



**BUSINESS**

*Finance For Non-Finance*

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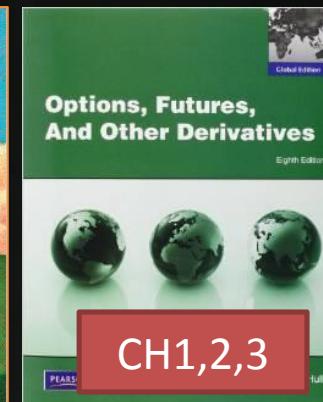
# Module 2

## Introduction to Equity Markets

- What is the characteristic of stock?
- Firm Valuation and Stock Valuation
- What is Risk and Return, Cost of Equity, Beta?
- Related **equity derivatives**
- <https://db.tt/DfOjAdBc>



CH1,6,7



CH1,2,3





...On Today's Menu...

## Module 2: Introduction to Equity Markets

- What is the characteristic of stock?
- Firm Valuation and Stock Valuation
- What is Risk and Return, Cost of Equity, **Beta**?
- Related **equity derivatives – Put/Call Option, SET Index Future, Gold/Silver Future**

**In Sum:** This module will explain the concept of basic calculation regards valuation, pricing and modeling



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Concept Checks!  
Answer

**What are the channels that fund transfer from **savers** to **borrowers**?**

- Direct, Indirect via IB, Indirect via FI

**What is **Capital** and What is **Cost of Capital**?**

- Capital=Money, Cost of capital=The interest payment

**What is **short term** investment and **long term** investment?**

- Short Term<1Y, Long Term>1Y

**Does issue firm gain additional cash flows from secondary market?**

- No

**Stock investor is the first claimant, true or false?**

- false





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Concept Checks!  
Answer

Put these keywords in the boxes!

Call Option

Cost Of Capital

Put Option



**Debt**

coupon

default

commercial

paper

**Principal**

หุนកู้

debenture

Maturity

first claim

หุนสามัญ

**Equity**

capital gains

dividend

หุนบุริมสิทธิ์

voting rights

PE

**Beta**

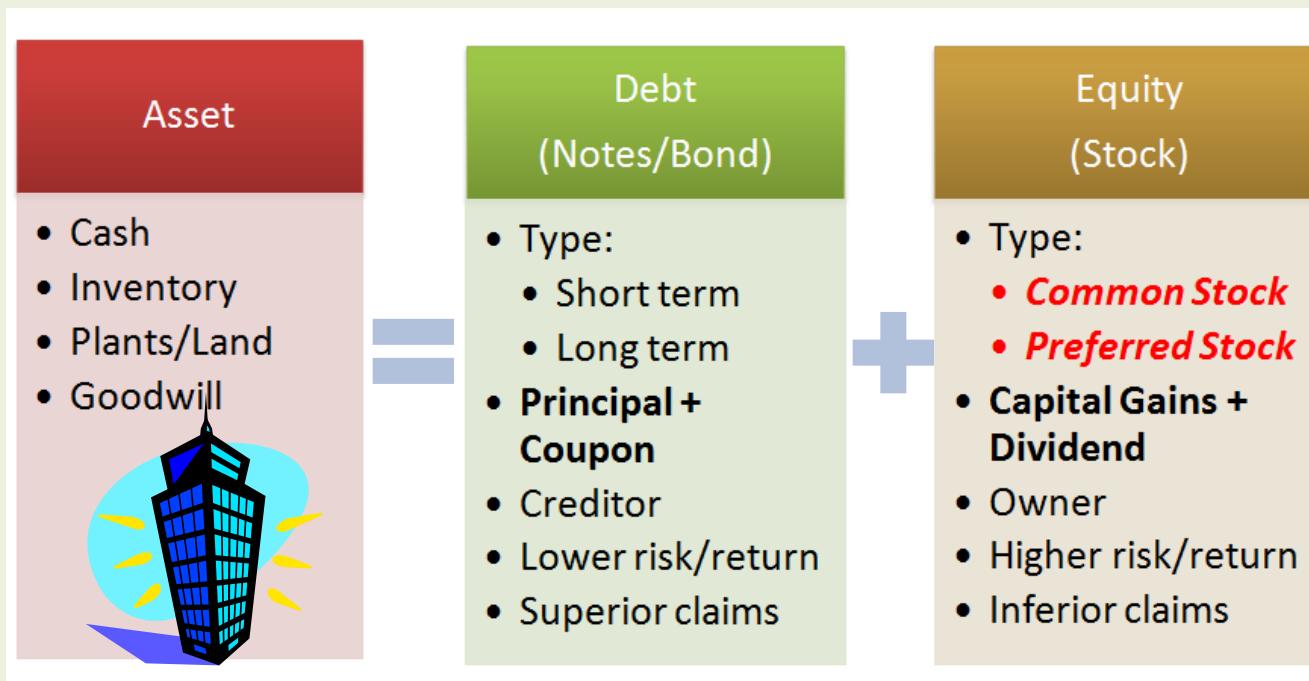
last claim



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..Recall That..

## The Balance Sheet





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...The Corporate Life Cycle..

1

- Starting up as a proprietorship
- **One owner**

2

- More than one owner
- **Partnerships**

3

- Many owners
- **A corporation**



1

- Starting up as A proprietorship
- **One owner**

### Advantage

- Easiest to start
- Least regulated
- Single owner keeps all the profits
- Owner has full control
- Taxed once as personal income

### Disadvantage

- Limited to life of owner
- **Equity capital limited to owner's personal wealth**
- **Unlimited liability**
- Difficult to sell ownership interest



2

- More than one owner
- **Partnerships**

## Advantage

- Two or more owners
- More capital available
- Relatively easy to start
- Income taxed once as personal income

## Disadvantage

- **Unlimited liability**
  - general vs. limited partners
- Partnership dissolves when one partner dies or wishes to sell
- Difficult to transfer ownership



