**FOR FIN 4310 MANAGERIAL FINANCE**

**LECTURE 1**

***FINANCIAL ANALYSIS, CORPORATE VALUATION AND CAPITAL FORMATION***

by

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# **LECTURE 1 WHAT IS FINANCE**

1.1. Finance

**1.2. Short History of Finance in the U.S.: Institutions**

**1.3. Short History of Finance: Literature**

**1.1. Finance**

The word “finance” is both a noun and a verb. As a noun it describes the body of literature that represents the accumulated knowledge concerning the field – “I am a professor of finance [fi-nans]”. As a verb it describes the action of finance, that is the activity of borrowing or lending – “I am going to finance [fahy-nans] my car.” [[1]](#footnote-1)

The action of finance occurs in the financial markets, and requires as a necessary condition the existence of savers, who are then capable of lending funds to borrowers. The lack of savings in an economy dooms the field of finance, for then there is no catalyst for the activity of finance. In this sense, the character Polonius in Hamlet was anti-finance in the first line of one of William Shakespeare’s most famous quotes:

“Neither a borrower nor a lender be,

For loan oft loses both itself and friend,

And borrowing dulls the’ edge of husbandry,

This above all, to thine own self be true.”

The problem with Polonius’ view of the world of finance is its restrictiveness, insofar as the inability to borrow or lend restricts the flexibility of individuals in navigating through their consumption and investment preferences through time. In this world, students would not receive loans to enhance the value of their human capital through education, and working individuals would not be able to invest in tax-sheltered accounts to plan for their retirement (like IRAs, 401(k)’s or 403(b)’s). More importantly, the economic growth function of transferring savings into investment, driven by the sacrifice of current consumption (aka saving) to improve technology through research, for the sake of increasing future consumption through growth, would not be possible. Thus, in contrast to Polonious, lending and borrowing produce a crucial link to giving individuals more flexibility in their consumption and saving decisions, enhancing what economists refer to as utility, and indeed through their saving, economic growth. The use of those savings for making real investments often falls on the shoulders of profit oriented business (*Busi Ness*) although such savings could also be utilized by non-profits.

**1.2. Short History of Finance in the U.S.: Institutions**

The New York Stock Exchange (NYSE), founded as the Buttonwood Agreement in 1792, is one of the oldest financial institutions in the U.S.– the Philadelphia Stock Exchange is the oldest having been founded in 1790.

As the NYSE website states (<http://www.nyx.com/who-we-are/history/new-york>):

“On May 17, 1792, twenty-four stockbrokers gathered outside 68 Wall Street under a buttonwood tree to sign an agreement that would establish the rules for buying and selling bonds and shares of companies. The Buttonwood Agreement, as it is known, is so named because the tree served as the regular meeting place for these pioneers of Wall Street. The signers of the Buttonwood Agreement drafted their first constitution on March 8th, 1817, and named their nascent organization the New York Stock & Exchange Board.”

In 1863, its name was changed to the New York Stock Exchange (it had been the New York Stock & Exchange Board), and in 1953 its membership was fixed at 1,366 seats because of the physical limits of the exchange, with the original members having a seat at a table to trade stocks. The NYSE is a profit making corporation, with the revenue earned by its 1,366 closely held owners based on the commission they charged non-owners to trade their stocks.

In 2006, the NYSE went public, causing the ownership status for members holding seats to disappear. Then, after merging with the Archipelago electronic stock exchange (which was already publicly traded), it became the NYSE Group, Inc., with the seats exchanged for shares of publicly traded stock.

In 2007, the NYSE Group combined with Euronext, and this publicly traded combination - the only Fortune 500 exchange operator with ticker: NYX - brought together markets in Europe and the U.S. that account for 33% of the worldwide equities trading, in addition to trading in futures and options on commodities, foreign exchange, equities, bonds and interest rates, and swaps.

