Bachelor of Economics
THAMMASAT UNIVERSITY

FN 211 Financial Markets

Class 10: Stock Markets

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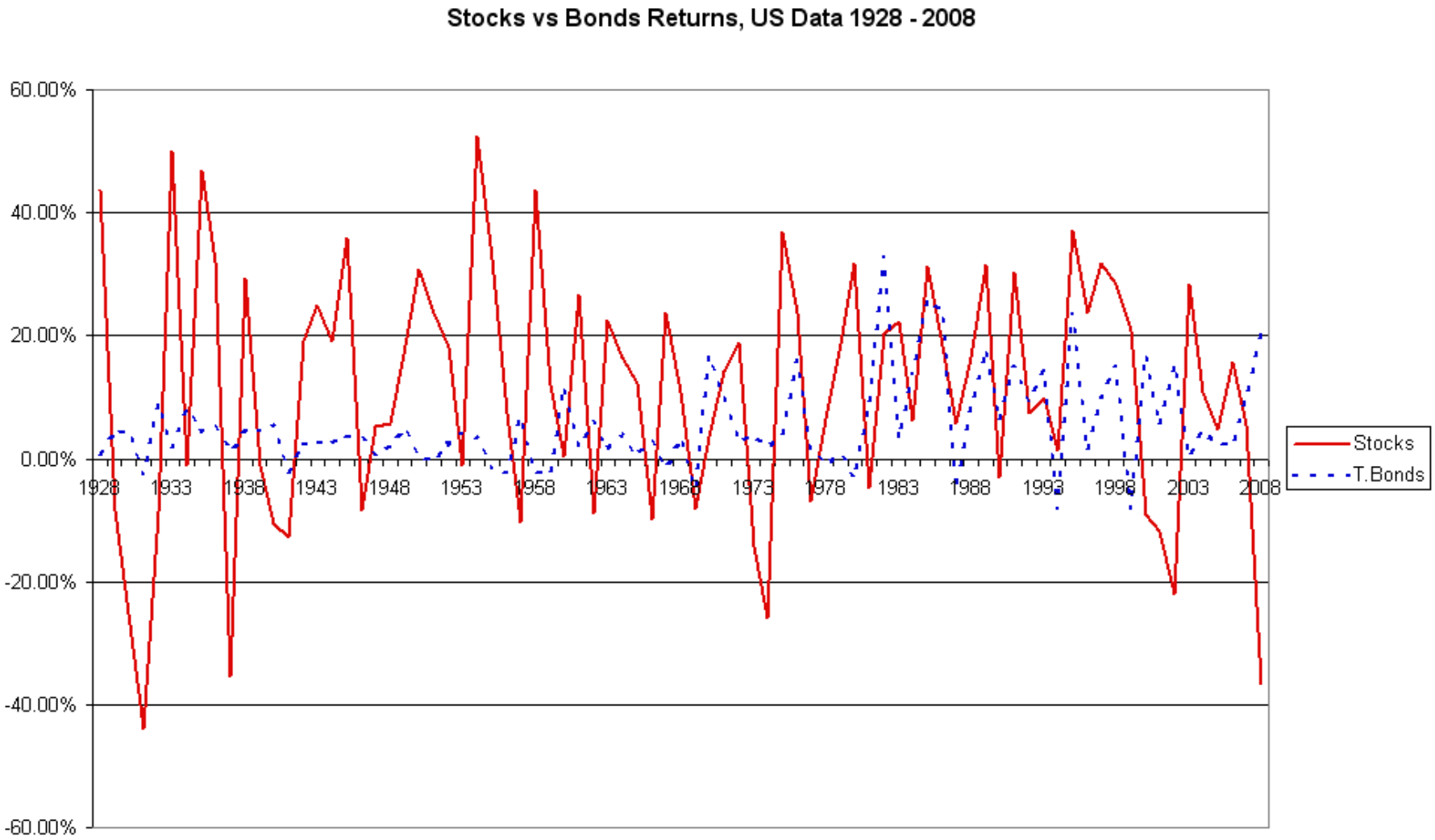
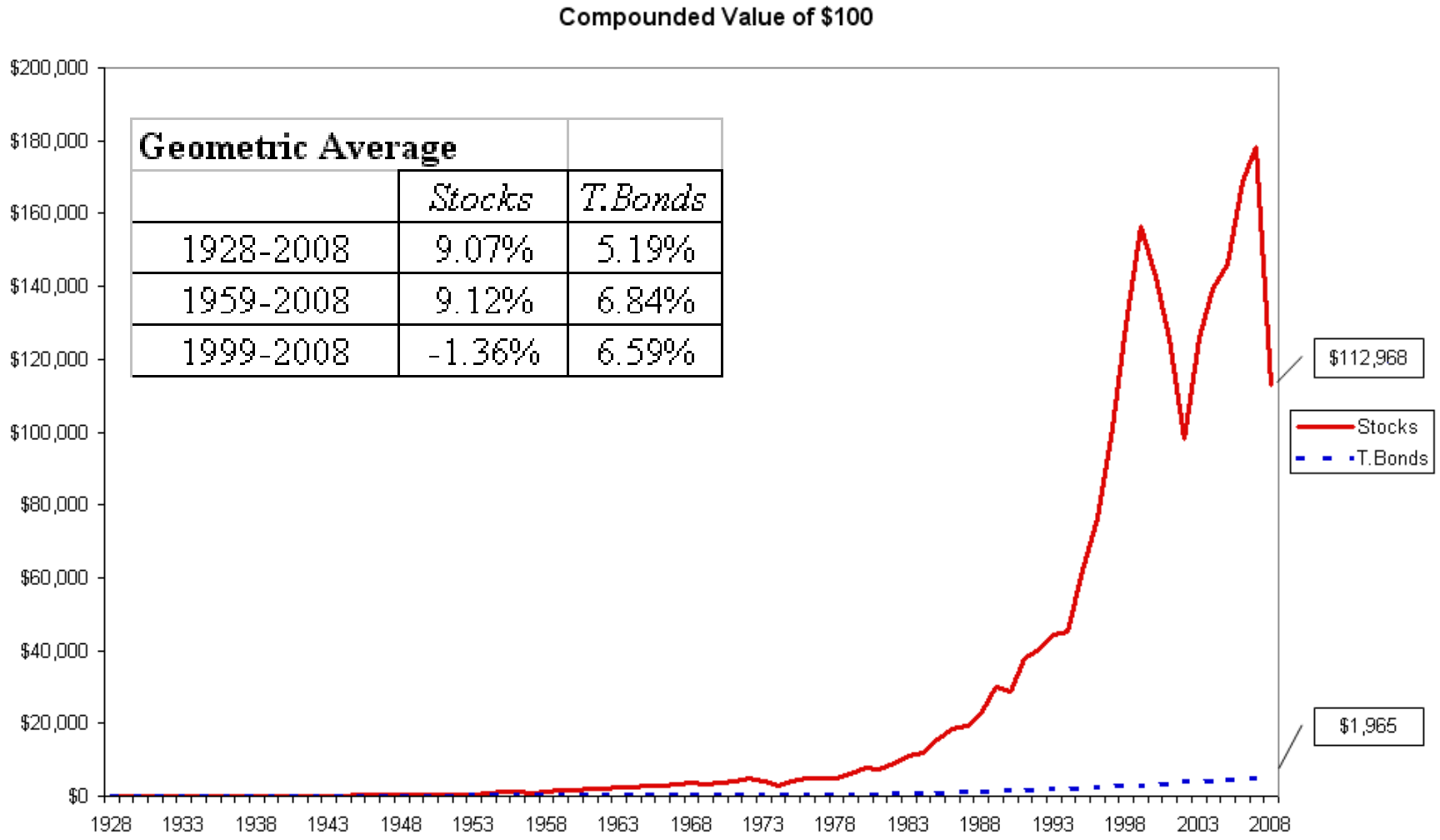
Today's Outline