3

- Many owners
- **A corporation**



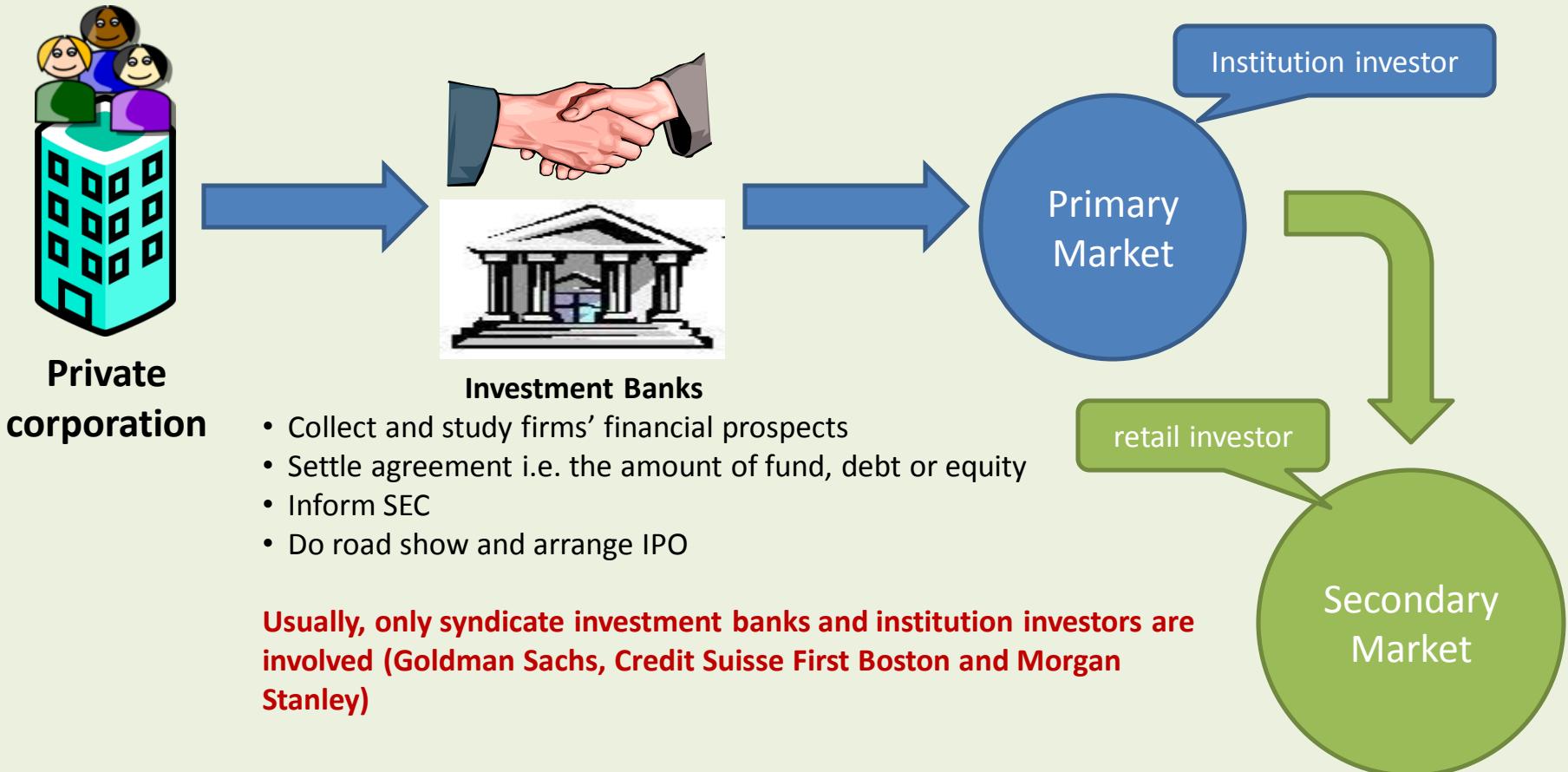
Private  
corporation

## Advantage

- **Limited liability**
- **Unlimited life**
- **Separation of ownership and management**
- Transfer of ownership is easy
- Easier to raise capital

## Disadvantage

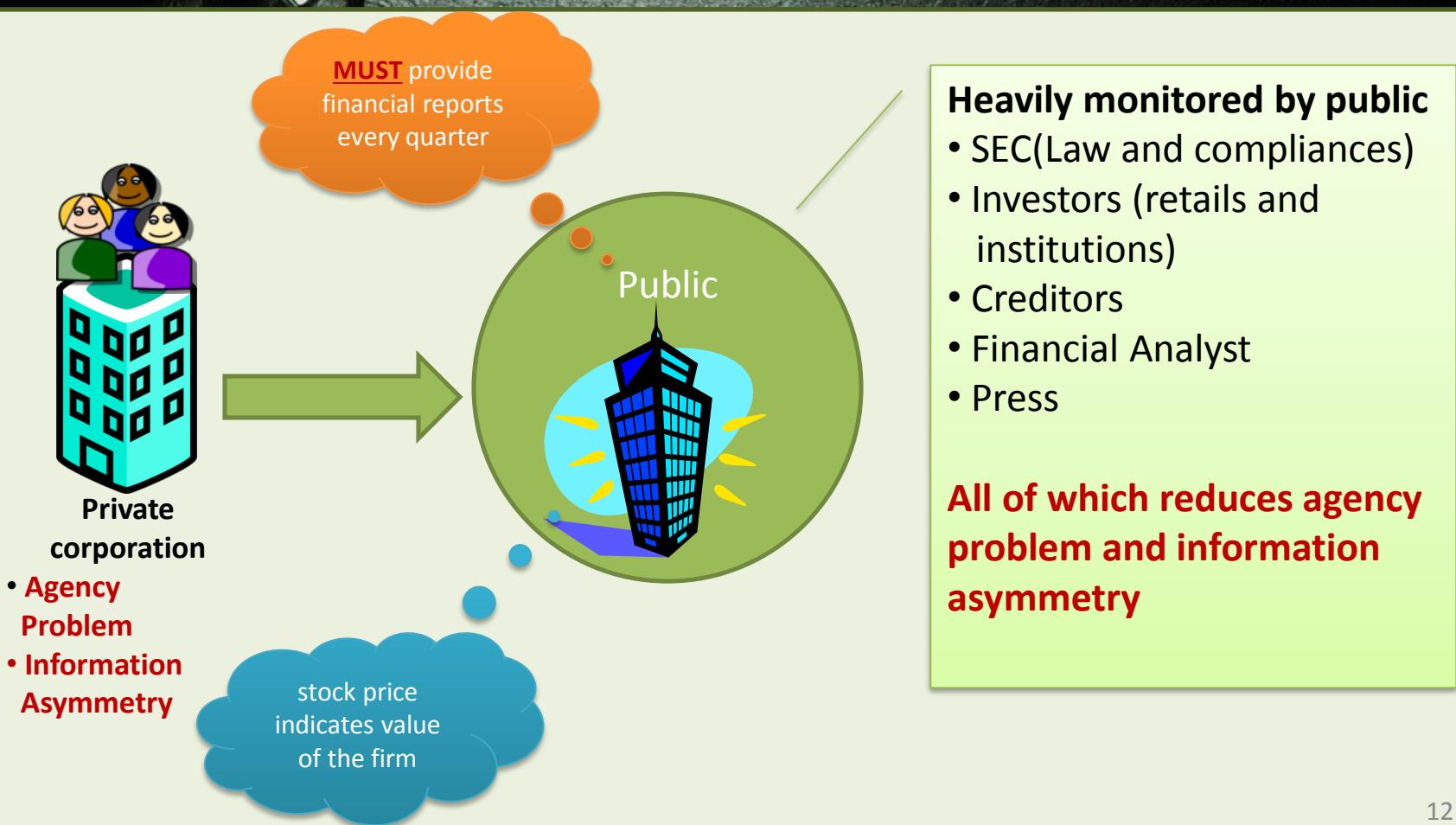
- Separation of ownership and management's **Problem**
  - **Agency Problem**
  - **Information Asymmetry Problem**
- **Double taxation** (income taxed at the **corporate rate** and then dividends taxed at the **personal rate**)