In 2008, NYSE Euronext acquired the American Stock Exchange (AMEX) making it one of the largest and most liquid of exchanges. The AMEX itself was founded in 1910 as the Outdoor Curb Market Association, with the trading unlisted shares outdoors on the curb on Wall and Hanover Streets in New York. Its name was changed to the American Stock Exchange in 1953 when listed stocks outnumbered unlisted ones. The NYSE Euronext includes a) NYSE Arca that trades more than 8,000 exchange-listed equities in a fully electronic platform, b) NYSE Amex that represents the former American Stock Exchange platform that includes more than 500 small and micro-cap listed companies, and c) ArcaEdge which trades over-the-counter stocks in an all-electronic matching system.

On July 10, 2013 NYSE Euronext announced a deal to purchase the scandal ridden LIBOR (London Interbank Offer Rate) for one British pound (there are about US dollar 350 trillion in notional value loans and swaps tied to the benchmark LIBOR rate). This agreement whereby NYSE Euronext will take over LIBOR in 2014 occurs even in the midst of the NYSE Euronext itself being acquired by the Atlanta based Intercontinental Exchange, Inc., one of the largest operators of derivatives exchanges. Many derivative products are tied to LIBOR.

NASDAQ (National Association of Securities Dealers Automated Quotations), founded in 1971 by the National Association of Securities Dealers, began trading on February 8, 1971 as the first electronic stock market, and subsequently was the first to start online trading. In 2007, it bought the U.S.’s oldest stock exchange – the Philadelphia Stock Exchange (PHLX). NASDAQ is owned by the NASDAQ OMX Group, formed after NASDAQ (in a complicated transaction) bought in 2007-08 the OMX stock market network, which owns the Helsinki, Copenhagen and Iceland Stock Exchanges, among others.

After the PHLX and NYSE, the development of the futures commodity derivatives market in Chicago began. The Chicago Board of Trade (CBOT) was established in 1848 for Spot and Forward Contracting, and in the 1860’s Commodity Futures begin trading there. These futures such as on cattle and wheat helped to establish a price today for a transaction to occur in the future, thereby reducing the price risk and uncertainty that exists without such a contract. Setting the price today for a future delivery reduces for example the price risk that farmers face for their produce and that food producers face for their inputs. The other great futures market in Chicago, the Chicago Mercantile Exchange (CME), was established and began trading commodity futures in 1919. In 1972, the CME created its International Monetary Market Division (IMM), and began trading the first financial futures ever. This was the futures contract on foreign exchange, which began trading not coincidentally in the same year (specifically, on May 16, 1972) that the world changed to a flexible exchange rate system (from the modified gold standard that had been established in the Bretton Woods Agreement in 1944). Other financial futures that began trading during this period included *Government National Mortgage Association* futures (GNMA) on the *Chicago Board of Trade* (CBOT) on October 20, 1975; Eurodollar Time Deposit futures, the first cash settled futures contract, on the IMM on December 9, 1981; and the Value Line Index futures, the first futures contract on a stock index, on the *Kansas City Board of Trade* (KCBT) on February 24, 1982.[[2]](#footnote-2) The GNMA and the Eurodollar futures were useful in hedging interest rate risk, and the Value Line in hedging stock market risk.

Between establishment of the NYSE and AMEX, and the CBOT and CME, the Wall Street Journal (WSJ), founded by Charles Dow and Edward Jones, began publication on July 8, 1889. Dow, a co-founder of Dow Jones and Co., subsequently created the Dow Jones Industrial Average (DJIA) which began as an average of 12 industrial companies on May 26, 1896, out of which only General Electric remains. Jones, who had nothing to do with the average’s creation, shared in its name mostly because he co-founded the company that bears its name. Except for the Dow Jones Transportation Average which was created July 3, 1884, the DJIA is the oldest market index in the U.S., and probably the most recognized market index in the world. The DJIA was expanded to a group of 30 industrial companies on October 1, 1928, and the first composite Dow-Jones average was computed on November 9, 1933. Now, of course, each stock exchange has its composite index, and other well-known stock market indexes include the Standard & Poor’s 500 index (first published in 1957, by the Standard and Poor’s Corporation, created by a 1941 merger between Poor’s Publishing and Standard Statistics), the Value Line 1700 stock index, and the Russell indexes (1000, 2000 and 3000).