- Introduction
- **Primary and Secondary Market**
- **Investment Transactions:**
  Positions, Margin, Types of Order
- **Stock Market Indices**

Introduction:
Stock vs. Bond Returns and Volatility



Introduction:
Stock vs. Bond Returns



Geometric Average		
	Stocks	*T.Bonds*
1928-2008	9.07%	5.19%
1959-2008	9.12%	6.84%
1999-2008	-1.36%	6.59%

Introduction:
Common vs. Preferred Stocks

Stockholders are the legal owners of a corporation

- they have a residual claim to all earnings and assets after debt and tax claims are satisfied
- voting rights (e.g., to elect board of directors)
- shareholders do not exercise control regularly (they elect a board, who chooses a CEO, etc.)

Common stock - the fundamental ownership claim in a public corporation

Preferred stock - a hybrid security that has characteristics of both bonds and common stock

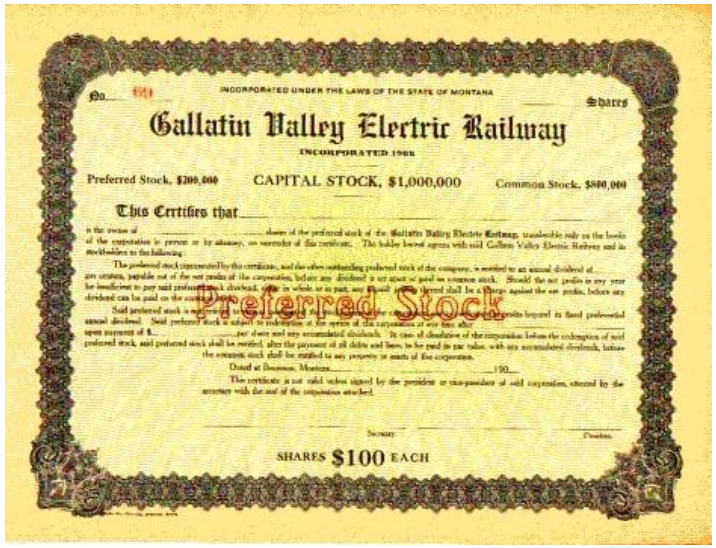
Introduction:
Characteristics of Common Stocks

- Dividends - payment and size of dividends is determined by the board of directors of the issuing firm
- Residual Claim - in the event of liquidation, common stockholders have the lowest priority in terms of any cash distribution.
  - *If a company is liquidated, assets are used first to pay debts; second, preferred stockholders receive their contractual share; and lastly, common stockholders receive only a pro rata basis of any residual funds.*
- Limited Liability - common stockholders losses are limited to the amount of their original investment in the firm
- Voting Rights – typically, common stock shareholders receive one vote per share to elect the company's board of directors

Introduction:
Characteristics of Common Stocks

Common Stock	Corporate Bond
represents an ownership interest in the corporation, conferring on the holder a number of rights (voting) as well as risks	represents IOUs of the corporation
dividends are not obligatory, and are not a tax-deductible expense	interest payments and principal repayments are legally required, and interest payments are tax-deductible
represents a residual claim on the corporation	represents a prior claim on the corporation
yield comes from dividends and capital gains (or losses)	yield comes from interest payments (and price difference if not held for the full term), yield is fixed if held to maturity
generally, has potential for giving higher returns, but is more risky	generally, does not have potential for giving much higher returns, but is less risky
has no stated maturity	has a stated maturity

Introduction:
Characteristics of Preferred Stocks



- Similar to common stock in that it represents an ownership interest but, like bonds, pays a fixed (amount or percent) periodic dividend
- Senior to common stock but junior to bonds
- Generally do not have voting rights

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Financial Markets:
Primary Markets

- **Primary Market** – issuers sell securities to investors.
  - **Public Offerings** – Corporations generally contract with an investment bank to help them sell their securities to the public.
    - Underwriting – the bank guarantees the sale of the issue at an offering price and take the risk if the issue is undersubscribed.
    - Best effort – the bank acts only as broker.
  - **Private Placement** – sell securities directly to a small group of qualified investors.

  - firms can raise equity capital in its **initial public offering (IPO)**
  - firms can raise equity capital in a subsequent **seasoned equity offering**

MK Restaurant – Primary Market

Issuer: MK Restaurant Group Public Company Limited

Sector: Agro & Food Industry

Symbol: M

Registered: 905.85 million shares

Offered: 185.85 million shares

- 121.85 million to the general public
- 24 million for institutional investors
- 40 million to company's patron

Par Value: 1 Baht

IPO Price: 49 Baht

First Day Trading: 15 Aug 2013

Lead Underwriters: Asia Plus + Phatra + Bualuang

MK Restaurant – Secondary Market

Bloomberg

M:TB
MK Restaurants Group PCL

47.50 THB
-0.25 (-0.52%)
Close 10/28/13

+ Watchlist

Today	
High	48.00
Low	47.50
Volume	507.6k
Open	47.75
Prev Close	47.75

Summary	
52w High	55.50
52w Low	40.00
1y Rtn	-
P/E Ratio	11.50
Mkt Cap	43.03B

1d 5d YTD 1m 3m 6m 1y 5y 10y Comparisons Technicals

Financial Markets:
Secondary Markets

- **Secondary Market** – investors sell those securities to others. Fund flow between investors.
  - *A good secondary market is important to the efficiency of the primary market.*
  - **Call market** – trades arranged only when the market is called at a particular time and place.
  - **Continuous market** – trades can be arranged and executed anytime the market is open

  - **Quote/Price-driven** – **OTC markets** where customers trade at price quoted by dealers; mostly bonds and currencies: *NASDAQ*
  - **Order-driven** – **exchange markets** that match buy and sell orders; mostly stocks: *NYSE, SET*
  - **Brokered market** – brokers arrange (block) trades among client.

