$54

$Price_0$ = $54

Note: r and g must be in decimals.

One more example

Company pays no dividend and reinvests all its earnings into rapid growth, but it is expected to begin paying dividends in five years. The first dividend will be $5.00, dividends will grow at 5% per year, and the required rate of return throughout the period is 15%.

In four years, next dividend will be $5.00 So P4=5/(0.15-0.05) = $50.00

g=5%; r=15%

P_0 = P4/(1+r)^4➔$50.00/(1+15%)^4➔$28.59

$Price_0$ = $28.59

Note: r and g must be in decimals.

Preferred Stock

Pays constant dividend as long as the stock is outstanding.

Typically has infinite maturity, but some are convertible into common stock at some pre-determined ratio.

Have "preferred status" over common stockholders in the case of dividend payments and liquidation payouts.

Dividends can be *cumulative* or *non-cumulative*

To calculate the price of preferred stock, we use the PV of a perpetuity equation, i.e. $Price_0 = PMT/r$

***PMT* = Annual dividend (dividend rate * par value); and**

***r* = investor's required rate of return.**

Preferred Stock (Cont'd)

Example 3: Pricing preferred stock.

The Mid-American Utility Company's preferred stock pays an annual dividend of 8% per year on its par value of $60. If you want to earn 10% on your investment how much should you offer for this preferred stock?

Answer

Annual dividend = .08*$60 = $4.80

Price = $4.80/0.10 = $48

Efficient Markets

Market in which security prices are current and fair to all traders.

Transactions costs are minimal.

There are two forms of efficiency:

1. *Operational efficiency and*
2. *Informational efficiency.*

Operational Efficiency

- **Speed and accuracy with which trades are processed.**
- **Ease with which the investing public can access the best available prices.**
  - The NYSE's SuperDOT computer system (the designated order turnaround (DOT) system is a computer program that automatically routes large baskets of orders to exchange specialists in addition to odd-lot transactions. Automated trading systems like SuperDOT have the capacity to execute orders with both speed and accuracy),
  - NASDAQ's SOES (The small order execution system (SOES) was a computer network that automatically executed trades in Nasdaq market securities and some Nasdaq small-cap securities.)
- **Match buyers and sellers very efficiently and at the best available price.**
- **Therefore definitely very operationally efficient markets.**

Informational Efficiency

- **Speed and accuracy with which information is reflected in the available prices for trading.**
- **Securities would always trade at their fair or equilibrium value.**
  - Diverse information -- financial economists have come up with three versions of efficient markets from an information perspective:
  - *weak form*,
  - *semi-strong form,*
  - *strong form*.
- **These three forms make up what is known as the efficient market hypothesis (EMH).**

Informational Efficiency (Cont'd)

- ***Weak-form efficient markets*** **:**
  - Current prices reflect past prices and trading volume.
  - Technical analysis – not useful
- ***Semi-strong-form efficient markets:***
  - Current prices reflect price and volume information and all available relevant public information as well.
  - Publicly available news or financial statement information not very useful.
- ***Strong-form efficient markets:***
  - Current prices reflect price and volume history of the stock, all publicly available information, and even all private information.
  - All information is already embedded in the price--no advantage to using insider information to routinely outperform the market.
- **Jury is still out, evidence is not conclusive!**

- *Technical Analysis of Stock Price (股价技术分析）*

Assumptions

- Values and thus prices are determined by supply and demand
- The market discounts everything
- Price moves in trends
- History tends to repeat itself
- Supply and demand is driven by both rational and irrational behavior
- Security prices move in trends that persist for long periods of time
- While the cause for changes in supply and demand are difficult to determine, the actual shifts in supply and demand can be observed in market price behavior

Trend Analysis: Samples

- **Dow Theory （道氏理论）**
  - it states that stock prices move in trends; a stock price is more likely to continue a past trend than move erratically
  - 3 types of trends: major trends, intermediate trends, and short-run movements
  - Technicians look for reversals and recoveries in major market trends

Trend Analysis: Samples

- **Support and Resistance Levels**
  - Most stock prices remain relatively stable and fluctuate up and down from their true value
  - The lower limit to these fluctuations is called a support level – the price range where a stock appears cheap and attracts buyers
  - The upper limit is called a resistance level – the price range where a stock appears expensive and initiates selling

Trend Analysis: Samples

- **Moving Average Lines**
  - Technicians believe stock prices move in trends
  - Random fluctuations in prices mask these trends
  - By using moving averages (10 to 200 days) technicians can eliminate the minor blips from graphs but retain the overall long-run trend in prices

Trend Analysis: Samples

- **Relative Strength**
  - If two variables are changing at the same rate, the ratio created by dividing one of the variables by the other will remain constant
  - Relative Strength = Stock Price/Market Price
  - If the ratio increases over time the stock is out-performing the market (a + trend)
  - If the ratio declines over time the stock is under-performing the market (a – trend)
  - Relative strength investors assume that the trends currently displayed by the market will continue for long enough to allow them to realize a positive return. Any sudden reversal to that trend will lead to negative results.