**A simple way to financially interpret changes in the Dow Jones Industrial Average**

The idea behind the calculation of the DJIA is as follows.

Imagine we have only three stocks (stocks A, B and C) in the DJIA.

Let’s say stock A has a $20 price, stock B a $25 price and stock C $30.

When the DJIA was first started, the DJIA average for the hypothetical example above would have been equal to the arithmetic average of the prices, that is:

            DJIA = 25 = ($20 price for A + $25 price for B + $30 price for C) / 3.

Now, a problem occurs when one of these stocks splits – let’s say stock C splits 3 to 1, so that now the price per share will equal $10.

What happens if we calculate the DJIA now?  Let’s try to redo the calculations, such that

DJIA = **18.33** = ($20 price for A + $25 price for B + **$10** price for C) / 3.

Having substituted $10 for $30 for stock C, the DJIA would fall from 25 to 18.33 – about a 28% market fall.

The problem is that this decline in the market is not a real decline, because nothing happened except that stock C split 3 to 1.

Thus, the DJIA should remain unchanged from its initial value of 25, and now the only way to accomplish this is to change the denominator so that the ratio stays at 25.

So this is what we have to do – solve for the denominator’s value x below, such that

            DJIA = **25** = ($20 price for A + $25 price for B + **$10** price for C) / x.

If x equals 2.2, then the DJIA remains unchanged at 25, as it should.

It follows that the DJIA divisor will change when we have stock splits in any of its 30 companies (subject to some exceptions).

Now, the value of this divisor as shown in the Wall Street Journal on August 10, 2011 (page C4, Dow Jones Industrial Average table) was 0.132129493.

To obtain a financial interpretation, use the divisor in combination with the value of the DJIA index.

For example, the DJIA index closed at 11239.77 on August 9, 2011 and 10719.94 on August 10, 2011, down 519.83 points.

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So, based on how the index is calculated using a 30 stock portfolio, we have on August 10, 2011:

DJIA = 10719.94  = (price for 1+price for stock 2+price for stock 3+ …+price for stock 30) / (0.132129493)

We can then solve for the combined prices of all its 30 stocks, since

(10719.94) (0.132129493) = $1,416.42 =

= (price for 1+price for stock 2+price for stock 3+ …+price for stock 30)

Thus, the value of a portfolio consisting of one share for each of the 30 Dow stocks on August 10, 2011 was $1,416.42 (with a little error because not all stock splits cause the divisor to be adjusted).

As a result, the price per share on the average for each of the 30 Dow stocks on August 10, 2011 was:

$47.21 = $1,416.42 / 30

And the average per share dollar value of a point in the DJIA is

$ 0.0044 = $47.21  / 10719.94

so that each point change in the DJIA is worth about 4/10 of U.S. penny in terms of the average price per share.

Thus, when the DJIA declined by 519.83 points on August 10, 2011, the average decrease in the price per share for each of its 30 stocks was $2.28.

**1.3. Short History of Finance: Literature**

**The field of finance, coming from the field of economics, began to break-out and establish its own literature around the middle of the twentieth century. Joel Dean, considered one of the founders of business economics, in a 1951 book began this process with development of the theory of capital budgeting,** reigning in the era when business investments in capital and equipment began to undergo more rigorous analysis with respect to their acceptance or rejection decision.[[3]](#footnote-3)