Financial Markets:
Secondary Markets

- Secondary markets provide liquidity to investors who purchased the securities initially sold in the primary markets.
  - Thus, secondary markets allow investors to sell the securities quickly.
  - Without an active secondary market: Investors will be reluctant to buy securities in the primary market.
- Secondary markets determine the prevailing market price of securities.
  - New issues in the primary market are based on the prices in the secondary market.

Financial Markets:
Secondary Markets

- **Automatic Order Matching (AOM) Trading** - after brokerage houses electronically send buy or sell orders from their offices to the SET mainframe computer, the system implements an order queuing process and arranges the orders according to a ***price-then-time priority***
- **Call Market Matching** is utilized in *calculating the opening and closing prices* of a security at the opening and closing of the trading hours. This method allows brokers to enter their orders to be queued for matching at a specified time at a single price that generates the greatest trading volumes for that particular stock.
  - *This method is used in small exchanges with only a few stocks and a few traders. Example: Fiji*
- **Continuous Order Matching** procedures operate during the regular trading sessions. The system continuously matches the first buy and sell orders in the queue, and at the same time, confirms each executed transaction via the broker's terminal.

Financial Markets:
Secondary Markets

South Pacific Stock Exchange

*Example of Call Market is the **South Pacific Stock Exchange (SPSE)** in **Fiji** where trading is paper-based, conducted by a "call market" on a physical trading floor **at 10:30am each weekday**.*

Each listed company name is called out and orders are submitted by brokers and dealers.

The market caller then matches orders on a price and time priority basis.

Compare Trading Volume

SPSE	=	*2*	*million shares per year*
SET	=	*4,515*	*million shares per **day***

Financial Markets:
Secondary Markets

THE STOCK EXCHANGE OF **THAILAND** (SET)
trading sessions

09:30 am — T1	T1 — 12:30 pm	02:00 pm — T2	T2 — 04:30 pm	04:30 pm — T3	T3 — 05:00 pm
Pre-Opening	Continuous TRADING	Pre-Opening	Continuous TRADING	Pre-Opening	TRADING at Last

T1 is the random opening time between 9:55 - 10:00 for calculating the opening price for the morning trading session.

T2 is the random opening time between 2:25 - 2:30 for calculating the opening price for the afternoon trading session. The trading system stops matching all orders at 4:30; however orders may still be sent for queuing until the market closes (T3).

T3 is the random closing time between 4:35 - 4:40 for calculating the closing price of each day. The trading system allows only Put Through (PT) transactions to be recorded.

Financial Markets:
Secondary Markets

Symbol	Vol_ex		Trade	Change	%Chg	%Buy	%Sell	Time
PTT9	10	=	343.00B	0.00	0.00			10:08

Vol	Bid	Offer	Vol				
				Open	343.00	Avg.	342.92
804	342.00	343.00	798	High	343.00	Volume	3156
1433	341.00	344.00	2038	Low	342.00	Avg5D	42434
2328	340.00	345.00	2593	Prev	343.00	Value	108227

Symbol	Vol_ex	Trade	Change	%Chg	%Buy	%Sell	Time
IVL9	50	52.50B	0.00	0.00			10:08

Vol	Bid	Offer	Vol				
				Open	52.75	Avg.	52.65
5987	52.50	52.75	7874	High	53.00	Volume	35076
4122	52.25	53.00	8403	Low	52.25	Avg5D	306081
4738	52.00	53.25	6973	Prev	52.50	Value	184691

Symbol	Vol_ex	Trade	Change	%Chg	%Buy	%Sell	Time
BBL9	2	163.50B	2.50	1.55			10:08

Vol	Bid	Offer	Vol				
				Open	162.50	Avg.	162.78
1559	163.00	163.50	478	High	163.50	Volume	14875
2168	162.50	164.00	5692	Low	162.00	Avg5D	55394
1344	162.00	164.50	1636	Prev	161.00	Value	242139

Financial Markets:
Secondary Markets

- Over-the-counter (OTC) market is where investors trade stocks not listed in any exchanges.
  - Unlike securities exchanges, the OTC market is not a formal organization with membership requirements or stock listing requirements.
  - Example is *NASDAQ* which is referred to an automatic electronic quotation system for the US OTC market.
- Third Market refers to shares listed on an exchange which are traded on the OTC market.
- Fourth Market refers to the direct trading of securities between two institutional investors without involvement of a broker intermediary. The main purpose is to avoid transaction fees charged by brokers.

