

Finance Matters

By Dr. Monia Mazigh, 2019©

Lecture#3

Financial Instruments: Stocks, Bonds and Derivatives

The Financial System

- ❖ **Money** is considered as a tool to purchases and store wealth
- ❖ **Financial Markets** are institutions where financial instruments are bought and sold
- ❖ **Financial Instruments** they serve to transfer resources from savers to investors and to transfer risk from the risk averse to the risk takers or the ones who can manage it
- ❖ **Financial Institutions:** They provide access to financial markets, collect information & provide services
- ❖ **Central Banks:** they monitor financial Institutions and stabilize the economy through monetary policies (increase interest, decrease interest rate)

Functions of the Markets

- ◆ Markets have a critical role in channeling the money from savers to investors
- ◆ They are supposed to promote the economic efficiency by achieving an efficient allocation of capital. That will increase production
- ◆ They help consumers by increasing their purchase power

Type of Markets

- ◆ Equity Markets vs. Debt Markets
- ◆ Primary and Secondary Markets
 - ◆ Investment Banks *underwrite* securities in primary markets
 - ◆ Brokers and dealers work in secondary markets
- ◆ Centralized vs. Over-the-Counter (OTC) Markets
- ◆ Money and Capital Markets
 - ◆ Money markets deal in short-term debt instruments
 - ◆ Capital markets deal in longer-term debt and equity instruments

Type of Instruments

- ♦ A **security** (financial instrument) is a claim on the issuer's future income or assets
- ♦ A **bond** is a debt security that promises to make payments periodically for a specified period of time
- ♦ **Interest rate** is the cost of borrowing or the price paid for the rental of funds

Risks

- ◆ Financial markets redistribute risk.
- ◆ From the more risk-averse to the less risk-averse
- ◆ There are several type of risks:
 - Market Risk
 - Credit risk
 - Business risk

- ◆ Financial risk can apply to a government that defaults on its bonds
- ◆ Credit risk, also known as default risk: it is the risk of borrowing money. Example: Borrowers can't repay their loans
- ◆ Specific risk: it is a risk specific to the structure of a company: capital structure, financial transactions...
- ◆ Operational risk: poor management or financial reasoning

Market risk

- ◆ This risk is eliminated through diversification: it can be offset: when one is high the other is low

Efficient Markets

- ◆ In the 1950s, Milton Friedman ruled out the possibility of the very existence of destabilizing speculation. He famously declared “There is no free lunch”
- ◆ He showed that even if there is a possibility of arbitrage and making profit. Everyone else would “copycat” and the profit will disappear and the disequilibrium will not prevail

In case of “opportunity”

- ◆ Speculators tend to sell the securities they think are overpriced in this case. The prices would fall until they reach a point where “fair value” is reached and confidence is regained.
- ◆ Speculators tend to buy the securities they think are underpriced. Everyone would try to jump on the opportunity. The securities would become in demand. Their prices would go high until it reaches the level “fair value” is attained.

Finance=Trust

The key word in financial markets is:

Trust

As long as participants in the market remain **confident** that the price of the assets they hold represents fair value, the speculation won't work



Liquidity risk

- ◆ It has two forms:
- ◆ When investors can't sell assets quickly enough to stop the loss. Example: this is a situation where there are few buyers but many sellers.
- ◆ Cash-flow liquidity risk: when a company has no capital to pay off its debt

Currency Risk

Foreign currencies can be exposed because of interest rates changes, monetary policies, natural disaster

Assets around the World

- ◆ Real Estate in the world: 217 trillions
- ◆ Stocks in the world: 77.7 trillions
- ◆ Debt around the world: 184 trillions
- ◆ Monetary supply: 95.4 trillions (43.2 in cash)
- ◆ Derivatives: 532 trillions
- ◆ Gold: 7.8 trillions
- ◆ Cryptocurrency: 124 billions (63 billions of Bitcoins)

Stock

- ◆ Common stock represents a share of ownership in a corporation
- ◆ In American English, the shares are commonly known as "stocks"
- ◆ A stockholder has the right to a fraction of the earnings (dividends) to the assets of the corporation (in case of bankruptcy and after the debtholders had been paid) and to the vote