Roughly about this same time, Harry Markowitz in a 1952 paper in the *Journal of Finance* in 1952 and a 1959 book began the development of portfolio theory, showing how a combination of investments through an optimal portfolio could significantly reduce risk while maintaining return.[[4]](#footnote-4) William Sharpe in a 1964 paper in the *Journal of Finance* extended Markowitz’s theory by inquiring into the prices of the securities in the optimal portfolio assuming conditions of market equilibrium. His theory, known as the *Capital Asset Pricing Model*, showed that the optimal prices for securities, i.e. prices consistent with their required returns, are driven not by their total risk, but rather by their systematic or market related risk, that excludes firm specific risk.[[5]](#footnote-5)

Other major strands of thought in finance concern capital structure theory, i.e. the proper use of debt, option pricing theory and agency theory, as well as theories in the area of behavioral finance. Franco Modigliani and Merton Miller (MM) in 1958 and 1963 papers in the *American Economic Review* showed using arbitrage arguments that under condition of efficient markets and no corporate income tax the capital structure of the firm, i.e. its use of debt and equity, does not matter with respect to determining the firm’s value.[[6]](#footnote-6) Rather, the net operating income of the firm and its risk are the major factors in determining its value. The financial structure determines how the how the income proceeds are distributed between creditors and owners, but not the firm’s value. This result was revolutionary at the time, as most analysts felt that a firm could reduce its cost of capital (and therefore increase its value) with the use of debt financing, as debt (bonds), being less risky than equity, have lower costs.

The MM capital structure irrelevance propositions (as they are called) returned the focus for analyzing the firm’s value from concerns over the cheapest financing mix, as it had been during the great depression years in the 1930s, to what it is that the firm does with the money it obtains, regardless of the financing mix involved – how does the firm make money talk! MM expanded their theory for the case where a corporate income tax and a tax-deduction allowance for interest expense exist, as is the case in the U.S. They showed that the tax-deduction of interest is equivalent to a government subsidy of debt financing, such that the firm (and anyone else able to deduct interest to reduce taxes) has a greater value due to the free financing obtained via the government’s subsidy of the financing costs (interest).

One of the greatest theories in finance emerged when Fisher Black and Myron Scholes in a 1973 article in the *Journal of Political Economy* developed option pricing theory.[[7]](#footnote-7) The development of this theory itself is quite interesting. Black and Scholes used call options on stocks to create a portfolio consisting of common stocks and their call options. They showed that such a portfolio could be constructed to be risk free, meaning that its return should equal the risk-free rate of return. Knowing parameters like the risk-free rate, the stock’s price, the option’s exercise price, and the time period involved, they backed out the call option’s price, showing its determinants and properties, partly by utilizing the equations in the second law of thermodynamics. The symmetry in this application was that in the same way that energy is a constant in the universe, so is the value of a risk-free portfolio a constant (netting out the risk free rate). This symmetry permitted the application of a classic theory in physics and engineering to finance in a very unique way.

Black and Scholes’ theory concentrated on the pricing of call options on stocks, and not coincidentally, the Chicago Board Options Exchange (CBOE) in 1973 (the same year the theory was published) began the trading of call options on stocks in its new created exchange, leading to another great evolution in the development of the derivatives markets in Chicago. Interestingly, before Black and Scholes formalized a model to price calls, Hans Stoll in 1969 in an article in the *Journal of Finance* showed how call option and put option prices must be related, i.e. put-call parity.[[8]](#footnote-8) The main point here is that since a call option delays the payment of money (as it is an option to buy stocks to be exercised in the future) whereas a put option delays the receipt of money (as it is an option to sell stocks to be exercised in the future), all else the same, call options are more valuable (have higher prices) as it is more valuable to delay payment than receipt. Combining Black and Scholes, and Stoll, the CBOE in 1977 began trading put options on stocks. And the Philadelphia Stock Exchange (our oldest exchange) began trading options on foreign exchange in 1982, preceding by one year Garman and Kolhagen (1983), and Grabbe’s (1983) publications on the theory underlying the pricing of foreign exchange options.[[9]](#footnote-9)

