INTRODUCTION OF INVESTMENT

Investment is a topic in which virtually everyone has some native interest. At a college campus, a number of students from astronomy to zoology seek to gain admission to an elective investments class in the College of Business Administration. Evening adult education classes with titles such as "Fundamentals of Stock Market" are common.

Most readers of this book are enrolled in a college-level investment course. For many students, this course will be the only time they ever formally study investments in a classroom sitting. The success of an individual investment program has lifelong ramifications, so soaking up as much of this material as possible can be advantageous. Aristotle said, "The educated differ from the uneducated as much as the living from the dead". This idea is especially true with regards to investment education.

INVESTING DEFINED:

An economist says when people earn a dollar; they do one of two things with it: they either consume it or save it. A person consumes a dollar by spending it on something like a car, clothing, or food. People also consume some of their money involuntarily because they must pay tax; a person saves a dollar by somehow putting it aside for consumption at a later time.

A distinction can be made between saving and investing. Saving involves putting money away with little, if any, risk saving dollars. Putting money in a bank certificate of deposit or a passbook account is saving. A saver knows the future return, and the account is probably insured by the Federal deposit Insurance Corporation (FDIC), a government agency that protects depositors against bank failure. In the short-run, saving involves few worries.

Investing also involves putting money away, but in a risky endeavor. Buying shares of stock in a New York Stock Exchange listed company is investing. If an investor choose to let a broker hold the shares and just send an account statement each month, his or her investment is protected against theft, loss, or brokerage firm failure by the Securities Investor Protection Corporation (SIPC), but not against a decline in value. Depending on the particular stock purchased and other holdings, an investor may have plenty to worry about.

Both saving and investing amount to consumption shifting through time. By not spending a dollar today, a person is able to spend more lately, assuming of course, the person saved or invested wisely.

Investing is risky but saving is not.

INVESTMENT ALTERNATIVES:

Assets:

Assets are things that people own. The two kinds of assets are financial assets and real assets. The distinction between these terms is easiest to see from an accounting viewpoint.
A financial asset carries a corresponding liability somewhere. If an investor buys shares of stock, they are an asset to the investor but show up on the right side of the corporation's balance sheet. A financial asset, therefore, is on the left-hand side of the owner's balance sheet and the right-hand side of the issuer's balance sheet.

A **real asset** does not have a corresponding liability associated with it, although one might be created to finance the real asset.

Financial assets have a corresponding liability but real assets do not.

Securities:

A **security** is a legal document that shows an ownership interest. Securities have historically been associated with financial assets such as stocks and bonds, but in recent years have also been used with real assets. **Securitization** is the process of converting an asset or collection of assets into a more marketable forum.

Security Groupings:

Securities are placed in one of three categories: equity securities, fixed income securities, or derivative assets.

1) **Equity Securities:**

The most important equity security is common stock. Stock represents ownership interest in a corporation. Equity securities may pay dividends from the company's earnings, although the company has no legal obligation to do so. Most companies do pay dividends, and most companies try to increase these dividends on a regular basis.

2) **Fixed Income Securities:**

A **fixed income** security usually provides a known cash flow with no growth in the income stream. Bonds are the most important fixed income securities. A bond is a legal obligation to repay a loan's principal and interest, but carries no obligation to pay more than this. Interest is the cost of borrowing money. Although accountants classify preferred stock as an equity security, the investment characteristics of preferred stock are more like those of a fixed income security. Most preferred stocks pay a fixed annual dividend that does not change overtime consequently. An investment manager will usually lump preferred shares with bonds rather than with common stocks.

Conversely, a convertible bond is a debt security paying a fixed interest rate. It has the added feature of being convertible into shares of common stocks by the bond holders. If the terms of the conversion feature are not particularly attractive at a given moment, the bonds behave like a bond and are classified as fixed **income** securities. On the other hand, rising stock prices make the bond act more like the underlying stock, in which case the bond might be classified as an equity security.

The point is that one cannot generalize and group all stock issues as equity securities and all bonds as fixed income securities. Their investment characteristics determine how they are treated.

For investment purposes, preferred stock is considered a fixed income security.

3) **Derivative Assets:**

Derivative assets have received a great deal of attention in the 1990s. A derivative asset is probably impossible to define universally. In general, the value of such an asset derives from the value of some other asset or the relationship between several other assets.

Future and options contracts are the most familiar derivative assets. These building blocks of risk management programs are used by all large investment houses and commercial banks.

The three broad categories of securities are equities, fixed income securities, and derivative asset.

THREE REASONS FOR INVESTING:

People choose to invest to supplement their income, to earn gains, and to experience the excitement of the investment process.

1) **Income:**

Some people invest in order to provide or supplement their income. Investments provide income through the payment of dividends or interest.

2) **Appreciation:**

Other individuals, especially those in their peak working years, may be more interested in seeing the value of their investments grow rather than in receiving any income from investment. Appreciation is an increase in the value of an investment.