Financial Markets:
Characteristics of a Well-functioning Market

- Timely and accurate information on the volume and price of past transactions and current outstanding bids and offers.
- Liquidity covers three aspects:
  - Marketability: The ability to buy or sell an asset quickly.
  - Price continuity: Prices do not change much between transactions, assuming no new information is available.
  - Depth: Numerous buyers and sellers are willing to trade at prices above or below the current price.
- Internal efficiency: minimal transaction cost
- Informational (or external) efficiency: Prices rapidly adjust to new information so that the prevailing market price reflects all available information about the asset.

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Positions

- **Long Positions** – investors own assets or contracts.
  - Benefit from price increase.
  - Potential gain is unlimited. Potential loss is 100% max.
- **Short Positions –** investors sell assets they do not own or write/sell contracts.
  - Benefit from price decrease.
  - Potential gain is 100% max. Potential loss is unlimited.
  - Hedgers short sell to reduce the risk of a long position in a related contract.

Margin Transactions

- **Margin transactions** involve buying stocks by borrowing part of the funds from the broker.
- **Initial Margin requirement** minimum proportion of total transaction value that must be paid in cash.
  - If the margin requirement is 40%, then the investor must put up at least 40% of the value in cash, and the broker may lend up to 60% of the value.
  - Leverage Ratio = Position Value/Equity Investment
  - Max leverage ratio = 100%/initial margin requirement; 100%/40% = 2.5 times.
- **Maintenance margin** is the required proportion of an investor's equity that must be available in the account after executing a short sale or buying stock on margin.

$$\text{Margin Call Stock Price} = \frac{\text{(Purchase Price) (1 – Initial Margin\%)}}{\text{1 – Maintenance Margin\%}}$$

Margin Transactions

Buy stock with an initial margin of 50%.

- Assume Tim acquires 100 shares of a $10 stock at a total cost of $1,000.
- With an initial margin of 50%, Tim can borrow $500.
- Thus, his initial equity is $500 (1,000–500).

If the stock price rises, the owners equity rises.

- If the stock price rises to $12 in 1 year, the total market value of Tim's position is $1,200.
- His equity is now $700 (1,200 – 500) or 58% (700/1,200)
- His total return = (700 – 500)/500 = +40%

If the stock price declines, the owners equity drops.

- If the stock price drops to $8 in 1 year, the total market value of Tim's position is $800.
- His equity is now $300 (800 – 500) or 37.5% (300/800)
- His total return = (300 – 500)/500 = -40%

Margin Transactions

- The stock price at which the investor would receive a margin call is determined as follows:
  - If the investor buys stock:

$$\text{Margin Call Stock Price} = \frac{\text{(Purchase Price) (1 – Initial Margin\%)}}{\text{1 – Maintenance Margin\%}}$$

  - Example: Tim buys a stock at $10. The initial margin is 50% and the maintenance margin is 25%. Thus, Tim shall expect a margin call *when price drops below*:

$$\textit{Margin Call Stock Price} = \frac{(\$10)\,(1 - .5)}{1 - .25} = \$6.67$$

Debt = $5 (75%)

Equity = $1.67 (25%)

For example, if price drops to $6, investor must pay cash of $0.67 per share to bring his equity level back to 25%

Types of Order

- **Market orders**: buy or sell a stock at the current price.
- **Limit orders:** buy or sell a stock at the specified price (or best price available).
- **Stop orders:**
  - A stop loss order specifies the price at which the stock must be sold if the price drops to this level.
  - A stop buy order specifies the price at which the stock must be bought to cover the investor's short position if the price rises to this level.
- **Short sale:**
  - Borrows the stock from another investor through a broker
  - Posts margin with the broker.
  - Sells the stock in the market.
  - Purchases the stock back, at a lower price and books a profit.
  - The seller then returns the stock to the lender.