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## Besides accessing to more capital Why go public?





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## Discussion

### Why different stock trade at different price?



A share certificate for 50 shares in Reuter's Telegram Company issued in 1905

### Why stock price changes every day?



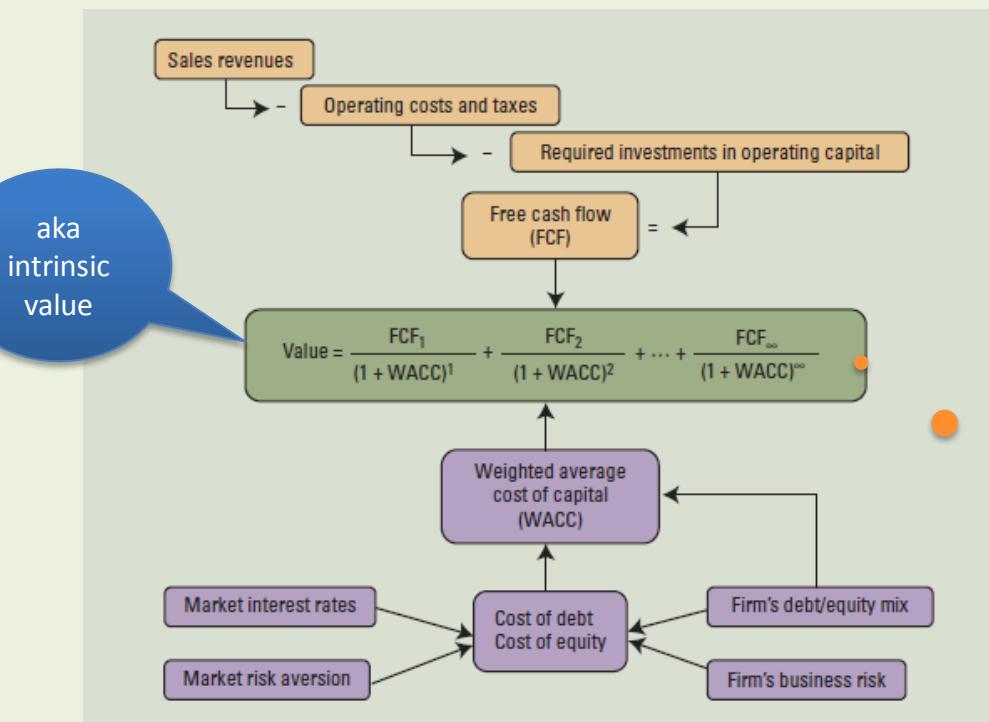
Share Number 1 for £1 in The Eastern News Agency Ltd founded by Reuters in 1910

### What calculation can be done with stock prices?



## How do we evaluate a firm value?

A firm value = Net Discounted Future Cashflows



**Question.** Firm A is a 100% equity-firm. Current total equity value is 1M USD. If the firm has 50,000 #of share. What is the **fundamental price** per share of Firm A ?

**Ans.=**

Guess what  
make value  
goes up and  
down?

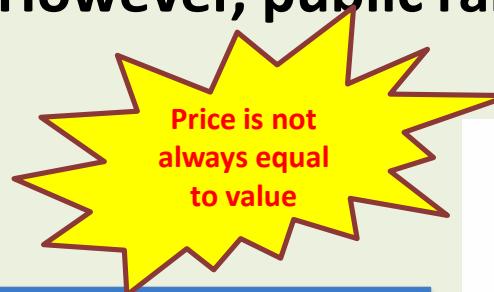


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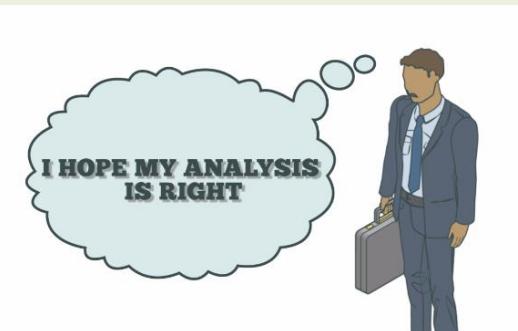
## Market Price vs. Fundamental Price

The market price is the stock price that we observe in the financial markets. The fundamental price is the price that reflects *all relevant information* of the firm.

If the public have all relevant information *then market price is fundamental price*. However, public rarely have all relevant information.



