COMMODITY MARKET

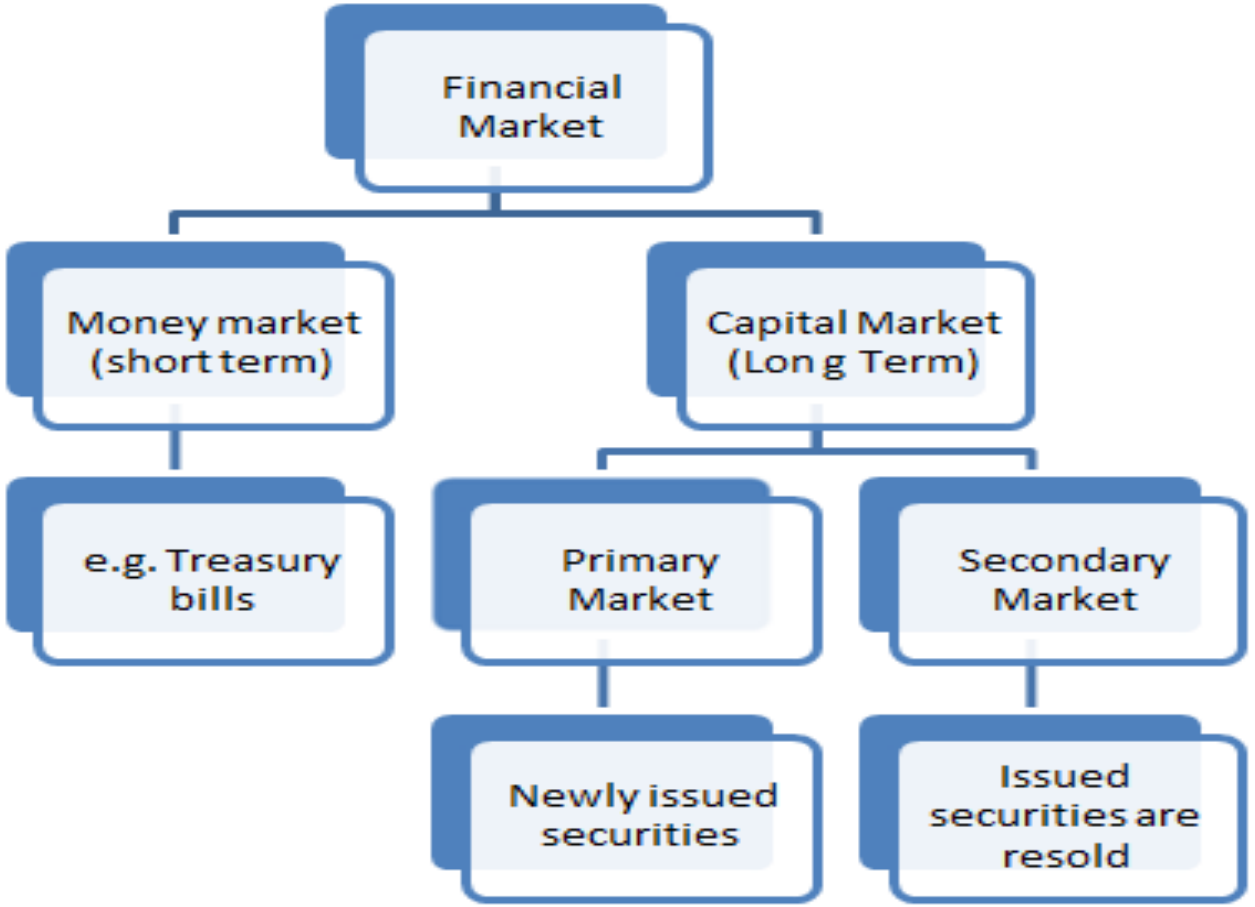
- Presented by: Dr. Guechari Yasmina
- E-mail:yasmina.guechari@univ-biskra.dz

Content

- Stock Market: concept, Instruments and Indices
- What is the commodity market?
- Risk management in commodity markets
- Applications of futures and options in the commodity market
- Commodity's Forward Pricing
- Speculation in commodity markets
- Short selling on futures markets
- Clearing and settlement

Stock Market: concept, Instruments and Indices

INTRODUCTION



Capital Markets within Financial Markets

INTRODUCTION

- The **capital market** is the market where corporations and governments issue financial assets such as bonds and shares to meet their medium to long-term financial needs.
- In the money market, there are bills issued by an investment bank or the Central Bank known as **Commercial bills** and **Treasury bills**. These are short-term loans that expire within a year. On the other hand, the capital market is made up of **shares, corporate bonds, and government bonds** that last for a year or more.