- ◆ Stock are sold and bought on the Stock Markets. These transactions are heavily regulated by government to prevent fraud.
- ◆ When a company issues new shares, the rights and ownership of the existing shareholders are diluted in return for cash.
- ◆ There may be different categories of shares with different privileges, rights, or share values.
- ◆ Common stocks and preferred stocks

The East India Company



The Baltimore Ohio Railroad Company



- ◆ Small companies that do not qualify and cannot meet the listing requirements of the major exchanges may be traded over-the-counter (OTC) by an off-exchange mechanism in which trading occurs directly between parties.
- ◆ Most trades are actually done through brokers listed with a stock exchange

◆ When it comes to financing a purchase of stocks there are two ways:

❖ purchasing stock with money that is currently in the buyer's ownership,

❖ or by buying stock on margin

Buying on Margin

- ◆ Buying stock on margin means buying stocks with money borrowed against the value of stocks in the same account
- ◆ These stocks, or collateral, a guarantee that the buyer can repay the loan
- ◆ If not, the stockbroker has the right to sell the stock (collateral) to repay the borrowed money
- ◆ He can sell if the share price drops below the margin requirement, at least 50% of the value of the stocks in the account

- ◆ Buying on margin works the same way as borrowing money to buy a car or a house, using a car or house as collateral.
- ◆ Moreover, borrowing is not free; the broker usually charges 8–10% interest.

Vocabulary

- ◆ Float: the number of stocks in the market
- ◆ Market Capitalization: float times market share
- ◆ Efficient Market Theory: the price of a stock at any given moment represents a rational evaluation of the known information that might bear on the future value of the company;
- ◆ Prices are the result of discounting expected future cash flows.

Bonds

- ◆ Government bonds, Corporate bonds
- ◆ A bond is an instrument that allows people with money to borrow for people who are in need of money. The issuer of the debt (government, bank, corporation) and the holder of the debt (individual, investors...)
- ◆ The issuer of the bond (borrower or debtor) should pay the holder of the bond (lender or creditor) a regular interest payment: coupon and repay the principal at the maturity date.

- ◆ When a bond issue is underwritten, one or more securities firms or banks, forming a syndicate, buy the entire issue of bonds from the issuer and re-sell them to investors.
- ◆ In contrast, government bonds are usually issued in an auction. In some cases, both members of the public and banks may bid for bonds. In other cases, only market makers may bid for bonds. The terms of the bond, such as the coupon, are fixed in advance and the price is determined by the market.

- ♦ Short term (bills): maturities between one and five years
- ♦ Medium term (notes): maturities between six and twelve years
- ♦ Long term (bonds): maturities longer than twelve years
- ♦ The market price of the bond will vary over its life: it may trade at a premium (above par, usually because market interest rates have fallen since issue), or at a discount (price below par, if market rates have risen or there is a high probability of default on the bond)

Futures

- ♦ A Future contract is “an agreement to buy or sell an asset at a certain time in the future for a certain price”
- ♦ In March, an investor in New York might contact a broker with instruction to buy 5,000 bushels of corn in July delivery
- ♦ The broker would immediately communicate the client’s instructions to the CBOT
- ♦ Another client in Kansas might contact a broker to sell 5,000 bushel of corn for July delivery. CBOT will be contacted as well
- ♦ A price would be determined and the deal would be done

History of Futures

- ◆ Future markets can be traced to the Middle Ages. They were originally developed to meet the needs of farmers and merchants
- ◆ Uncertainty for the the farmer about the quality and quantity of the harvest at the time when he is selling
- ◆ Uncertainty for the merchant (company). If there is abundance, the price will be low. If there is drought or natural disaster or disease, there will be scarcity and the price will be high

Options

- ◆ Thales of Miletus (624-545 BCE)
- ◆ It was predicted that the season's olive harvest would be larger than usual, and during the off-season, he acquired the **right** to use a number of olive presses the following spring. When spring came and the olive harvest was larger than expected he exercised his options and then rented the presses out at a much higher price than he paid for his “option”

“Right” and not the “Asset”

- ◆ In the real estate market, call options have long been used to assemble large parcels of land from separate owners
- ◆ A developer pays for the right to buy several adjacent plots, but is not obligated to buy these plots and might not unless he can buy all the plots in the entire parcel.
- ◆ Film or theatrical producers often buy the right — but not the obligation — to dramatize a specific book or script