Intrinsic value calculation involve detailed analysis of **company assets** and **future earning**





## Market Price vs. Fundamental Price

If the market price is **OVERPRICED**, strategy = **SELL**

if the market price is **UNDERPRICED**, strategy = **BUY**



**Question.** Can I use the average of historical price as a proxy of intrinsic value?

**Question.** What other factors that may drive the price to be **WAY TOO** overpriced and underpriced



## Recall Limit Order Book

- People who want to **SELL**, will submit **SELL ORDER**
- **SELL ORDER** will be aggregated here



Ask Price	Amount
2.50	63,000
2.10	83,000
2.05	55,000
2.04	15,000

216,000

- People who want to **BUY**, will submit **BUY ORDER**
- **BUY ORDER** will be aggregated here



Bid Price	Amount
2.03	63,000
2.00	15,000
1.80	12,000
1.50	5,000

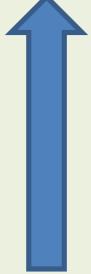
95,000



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## When Large Buy Order Come In

If an investor is **IMPATIENT**, he wants to buy **200,000** as fast as he can, he may instruct his broker to **“walk up the book”**



Ask Price	Amount
2.50	16,000
-	-
-	-
-	-

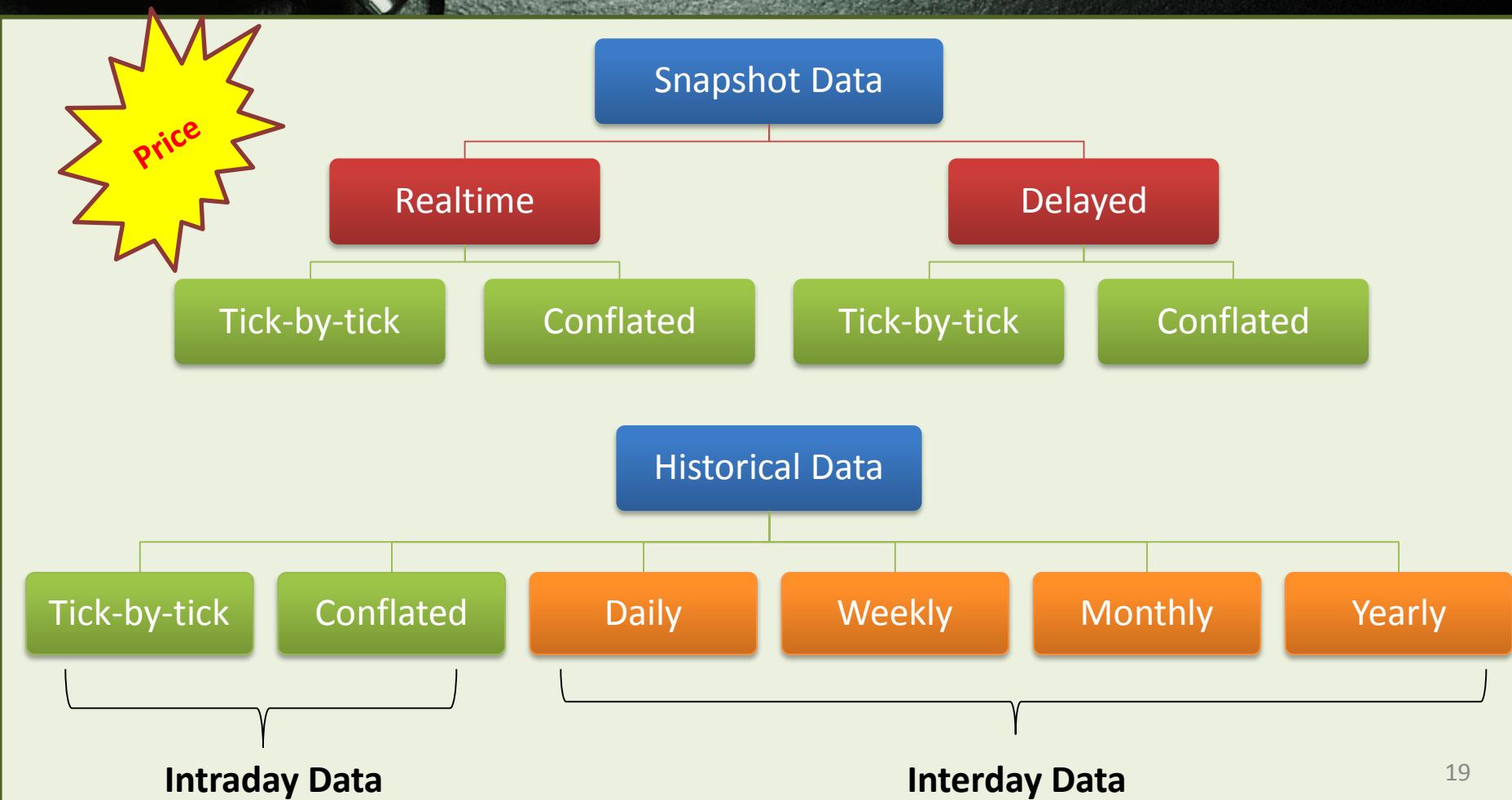


even if your price is fundamentally correct, market may still move against you

Tick-by-Tick Data



## Market Data





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So many prices

## PTT : PTT PUBLIC COMPANY LIMITED

Date	Open	High	Low	Close	Change	%Change	Total Volume (Shares)	Total Value ('000 Baht)
04/09/2015	263.00	266.00	260.00	260.00	-4.00	-1.52	5,629,862	1,476,884.15
03/09/2015	267.00	268.00	264.00	264.00	-2.00	-0.75	3,540,674	939,719.91
02/09/2015	262.00	267.00	260.00	266.00	+2.00	+0.76	7,133,786	1,881,556.03
01/09/2015	271.00	275.00	264.00	264.00	-4.00	-1.49	10,898,452	2,939,476.24
31/08/2015	271.00	272.00	265.00	268.00	-1.00	-0.37	8,687,803	2,332,172.10
28/08/2015	271.00	273.00	265.00	269.00	+10.00	+3.86	15,918,118	4,289,718.64
27/08/2015	255.00	261.00	254.00	259.00	+10.00	+4.02	11,384,016	2,938,128.43
26/08/2015	248.00	255.00	248.00	249.00	-3.00	-1.19	10,504,385	2,641,147.69



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So many indices

## Stock Indices





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## Thailand Stock Markets

**Organized Exchange: SET and MAI  
Under SEC Monitoring  
Market Index**

$$Index = \frac{CurrentMarketValue}{BaseMarketValue} \times 100$$

**SET Founded: April 30, 1975**  
**MAI Founded: September 2, 2002**





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What Calculation can we do with prices?  
Exercise 1 – Rate of Return

## Rate of Return Calculation

- Simple Return

$$R = \frac{P_1 - P_0}{P_0}$$

- Continuous Return

$$R = \ln\left(\frac{P_1}{P_0}\right)$$



Remark 1 : In financial Industry, the quoted rate is **ALWAYS** in X% per annum

Remark 2 : If you use daily, weekly, monthly data, you must also annualize it to 1 year



## Let's check our assumptions

- Daily vs monthly?
- Which formula to used?
- The number of sample point?
- Which time period?
- Do you also include 2008?