INTRODUCTION

- The two main components of capital markets are the primary market and the secondary market.
- The **primary market** is where securities are issued and traded in public for the first time.
- In a primary market, investors buy securities directly from the issuer.
- The securities can be **debt-based** (loans), **equity-based** (stock/ownership of a company).
- The first issue of a private company's stock on the market is called **initial public offering (IPO)**, which marks the company's transition from being privately owned to publicly owned.

INTRODUCTION

- The **secondary market** is where investors trade securities; It's called **Stock exchanges.** Some of the world's oldest and most reputable stock exchanges include the New York Stock Exchange (NYSE) and the NASDAQ in the US and the London Stock Exchange (LSE) in the UK.

STOCK MARKET CONCEPT

- **Definition**: the stock market is a financial marketplace that matches those who want to buy securities with those who want to sell them. People invest in the stock market with the expectation of earning returns from price appreciation and dividends.
- **Types of stock markets:** Stock markets in the world are divided into three categories as follows:
- **First - In terms of products traded in the stock maket**: we distinguish the following types: stock exchange, the commodity market, and the foreign exchange market (Forex; FX).

TYPES OF STOCK MARKET

- **Stock Exchange:** is the market in which securities such as stocks and bonds are traded.
- **Commodity market:** is the one in which the price of strategic commodities (such as cotton, gold, petroleum, etc.) is determined. Examples: London Coffee Exchange and the Chicago Wheat Exchange.
- **Foreign exchange (forex**): It is the market in which one currency is exchanged for another.

TYPES OF STOCK MARKET

- **Second- In term of time:** there is spot market and future market.
- **Spot market** is where financial instruments, such as commodities, currencies, and securities, are traded for **immediate delivery.**
- **Futures market** is a market in which participants buy and sell commodity and futures contracts for **delivery on a specified future date**.

TYPES OF STOCK MARKET

- Third- In term of Geographical extent: there are:
- Stock market that operates locally
- A stock market that operates at the international level- Global stock exchanges.

STOCK MARKET INSTRUMENTS

- Stock Market Instruments: There are two types of investment tools in the stock market, Cash (or basic) and Derivative Financial Instruments
- **Basic or Cash financial instruments**: are the instruments used in trading operations such as shares and bonds.
- **Derivatives** is an instrument whose value is derived from the value of one or more underlying, which can be commodities, precious metals, currency, bonds, stocks, stocks indices, etc. Four most common examples of derivative instruments are **Forwards, Futures, Options and Swaps**.

STOCK MARKET INDICES

- **Stock market index** represents an index measuring **share prices** in the market on a **daily basis**, so that it is positive when the number of shares whose prices increased is more than the number of shares whose prices decreased during the same day, and vice versa; means it reflects the market price and direction.
- **Stock market index** is a basket of stocks reflect the performance of an industry, sector or the entire market itself. For example, KSE-100 index is a measurement of the value of 100 selected stocks listed on the Karachi Stock Exchange.

STOCK MARKET INDICES

- Some examples of stock exchange indices:

1. S&P 500 – The top 500 stocks in the USA
2. Dow Jones Industrial Average – The top 30 stocks in the US
3. Nasdaq Composite – All securities listed on the NASDAQ Exchange
4. CAC 40
5. SSE
6. DAX 30
7. Nikkei 225

STOCK MARKET INDICES

- The stock markets index is based on a sample of shares that are traded in the stock markets.
- There are several types of indices, but the method of calculating them is based on the same basis: an appropriate sample, and a clear definition of weights.
- Statistically, the sample represents a part of the population under study. In the stock market, the sample means a group of securities used in calculating the index, and it is required that this sample be appropriate in three respects: size, breadth and source.

HOW TO CALCULATE STOCK INDICES?

- Relative weights of the sample elements: After selecting the sample representing the index, the technical procedures are taken to determine the relative weight of the stocks (noting that each type of stock represents a specific company) there are 3 methods

1. **Equal weighting:** By giving an equal relative value to each type of stock within the index. That is, if the index consists of 5 types of stocks, the weight of each one will be 0.2.

- $W_i = 1/N$ ..... (1); N is number of stock in the index

HOW TO CALCULATE STOCK INDICES?

- ***Price Weighting:*** *It represents the ratio of the price of one share to the total prices of other shares on which the index is based.*
- $W_i = \frac{P_i}{\sum_{i=1}^{n} P_i}$ .....(2)
- Example: Let the X index consist of five stocks A, B, C, D, E their prices are as follows: 30, 40, 25, 35 and 50 respectively.
- From this example, the total value of the group of stocks in which the index is composed is equal to (30+40+25+35+50)=180
- Then the weight of the stocks are:
  $W_A = 30/180 \cong 0.17, W_B = 40/180 = 0.22, W_C = 25/180 \cong 0.14,$
  $W_D = 35/180 \cong 0.19, W_E = 50/180 \cong 0.28$

HOW TO CALCULATE STOCK INDICES?