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Security Market Indices

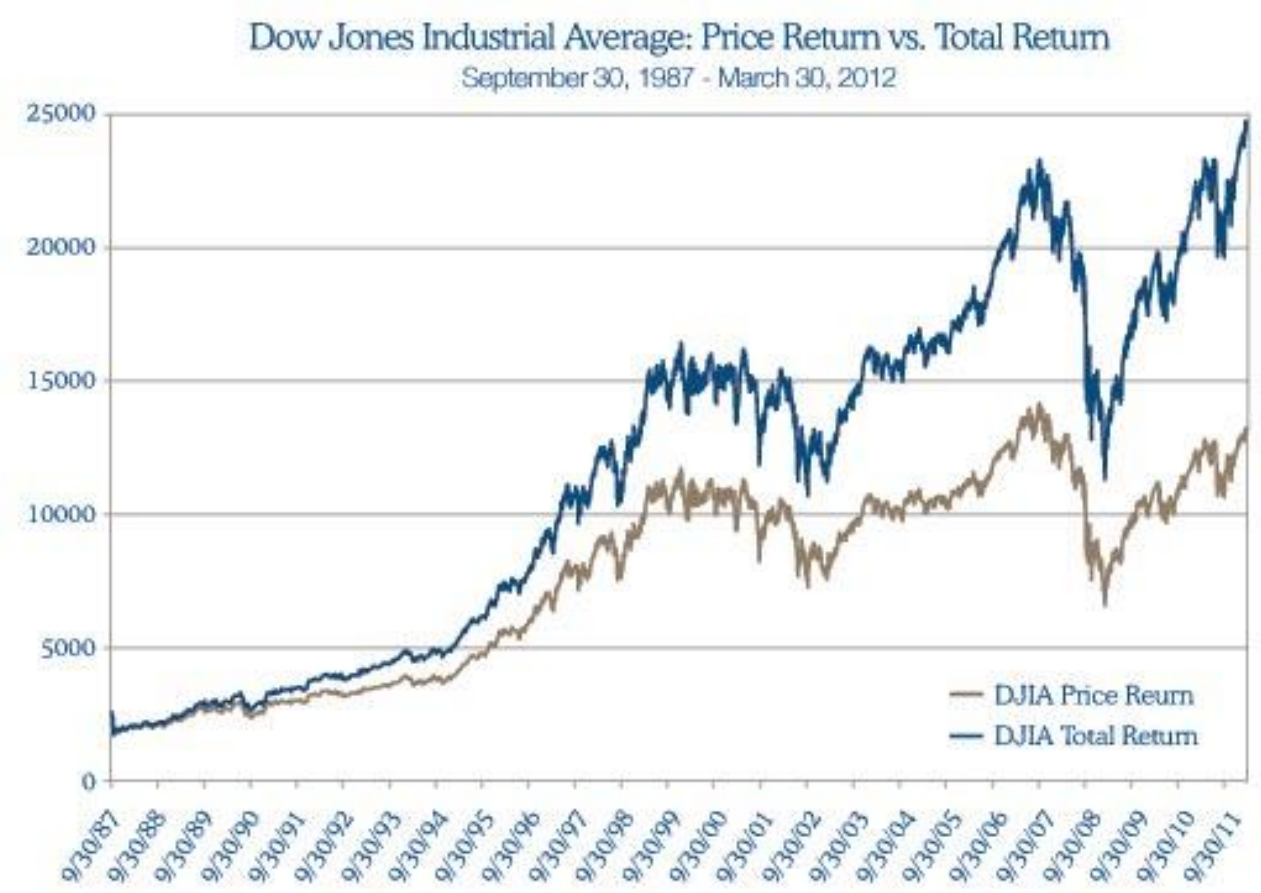
- **Security Market Indices** – are intended to measure the values of different target markets (security markets, market segments, or asset classes)
  - *DJIA measures values of 30 US blue-chip stocks*
- **Purposes of Indices**
  - Gauges of market sentiment
  - Proxies for measuring and modeling returns, beta, and risk-adjusted performance.
  - Proxies for asset classes in asset allocation models
  - Benchmark for actively managed portfolios
  - Model portfolios for investment products such as index funds and ETFs
- **Return Calculations**
  - **Price Return –** reflects only the prices
  - **Total Return –** reflects prices + reinvestment income

- **Rebalancing** – periodic adjustment of weights of constituent securities in the index to maintain consistency, esp. for equal-weighting method.
- **Reconstitution** – periodic change of the constituent securities in the index. Based on selection criteria, some securities will be retained, removed, or added.

Security Market Indices

Return Calculations

- **Price Return –** reflects only the prices
- **Total Return –** reflects prices + reinvestment income



Security Market Indices

- **Price Weighing :** the weight on each constituent security is determined by dividing its price by the sum of all the prices.
  - *Dow Jones Industrial Average (DJIA), Nikkei 225*
- **Value (or Market Cap) Weighting :** the weight on each constituent security is determined by dividing its market capitalization by the total market capitalization of all the securities in the index.
  - *S&P 500, FTSE 100, DAX, Hang Seng Index, SET Index*
- **Equal Weighting** : assign an equal weight to each constituent security at inception and weight constituents equally at each (quarterly) rebalance
  - *MSCI Equal Weighted Indices*
- **Fundamental Weighting** – weighted by other measures (book value, earnings, etc.) that are independent of security price.
  - *Russell Fundamental Global Index*
- **Float-adjusted** – exclude shares held by controlling shareholders.