Options

- ◆ Categories of options
- ◆ Calls: the right to buy
- ◆ Put: the right to sell.
- ◆ You buy a call: you buy the right to “buy”
- ◆ You sell a call: you sell the right to “buy”
- ◆ You buy a put: you buy the right to “sell”
- ◆ You sell a put: you sell the right to “sell”

Models

- ◆ As above, the value of the option is estimated using a variety of quantitative techniques, all based on the principle of risk-neutral pricing, and using stochastic calculus in their solution.
- ◆ The most basic model is the Black–Scholes model. Valuation models depend on the following factors:

The price of the asset, the maturity, the risk-free interest rate, the exercise price, the volatility

Hedgers

- ♦ A cereal manufacturer wants to hedge against rising wheat prices by buying a future contract that promises delivery of September at a specified price
- ♦ If in August, the crop is bad, and the spot price increases, the manufacturer can take delivery of the wheat at the future price which is probably lower than the spot price
- ♦ Or he can sell the contract and use the extra cash to offset the increase in the spot wheat price.

Who are the Hedgers

- ◆ They are re both local and international firms, including banks, corporations, pension funds, exporters and importers who need to protect against foreign currency fluctuation, food processors and a great variety of other businesses.

Speculators

- ◆ Speculators are people who analyze and forecast futures price movement, trading contracts with the hope of making a profit. Speculators put their money at risk and must be prepared to accept outright losses in the futures market
- ◆ Speculators assume risk for hedgers. Speculators accept risk in the futures markets, trying to profit from price changes. Hedgers use the futures markets to avoid risk, protecting themselves against price changes.

SWAP and Interest Rates

- ◆ Company A owns \$1,000,000 in fixed rate bonds earning 5 percent annually, which is \$50,000 in cash flows each year.
- ◆ Company A thinks interest rates will rise to 10 percent, which will yield \$100,000 in annual cash flows (\$50,000 more per year than their current bond holdings), but exchanging all \$1,000,000 for bonds that will yield the higher rate would be too costly.
- ◆ Company A agrees to give the swap broker the \$50,000 in fixed rate annual cash flows, and in return, the swap broker gives the company the cash flows from variable rate bonds worth \$1,000,000.
- ◆ Company A and the swap broker continue to exchange these cash flows over the life of the swap, which ends on a date determined at the time the contract is signed.

SWAP and Currencies

- ◆ Company A has USD 1,000 and believes that the Chinese Yuan (CNY) is set to increase in value compared to the USD.
- ◆ Company A gets in touch with Company B in China, which just happens to need USD for a short time to fund a capital investment in computers coming from the U.S.
- ◆ They swap USD 1,000 for CNY 1,000. The swap agreement states that they'll exchange currencies back in one year at the forward rate (also USD 1 = CNY 1; it's a very stable market in Example-World).
- ◆ If the CNY were to increase by 1 percent compared to the USD, then Company A would make a profit on the swap.
- ◆ If the CNY were to decrease in value by 1 percent, then Company A would lose money on the swap.

Dangers

- ◆ Derivatives are very versatile instruments.
- ◆ In 2002, Warren Buffet, the investor guru described the derivatives as : “time bombs” and “Weapons of Mass Destruction”
- ◆ Some traders who have a mandate to hedge risks or follow an arbitrage strategy became, consciously or unconsciously, speculators. Example: the actions of Nick Leeson at Barings Bank

- ◆ In addition, 2008 was marked by Société Générale's Jerome Kerviel's orchestration of the largest bank fraud in world history via derivatives trading (a £3.6 billion loss). This makes previous rogue trader incidents pale in comparison:
- ◆ Nick Leeson at Barings Bank in 1995 (a £791 million loss and bankruptcy for his employer)
- ◆ National Westminster Bank PLC in 1997 (a \$125 million loss)
- ◆ John Rusniak at Allied Irish Bank in 2002 (a \$691 million loss)
- ◆ David Bullen and three other traders at National Australia Bank in 2004 (a \$360 million loss)

Sources

- ◆ <https://www.thecanadianencyclopedia.ca/en/article/stock-and-bond-markets>
- ◆ The Flash boys
- ◆ https://en.wikipedia.org/wiki/Flash_Boys
- ◆ <https://www.amazon.com/Hummingbird-Project-Jesse-Eisenberg/dp/B07PS6YKVB>

Your Thoughts