The value of option theory in finance goes beyond the fact that options on stocks exist, as it turns out that options seem to be anywhere and everywhere for decisions makers, including for real assets. Practitioners should be and indeed are aware of real options. Anyone who owns property has the option to abandon it - to sell it. This is a real option underlying the ownership of real property, and adds value to it (thus other options on real property are technically compound options – they are options on options). A comprehensive insurance policy on an automobile allows a covered individual who “totals” the automobile to collect on the insurance. For premium paid, the individual has a put option over the term of the insurance coverage to sell the totaled automobile to the insurance company for a predetermined (exercise) price (the blue book value, for example). An individual who buys a home in Texas ordinarily has for a nominal premium a ten-day call option on the house – the individual has 10 days to decide whether to exercise the option to buy or not.

Firms’ have real options to delay investments until perhaps some uncertainty is resolved, to expand investments by for example introducing new product lines, and to abandon investments. At the extreme, exercising an option to expand could lead to a merger/acquisition – the biggest capital budgeting decision a firm can make. At the extreme, an option to abandon could lead to bankruptcy – the biggest abandonment decision a firm can make. Interestingly, bankruptcy results when a firm decides not to exercise its option to pay off its debt, i.e. to buy back its bonds. And the value of the stock – notwithstanding the constant growth valuation model – can be considered as the value of the option the owners have on the firm’s assets.

Much in the more recent literature in finance has concentrated on agency theory, and some of its behavioral aspects related to the state of asymmetric information that exists between owners (principals) and managers (agents). Michael Jensen and William H. Meckling in a 1976 article in the *Journal of Financial Economics* are the classic work in this literature, showing that the agency problem for a firm occurs when non-pecuniary benefits to an owner-manager are borne by outside owners, particularly when ownership is diffused.[[10]](#footnote-10) Such non-pecuniary benefits, i.e. excessive use of corporate jets, can reduce the firm’s value, and may even be partly responsible for the small firm effect (to be discussed later as a market anomaly).[[11]](#footnote-11) Owners may regulate the costs by monitoring or bonding the owner-manager, and thus, the total costs associated with agency for Jensen and Meckling includes the lower firm value, as well as the monitoring and bonding costs. When agency costs exist owing to asymmetric information – this includes the relations not just owners and owner-managers, but also between owners and employees (non-owners), owners (stockholders) and creditors (bondholders), and all other agency relationships – researchers then try to examine whether a firm’s insiders “signal” their knowledge of inside information by the actions they take.

A good example of this is a change by a firm in its payment of cash dividends. Merton Miller and Franco Modigliani in a 1961 article in the *Journal of Business* showed that in an efficient market the value of the stock or return to the investor is invariant to the payment of a (cash) dividend, with investors indifferent between the receipt of value from a dividend payout or share repurchase.[[12]](#footnote-12) An investor’s ability to create homemade dividends or homemade capital gains further supports the irrelevance of the corporation’s dividend policy in determining the value of the stock. No one has significantly challenged the basis for this theory. Indeed, Fisher Black in 1976 in “The Dividend Puzzle” claimed that the harder one looks at the questions regarding “Why do corporations pay dividends?” and “Why do investors pay attention to dividends?”, the more the answers ”.. seems like a puzzle, with pieces that just don’t fit together.”[[13]](#footnote-13)

The dividend puzzle from a theoretical perspective has endured and is still prevalent in the corporate finance literature. There are however many non-theoretical reasons (related to what the finance literature refers to as market imperfections) as to why firms would or would not pay dividends, including tax and transactions costs reasons, and investor (clientele) effects (preferences possibly dependent on the investors’ mean age). One of these reasons that may be related to agency costs is signaling effects. Fama, Fisher, Jensen and Roll (1969) and Brickley (1983), among many others, generally find positive signaling effects (the stock price rises) associated with an increase in cash dividends.[[14]](#footnote-14) In this case, management is thought to signal the market via the increase in the dividend that inside information suggests that the firm’s future is a bright one. Similarly, when a firm finances the expansion of its operations by issuing new equity (as in a seasoned equity offering) it may signal the market that management believes that the stock’s price is overvalued, whereas financing with new debt (via a bond issue) may signal its belief that the stock’s price is undervalued.