Computing Price-Weighted, Value-Weighted, and Equal-weighted Indices for Three Stocks

- Information about three stocks is as follows:

Stock	30/12/2009 (The Base Period)			30/12/2010		
	Price ($) (1)	# of Shares (2)	Market Value (3) = (1)×(2)	Price ($) (1)	# of Shares (2)	Market Value (3) = (1)×(2)
A	10	10,000	100,000	20	10,000	200,000
B	100	100	10,000	1	100	100
C	2	20,000	40,000	30	20,000	600,000
Total	**112**	**30,100**	**150,000**	**51**	**30,100**	**800,100**

Computing Price-Weighted, Value-Weighted, and Equal-weighted Indices for Three Stocks

- **Price-weighted index:**

$$\text{Price}-\text{weighted}_{09} = \frac{10+100+2}{3} = 37.33$$

$$\text{Price}-\text{weighted}_{10} = \frac{20+1+30}{3} = 17$$

$$Index_{09} = 100$$

$$Index_{10} = \frac{100}{37.33} x17 = 45.54$$

$$\text{Index Return} = \frac{45.54-100}{100} x100 = -54.46\%$$

Computing Price-Weighted, Value-Weighted, and Equal-weighted Indices for Three Stocks

- **Value-weighted index,** assuming the base value is 100:
  - **As of 30/12/2009:**
    - Market Value = 150,000
  - **As of 30/12/2010:**
    - Market Value = 800,100

$$Index_{09} = 100$$

$$Index_{10} = \frac{100}{150{,}000} x 800{,}100 = 533.4$$

$$\text{Index Return} = \frac{533.4 - 100}{100} x 100 = 433.4\%$$

Computing Price-Weighted, Value-Weighted, and Equal-weighted Indices for Three Stocks

- **Equal-weighted index**, assuming the base value is 100:
  - Assuming on 30/12/2009 an equal amounts of $100 were invested in each of the stocks A, B and C.
  - Thus, the information about the investment is as follows:

Stock	30/12/2009 (The Base Period)			30/12/2010			Holding Period Return (7) = (4)/(1) -1
	Price ($) (1)	# of Shares (2)	Market Value (3) = (1)×(2)	Price ($) (4)	# of Shares (5)	Market Value (6) = (4)×(5)	
A	10	10	100	20	10	200	100%
B	100	1	100	1	1	1	-99%
C	2	50	100	30	50	1,500	1400%

Computing Price-Weighted, Value-Weighted, and Equal-weighted Indices for Three Stocks

Equal - weighted index, using **Arithmetic Mean**:

- **As of 30/12/2009:**
  - Market Value = 300
- **As of 30/12/2010:**
  - Market Value = 1,701

$$Index_{09} = 100$$

$$Index_{10} = \frac{100}{300} x 1{,}701 = 567$$

$$\text{Index Return} = \frac{567 - 100}{100} x 100 = 467\%$$

$$= \frac{100\% + (-99\%) + 1{,}400\%}{3} = 467\%$$

Computing Price-Weighted, Value-Weighted, and Equal-weighted Indices for Three Stocks

- **The rate of returns measured by the three predominant weighting schemes are summarized below:**

	Priced-weighted	Value-weighted	Equal-weighted
Return	-54.46%	+433.4%	+467%

The Case of Stock Split

- Suppose Stock C has **2-for-1 split** in 2010

Stock	30/12/2009 (The Base Period)			30/12/2010		
	Price ($) (1)	# of Shares (2)	Market Value (3) = (1)×(2)	Price ($) (1)	# of Shares (2)	Market Value (3) = (1)×(2)
A	10	10,000	100,000	20	10,000	200,000
B	100	100	10,000	1	100	100
C	2	20,000	40,000	**15**	**40,000**	600,000
Total	**112**	**30,100**	**150,000**	**51**	**30,100**	**800,100**