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## What Calculation can we do with Returns? Exercise 2 – Risk & Beta

### Calculating Risk

- Stand Deviation(R)



### Calculate Required Rate of Return

- Capital Asset Pricing Model(CAPM) – Beta



$$R_i = R_f + \beta_i (R_m - R_f)$$

- Where Beta is the sensitivity measures between stock and market.
  - Beta=Slope(Y=Stock Return, X=Market Return)



## Exercise 2 – Risk & Beta Wrap-ups

### Let's check our assumptions

- Daily vs monthly?
- Raw Return or Excess Return?
  - In the exercise, we assume that riskfree rate in everyday is a constant
  - If riskfree changes substantially, using excess return to calculate Beta will be more appropriate
    - $\text{Beta} = \text{Slope}(Y = [\text{Stock Return} - R_f], X = [\text{Market Return} - R_f])$
- Which Riskfree rate?



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So many riskfree rates

## U.S Department of Treasury

Select type of Interest Rate Data  
 Go

Select Time Period  
 Go

Date	1 Mo	3 Mo	6 Mo	1 Yr	2 Yr	3 Yr	5 Yr	7 Yr	10 Yr	20 Yr	30 Yr
01/02/15	0.02	0.02	0.11	0.25	0.66	1.07	1.61	1.92	2.12	2.41	2.69
01/05/15	0.02	0.03	0.10	0.26	0.68	1.06	1.57	1.85	2.04	2.32	2.60
01/06/15	0.02	0.03	0.10	0.25	0.65	1.02	1.50	1.78	1.97	2.25	2.52
01/07/15	0.02	0.03	0.09	0.25	0.62	1.00	1.47	1.76	1.96	2.25	2.52
01/08/15	0.01	0.03	0.08	0.23	0.62	1.00	1.50	1.81	2.03	2.33	2.59
01/09/15	0.02	0.02	0.08	0.22	0.59	0.96	1.45	1.75	1.98	2.29	2.55
01/12/15	0.02	0.03	0.09	0.19	0.56	0.91	1.39	1.69	1.92	2.23	2.49
01/13/15	0.02	0.03	0.08	0.20	0.54	0.88	1.37	1.67	1.91	2.24	2.49
01/14/15	0.02	0.04	0.09	0.18	0.51	0.83	1.33	1.62	1.86	2.20	2.47
01/15/15	0.03	0.03	0.08	0.16	0.44	0.75	1.22	1.53	1.77	2.12	2.40
01/16/15	0.02	0.03	0.07	0.17	0.49	0.80	1.29	1.60	1.83	2.17	2.44
01/20/15	0.01	0.03	0.08	0.17	0.53	0.85	1.31	1.61	1.82	2.15	2.39
01/21/15	0.01	0.03	0.08	0.17	0.53	0.87	1.35	1.66	1.87	2.20	2.44



## The Bloomberg adjustment

**Adjusted beta = (Raw Beta) \* 0.67 + 1.0 \*0.33**

- Why adjust betas towards one?
- Studies indicate that, over time, there is a tendency on the part of betas of all companies to move towards one.
- Intuitively, this should not be surprising. Firms that survive in the market tend to increase in size over time, become more diversified and have more assets in place



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## Other Stock Valuation(CH7)

### Expected Dividend Model

Value of stock =  $\hat{P}_0$  = PV of expected future dividends

$$\begin{aligned} &= \frac{D_1}{(1 + r_s)^1} + \frac{D_2}{(1 + r_s)^2} + \dots + \frac{D_\infty}{(1 + r_s)^\infty} \\ &= \sum_{t=1}^{\infty} \frac{D_t}{(1 + r_s)^t} \end{aligned}$$

(7-1)

cost of  
equity

### Constant Growth Model

$$\hat{P}_0 = \frac{D_0(1 + g)^1}{(1 + r_s)^1} + \frac{D_0(1 + g)^2}{(1 + r_s)^2} + \dots + \frac{D_0(1 + g)^\infty}{(1 + r_s)^\infty}$$

$$= D_0 \sum_{t=1}^{\infty} \frac{(1 + g)^t}{(1 + r_s)^t}$$

(7-2)

$$= \frac{D_0(1 + g)}{r_s - g} = \frac{D_1}{r_s - g}$$



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## Other Type of Stock Investing

### Mutual Fund

- <http://www.investopedia.com/terms/m/mutualfund.asp>
- Unit of Fund
- NAV

### ETF

- <http://www.investopedia.com/terms/e/etf.asp>
- Similar with Mutual Fund but you can redeem for real stocks



## Financial Ratios

Ratio	Formula	Definition
<b>Market Ratio</b>		
Earning Per Share	Net Income/Equities	How much profit per a unit of share
Price Earning Ratio	Market Price per share/Earning per share	How much markets pay for a unit of earning
Payout Ratio	Dividend per share/Earning per share	How much dividend is paid out comparing with company earning
<b>Profitability Ratio</b>		
Gross Profit Margin	(Sales-COGS)/Sales	How profitable of a company sales
Return on Equity	Net Income/Equities	How much profit a company generates with the shareholder's money
Return on Asset	Net Income/Total Assets	How much profit a company generates with the total resources of the company
<b>Leverage Ratio</b>		
Debt Ratio	Total Liabilities/Total Assets	How much debts compare to total company assets
Debt-to-Equity Ratio	Total Liabilities/Total Equities	How much debts compare to total equities