- **Capitalization Weighting:** the weight of each stock is the ratio of its market value to the total market value of all the stocks that compose the index. It is calculated using the following formula:
- $W_i = \frac{P_i Q_i}{\sum_{i=1}^{N} P_i Q_i}$ .....(3)

Stock	Stock price	number of share outstanding	Market Cap.	Weight
A	10	100000	1000000	0.5
B	15	5000	75000	0.375
C	5	5000	25000	0.125
Total			2000000	1

HOW TO CALCULATE STOCK INDICES?

- $Index_t = \frac{\sum_{i=1}^{N} P_{it} \times W_{it}}{\sum_{i=1}^{N} P_{it-1} \times W_{it-1}}$ *Begning index value .....(4)*
- P_{it} *: is the price of stock i in day 2*
- P_{it-1} *: is the price of stock i in day 1*
- W_{it} *: is the weieght of stock i in day 2*
- W_{it-1} *: is the weight of stock i in day 1*
- N *: the total nubmer of the stock that compose the index*

HOW TO CALCULATE STOCK INDICES?

- **In the case of equal weights**, the value of the index is the average of the prices of the stocks that compose the index. For example, suppose an index compose of three types of stocks A, B, and C, and suppose that the base value is 100.

Stock	P_{it-1}	P_{it}	Explanation
A	100	120	The index price = $\sum_{i=1}^{N} P_i W_i$
B	90	100	The weights are equal, i.e. 1/3
C	80	110	Hence the price of the Index the first day is
Price Index (PI)	90	110	(80+90+100)/3=90
			And the second day index price is
			(110+100+120)/3=110

HOW TO CALCULATE STOCK INDICES?

- Applying Equation 4, we find that the **index value** is (110/90)*100=122
- Index on day 1 is 100 and on day 2 is 122, hence market is 22 points higher on day 2.
- It also represents the **return** that is calculated: $\frac{PI_t - PI_{t-1}}{PI_{t-1}}$ Based on the results of the above table, we find: (110- 90)/90 = 0.222 or 22.2%

HOW TO CALCULATE STOCK INDICES?

- **Example 2**: **Price Weighting**: calculating the value and price of the index according to the method of price weighting, mean that the prices of each stock in the index are weighted relative to the sum of the prices of all the stocks that compose this index. Then we calculate **the price of the index** which is the price multiplied by weight, and the index value is calculated according to equation 4. We assume that the index consists of three types of stocks A, B, and C, and let us assume that the base value is 100

HOW TO CALCULATE STOCK INDICES?

	P_{it-1}	W_{it-1}	P_{it}	W_{it}	**Price-weighted indexes day one (t-1)**	**Price-weighted indexes day two (t)**
A	150	0.3	196	0.28	45	54.88
B	100	0.2	161	0.23	20	37.03
C	250	0.5	343	0.49	125	168.07
Total	**500**	**1**	**700**	**1**		
Price Index (PI)					190	**260**

HOW TO CALCULATE STOCK INDICES?

- Applying Equation 4, we find that the index value is (260/190)*100=136.84
- Index on day 1 is 100 and on day 2 is 136.84, hence market is 36.84 points higher on day 2.
- It also represents the return that is calculated: $\frac{PI_t - PI_{t-1}}{PI_{t-1}}$

  Based on the results of the above table, we find: (260-190)/190 = 0.3684 or 36.84%

HOW TO CALCULATE STOCK INDICES?

- **Capitalization Weighting**: calculating the value or price of the index according to the capitalization weighting method, mean that the market value of the stocks that compose the index is weighted relative to the total market value as in Equation 3. Then we calculate the index price which is the price multiplied by weight, and the index value is calculated according to Equation 4.
- We assume An index consisting of three types of stocks, A, B, and C. Let us assume that the base value is 100.

HOW TO CALCULATE STOCK INDICES?

stock	Number of share Q_i	P_{it-1}	P_{it-1}*Q_i	W_{it-1}	P_{it-1}* W_{it-1}	P_{it}	P_{it} *Q_i	W_{it}	P_{it} *W_{it}
A	20	150	3000	0.375	56.25	196	3920	0.341	66.836
B	30	100	3000	0.375	37.5	161	4830	0.42	67.62
C	8	250	2000	0.25	62.5	343	2744	0.239	81.977
Total			**8000**	**1**			**11494**	**1**	
Price Index (PI)					**156.25**				**216.433**

HOW TO CALCULATE STOCK INDICES?

- From the above table, we notice that the index price on the first day was 156.25, and the index price on the second day was 216.433. The index, which represents the index price ratio between the first and second day, is calculated according to the formula in Equation 4, and we found it to be 138.52, and from it we say that the market is 38.52 points higher than the first day.
- It also represents the return that is calculated: $\frac{PI_t - PI_{t-1}}{PI_{t-1}}$ Based on the results of the above table, we find: (216.433- 156.25)/156.25 = 0.3852 or 38.52%