We are now in an era when a branch of finance known as “behavioral finance” is developing, although in some sense the long-standing practice of “technical analysis” of the market also involves behavioral issues. The well-known economist John Maynard Keynes in a famous passage from his 1936 book *The General Theory of Employment, Interest and Money* (the basis for Keynesian economics) alluded to the need for behavioral considerations in studying the market.

His famous passage referred to a beauty contest popular in England at the time where entrants were asked to choose the most beautiful from a set of six photographs of women, with those who picked the most popular eligible for a prize. Keynes wrote:

“It is not a case of choosing those [faces] that, to the best of one’s judgment, are really the prettiest, nor even those that average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practice the fourth, fifth and higher degrees.”

Keynes, John Maynard, *General Theory of Employment, Interest and Money* (London: Macmillan (1936, reprinted 2007).

A sophisticated, as opposed to a naïve entrant, to maximize the chance of winning a prize would have to try to forecast who the majority think of as the most beautiful, rather than just think of who the entrant thinks the most beautiful.

Extrapolating this idea to the stock market, an analyst may perform an analysis that produces a fundamental value for a stock, bases on the analyst’s views of the firm’s fundamentals – revenues, earnings, returns and their growth. The genesis for fundamental analysis, the subject matter of Chapter 4, is Benjamin Graham and David Dodd’s book *Security Analysis*, first published in 1934 (Whittlesey House, the trade division of [McGraw-Hill](http://en.wikipedia.org/wiki/McGraw-Hill))) in the midst of the Great Depression. Their philosophy of value investing prescribed an analysis of the business behind the security to value the business, rather than a focus on just earnings and earnings trends.

But such analysis is incomplete unless it also includes opinion as to what the analyst perceives regarding what others see as the firm’s fundamental value. That is to say, the individual is not the judge of fundamental value, for the market as a whole determines that. Thus, it is necessary to add to a fundamental analysis of a stock some technical analysis of what the market sees as the stock’s value.

Regarding the more recent developments in behavioral finance, an excellent reading is Hersh Shefrin’s *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing* (Oxford University Press, 2007). As this book suggests, behavioral finance concerns how psychological factors like bias and emotion enter (and possibly misguide) one’s judgment regarding investment decisions. There are many strands of thought in behavioral finance, such as one’s frame of reference when embarking on an investment decision and one’s degree of overconfidence. Examples include overconfidence that causes people to think of themselves as better than average stock pickers, leading to the overbuying or overselling that produces more market volatility, or the common disease of “getevenitis” that causes people to hold on to losers for too long.

1. ## fi·nance /fɪˈnæns, ˈfaɪnæns/ [fi-nans, fahy-nans] noun, verb.

   

   ***“–noun***

   **1.**  the management of revenues; the conduct or transaction of money matters generally, esp. those affecting the public, as in the fields of banking and investment…

   **2.**  the monetary resources, as of a government, company, organization, or individual; revenue.

   ***–verb (used with object)***

   **3.** to supply with money or capital; obtain money or credit for.”

   http://dictionary.reference.com/browse/finance [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)
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12. Miller, M. H., and F. Modigliani (1961), “Dividend Policy, Growth and the Valuation of Shares, “Journal of Business, October 1961, 411-433. [↑](#footnote-ref-12)
13. Black, F., (1976), “The Dividend Puzzle,“ Journal of Portfolio Management, Winter 1976, 5-8. [↑](#footnote-ref-13)
14. Fama, E., L. Fisher, M. Jensen and R. Roll (1969), “The Adjustment of Stock Prices to New Information,” *International Economic Review*, February 1969, 1-21, and Brickley, J., (1983) “Shareholders Wealth, Information Signaling, and the Specially Designated Dividend: An Empirical Study,” *Journal of Financial Economics*, August 1983, 187–209. [↑](#footnote-ref-14)