## Financial Ratios

Ratio	Formula	Definition
<b>Liquidity Ratio</b>		
Current Ratio	Current Assets/Current Liabilities	How much assets over short-term liabilities
Quick Ratio	(Current Asset-Inventory)/ Current Liabilities	How much highly liquid assets over short-term liabilities
Cash Ratio	(Cash + Marketable Securities)/ Current Liabilities	How much liquid assets over short-term liabilities
<b>Efficiency Ratio</b>		
Asset Turnover	Sales/Assets	How efficient a company generates sales from its assets
Inventory Turnover	Sales/Inventories	How many times a company's inventory is sold and re-produced
Receivable Turnover	Net Credit Sales/Avg.Account Receivables	How good a company collects its debts

# Equity Derivatives – The Basic

- Forward & Future
- Option



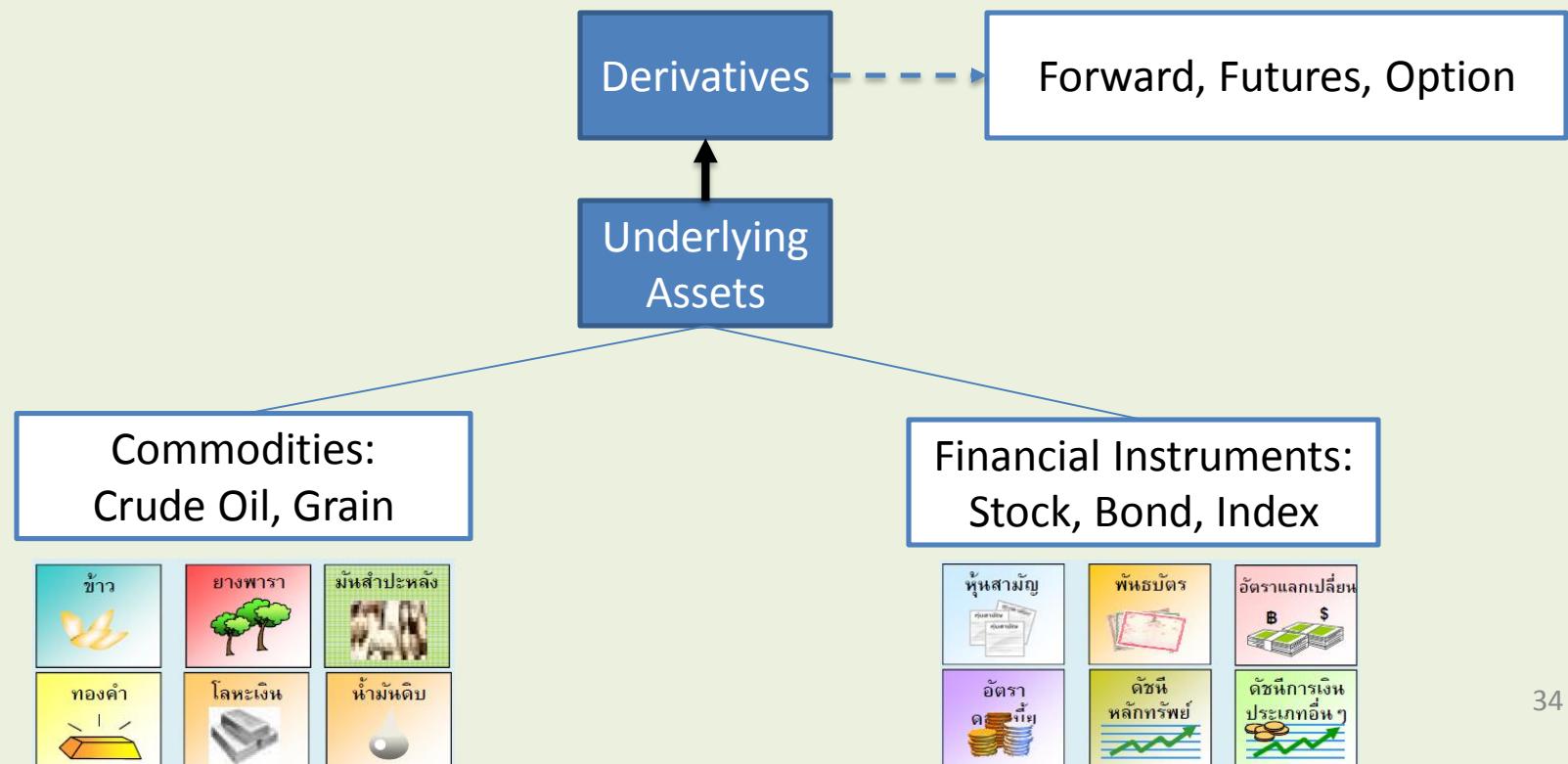
*This module does not cover pricing*



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## What is Derivatives?

**Derivative, by itself, has no value. Derivative derives value from Underlying Asset**





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## Derivative Markets in Thailand

Thailand Future Exchange(**TFEX**) and Agricultural Future Exchange of Thailand(**AFET**)





## Derivative Characteristic

**1. Derivative is a contract between buyer and seller. The value of the contract depends on underlying asset, size, agreed price**

- If underlying price changes, derivative price changes!!