The Case of Stock Split

- **Price-weighted index:**

$$\text{Price}-\text{weighted}_{09} = \frac{10+100+2}{3} = 37.33$$

$$\text{Price}-\text{weighted}_{10} = \frac{20+1+30}{3} = 17$$

$$\text{Price}-\text{weighted}_{split} = \frac{20+1+15}{x} = 17$$

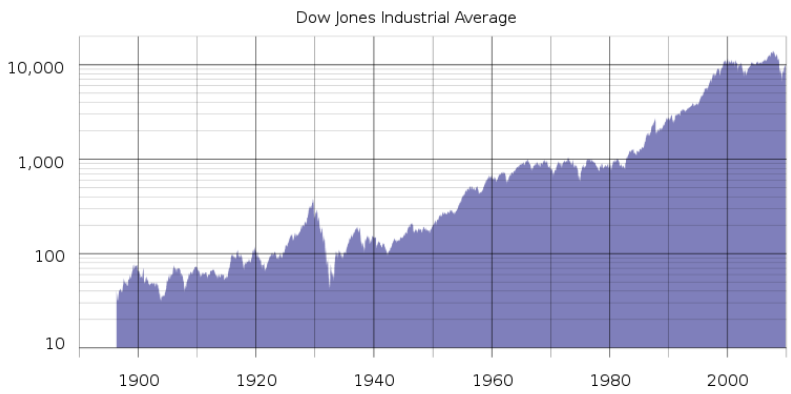
$$x = 2.18$$

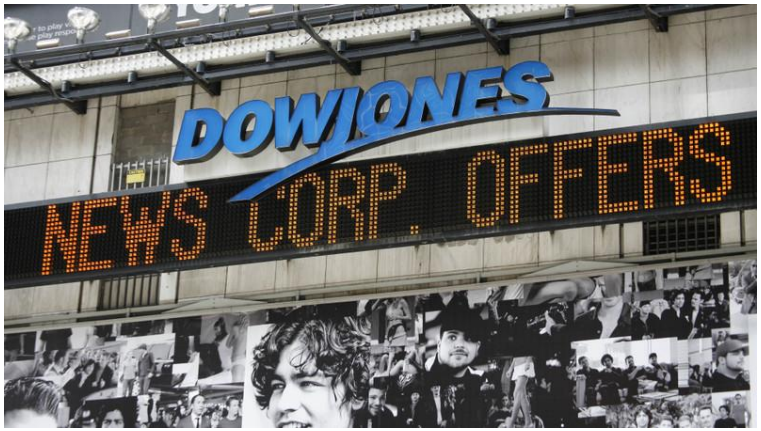
The divisor must be adjusted after a stock split

$$Index_{09} = 100$$

$$Index_{10} = \frac{100}{37.33} x17 = 45.54$$

Dow Jones Industrial Average (DJIA)





- The Dow Jones Industrial Average was founded by Charles Dow in 1896, and represented the dollar average of 12 stocks from leading American industries. The components were increased to 30 stocks in 1928.
- Today, DJIA is a **price-weighted index** that is calculated by dividing the sum of the prices of the 30 component by a number called the DJIA Divisor. The index divisor is updated periodically and adjusted to offset the effect of stock splits. The current value of **the Dow Divisor** is **0.130216081**.

Three Dominant Weighting Schemes

- **Price Weighting**
  - Pro: simple calculation
  - Con: high-priced stocks have greater impact
  - Con: the **divisor** must be adjusted when a stock splits.
- **Value Weighting**
  - Pro: securities are held in proportion to their value.
  - Con: securities whose prices have risen have a greater weight in the index, and also greater impact
- **Equal Weighting**
  - Pro: simple calculation
  - Con: large securities are underrepresented and small securities are overrepresented
  - Con: need frequent **rebalancing** to maintain equal weights

Types of Indices

Equity Indices

- **Broad Market Indices**
  - *Russell 3000 (rep 98% of US equity market)*
  - *SET Index*
- **Multi-Market Indices**
  - *MSCI World Index (23 developed countries)*
  - *MSCI All Country Index (23 developed and 22 EMs)*
  - *MSCI EAFE (21 developed countries exc. US + Canada)*
- **Sector Indices**
  - *DJ Transportation, DJ Utility*
- **Style Indices**
  - *Russell 3000 Growth (P/BV = 4.09, EPS Growth = +11.48%)*
  - *Russell 3000 Value (P/BV = 1.52, EPS Growth = -0.44%)*

Compare Stock Indices

	DJIA	S&P500	Russell 3000	MSCI World
Inception	1896	1923	N.A.	1969
Represent	30 large-cap common stocks of the US market	500 large-cap common stocks of the US market	3,000 stocks (98% of the investible US market)	Stocks in 23 developed countries
Number of securities	30	500	3,000	>6,000
Weighting	Price-weighted	Value-weighted	Value-weighted	Value-weighted