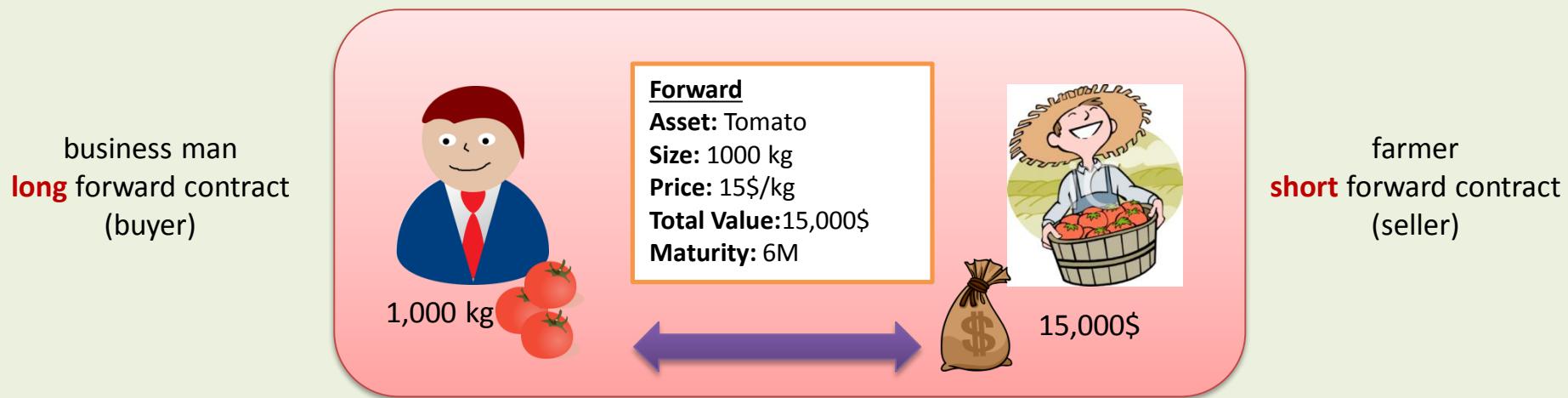
**2. Both party enter into a contract today, and make a settlement in the future**

- **Physical settlement or cash settlement**



## Example of Forward Contract

A business man concerns that **tomato price will increase**. He then try to find a farmer to enter a **forward contract** with



- 6M later, both party make a **physical settlement**.  
15,000\$ for 1000kg of tomato
- If the **spot price** of the tomato on the settlement date is 20\$/kg, if he decided to sell 1000kg of tomatoes to the **spot market**, he will effectively gain  $(20\$ - 15\$) \times 1000 = 5,000\$$



## Forward and Future

- Contract between two parties
- Agreement to BUY (**Long Position**) or to SELL (**Short Position**) an underlying asset.
- Specified time in the future (**Delivery Date or Maturity**)
- Specified price (**Delivery Price**)
- Futures are exchange traded (standardised).
- Forwards are not exchange traded.  
Often created between financial institutions.



What is the motivation to BUY(take long position)  
What is the motivation to SELL(take short position)



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## Simple Example of Investing in Derivatives

**Suppose you have 500,000 baht. you have a strong feeling that the market would GO UP, here is what you can do**

- Invest 500,000 in **index fund**.
- Invest 500,000 in **index futures**.

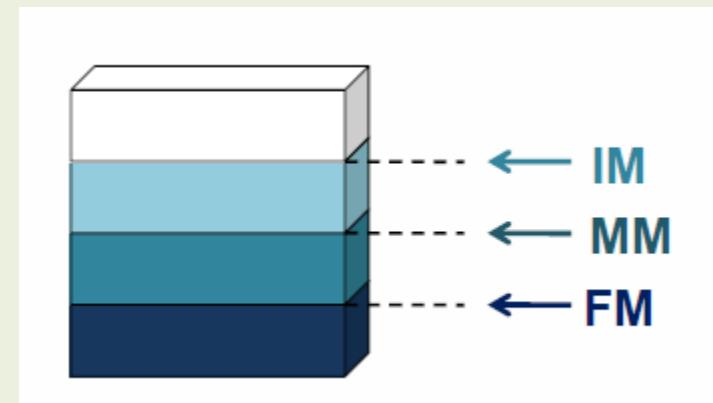


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## Simple Example of Investing in Derivatives

### Here are some rules

- First, you need to have a margin account with **initial margin**.
  - If the money hits **maintenance margin**, you must deposit more money
  - If the money hits **force close margin**, you done!
- Whatever you **gain(or lose)** will be **added/deducted** to/from the account at the end of the day





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## Simple Example of Investing in Derivatives

### Let The Game Begins..

- The current index = 500
- The total value of Index Future is [INDEX \* 1000]  
→  $500 \times 1000 = 500,000!!$ 
  - However, you need to deposit only 10% of the contract value.  
That is 50,000 baht per 1 contract
- **Today, Long 1 contract of Index Future @ 500**

Here is how you gain(or lose)

500

Payoff= (Spot Index – Contract Index) x 1000 x #contract

???



## Simple Example of Investing in Derivatives

### The Game Continues..

- Next Day, the index increases to 505, you effectively gain

$$\text{Gain} = (505 - 500) \times 1000 \times 1 = 5,000$$

- At the end of day, Margin Account =  $50,000 + 5000 = 55,000$
- You effectively gain  $5,000/50,000 = 10\%$  over a night

### The Game Ends when...

- The futures contract expires, or
- You opt out of the contract by taking **short position**.



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## Simple Example of Investing in Derivatives

Suppose you have 500,000 baht. you have a strong feeling that the market would **GO UP**, here is what you can do

invest 500,000 in index fund	invest 500,000 in 10 futures contract
initial investment= 500,000	initial investment=500,000
if index go up to 505, you gain $\frac{505,000}{500,000} = 1\%$	if index go up to 505, you gain $\frac{(505-500)x1000x10}{500,000} = \frac{50,000}{500,000} = 10\%$ 

**Wait, what if, the index goes down to 490, or, 470?**



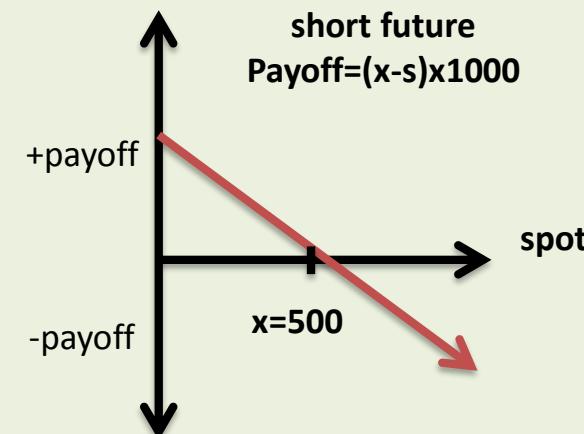
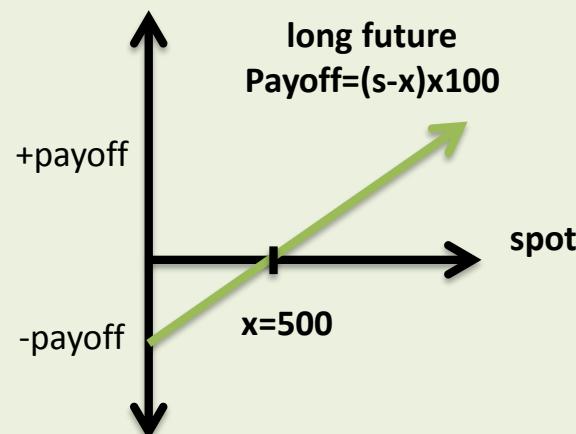
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## Futures Investment Summary

On the contrary, if you have a strong feeling that the index would **GO DOWN**, you can take a short position

$$\text{Payoff} = (\text{Contract Index} - \text{Spot Index}) \times 1000 \times \# \text{contract}$$

### Investment Strategies (Long futures vs. Short) futures

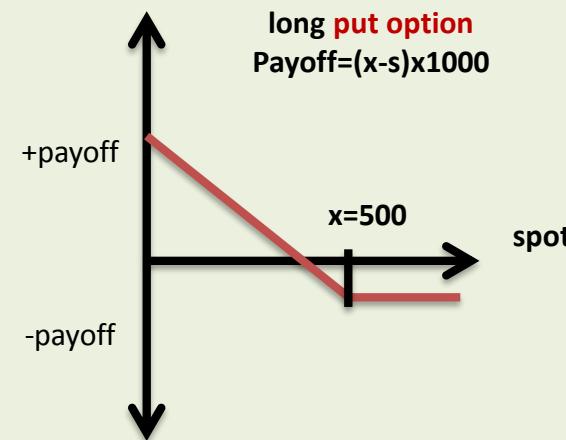
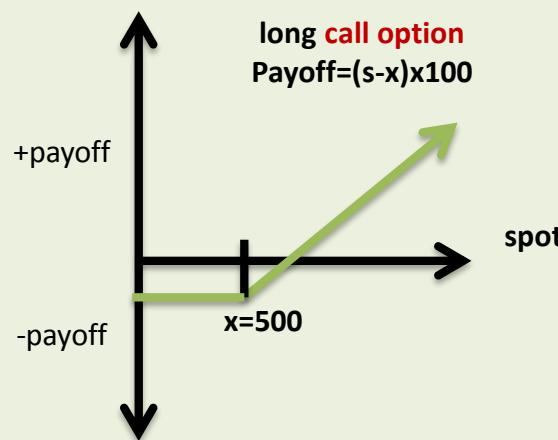




## Option

As we can see from the previous example, futures contract investment has both potential **of unlimited gain** and **unlimited loss**. Both buyer and seller are obligated to honor the contract

**Option** is a special kind of derivative where it gives **option buyers rights**, but **no obligation**, to exercise the contract.



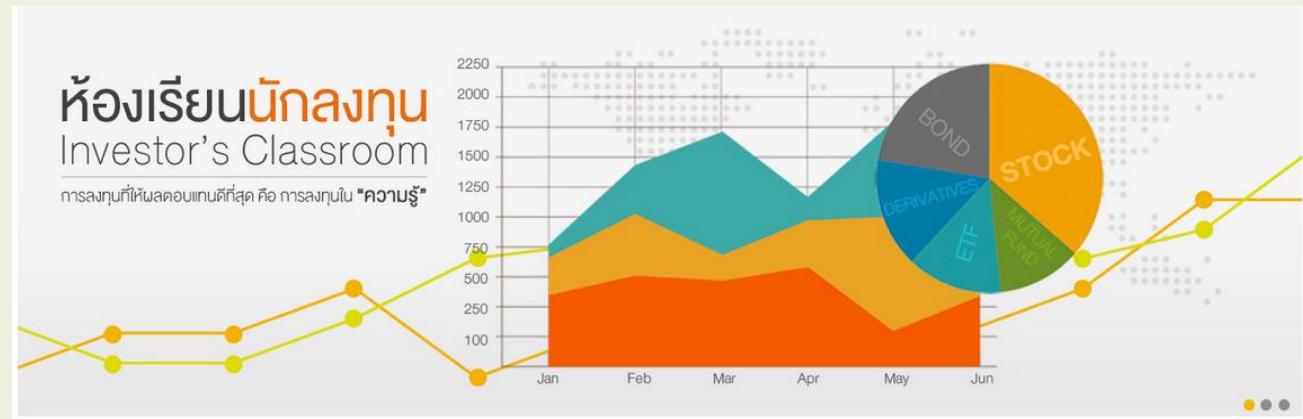


## More Resource for Self Study

<http://www.set.or.th/education/th/education.html>



บริบทนุรุ่งเมืองไทยแต่โบราณ  
ติดดอยชุมชนแสนเสน่ห์ว้า  
เดียวทรัพย์เดียวสินมิใช่เป้า  
หน้าที่เราภักษาสืบไป  
ถึงขีดจำกัด port ก็ไม่เห็น  
จะถากันไม่เหลือกหนี้หาย  
ถ้าที่นี่ถั่วตั่งนี้ จนวอดaway  
ถึงเป็นไม้สุดท้ายก็คงดู  
port เราเราต้องภักษา  
อยากปั่นมา ทุกมา เวลาสู้  
เกเรียดศึกดีเมืองไทยเราเชิดชู  
เราถ้าไม่ถอยจนก้าวเดียว  
(ทำนอง เพลงบรรพบุรุษของไทย)



ห้องเรียนนักลงทุนออนไลน์

โลกความรู้การเงินและการลงทุนอยู่ในมือคุณตลอด 24 ชั่วโมง

**ONLINE INVESTOR'S CLASSROOM**

24 hrs.

คลิกเดียว!! รอบรู้ทุกเรื่องการเงินและการลงทุน



## Summary & QA

**Why different stock trade at different price?**

**Why stock price changes every day?**

**What calculation can be done  
with stock prices?**



..Next Stop..

## Module 3: Introduction to Fixed-Income Markets

- What is the characteristic of Bill/Bond?  
Government/Corporate?
- **Time value of Money**
- Bond Pricing
- Related **bond derivatives**



**In Sum:** This module will explain the concept of bond pricing and the importance factor of its calculation