3) **Excitement:**

Investing is frequently someone's hobby. Investing is not inherently an end in itself; it is a means to an end. Ultimately, the investment objective involves improved financial standing. If an active investor makes frequent trades but only breaks even in the process, only the stockbroker will benefit materially.

Investing is not an end in itself; it is a means to an end.

THE ACADEMICS STUDY OF INVESTMENTS:

Some things about the markets and investor behavior are clear. Many other things remain a puzzle. One objective of any investments course should be to distinguish between what we do and don't know. Let's look briefly at the two types of market research in which both professors and Wall Street professionals engage: theoretical and empirical research.

One objective of any investment course should be to distinguish between what we do and don't know.

Theoretical Research:

Theoretical research builds mathematical models and proposes pricing relationships rather than studying actual market data. Arbitrage is the presence of a risk less profit. Much of theoretical research is the study of arbitrage relationships.
Similarly, dividends must be paid from the firm's checkbook, and once the checks are sent, the firms total assets decline. With reduced assets, the firm is worth less and the stock price declines. Both these points can be demonstrated with theoretical models, but that does not mean people will believe them.

Arbitrage is a presence of a risk less profit.

Empirical Research:

Empirical research uses actual market data rather than mathematical models. Financial theory might suggest a relationship that should hold, and research might then the hypothesis using real numbers. Relatively arbitrary accounting decisions within the firms should not affect the value of the firm. The theoretical underpinnings of firm value show that if management could increase the value of the firm by a simple management action all rational management teams would do so. An empirical research project might be to investigate all stock splits over the past 60 months and see if the evidence is consistent with the "no change in firm value" thesis.

The financial press is particularly interested in empirical research, especially research dealing with anomalies. An anomaly is an observed result that defies explanation within the known theoretical framework

INTRODUCTION OF MARKET PLACE

Capital markets are the hallmark of the capitalized system. With the collapse of the Soviet Union, hundreds of delegations from the former communist bloc countries have visited the United States to learn about out markets and to facilitate the development of markets in Eastern Europe. Stock markets are one of humankind's greatest inventions; they raise everyone's standard of living,. Capital growth promotes job creation, increases disposable income, and increases charitable giving. The capital markets enable better use of the resources we have, allowing us to alter our consumption pattern over time.

Despite these benefits, many Americans are ignorant of how markets work. For them, the nightly newscast is largely incomprehensible when the talk turns to the day's activity on Wall Street. This chapter serves as a primer on our markets, how they work, and why we have them. More detail follows in subsequent chapters.

This chapter also introduces the Association for Investment Management and Research (AIMR), and the Chartered Financial Analyst (CFA) program. The CFA is a prestigious credential for those involved in the investment business. Many firms require participation in the CFA program as a condition of employment. Sections of this book and end-of-chapter problems related to the CFA program are marked with the symbol shown in the margin.

THE ROLE OF THE CAPITAL MARKETS:

Why is there a New York stock Exchange, or a Chicago Board of Trade, or a Chicago Board option Exchange? An exchange serves three principal functions: an economic function, a continuous pricing function, and a fair pricing function. Although exchange function is a topic in macroeconomics, the concept is sufficiently important to warrant discussion in an investments text.

ECONOMIC FUNCTION:

The most important function is the economic function. This mechanism facilitates the transfer of money from savers to borrowers. As an example, consider the secondary market for home mortgages. Many small communities in the United States contain middle-class residents with modest savings. Still, the houses they buy are expensive, and virtually everyone needs to borrow money to buy a house. A town's residents usually have a bank relationship because of the convenience checking and savings accounts offer. People also look to banks for home mortgages suppose one person goes to the local bank and is able to get a $100000 loan. Three other families do the same thing shortly thereafter. Very quickly, the entire saving of the town is loaned out. The bank cannot loan money it does not have. Does this mean that no one else in the town can buy a house? Fortunately, it does not. Elsewhere in the United States, individual investors want to lend money rather than borrow it. The key is to match up the would-be borrowers with the available savers. THE local banks holding the mortgage certificates can sell these mortgages to someone else, and routinely do so. Government agencies like the Government National Mortgage Association and the Federal National Mortgage Association help facilitate these sales. Once the local bank sells a mortgage, it receives an inflow of money that can be used to finance someone else's home mortgage. These mortgages can be sold, too, and the cycle goes on.

Similarly, corporations periodically need to raise money and often sells stocks and bonds to the public. The U.S government never has enough money, it seems, and sells treasury bonds to buyers all over the world. Investors with surplus cash buy these securities. Individual

who already own stock and suddenly need to raise cash con sell their shares to someone else.
These are all the examples of the economic function of the capital markets: Facilitating the flow of capital from those who have it and wish to invest it to those who need it and want to borrow it. When a firm sells securities to the public for the first time, it does so in the primary market. The firm receives cash in the exchange for the creditor position. After their initial sale, securities trade in the secondary market, also known as the used of securities market.

After selling shares in the primary market, the issuing firm receives cash. Concurrently, the shareholders equity portion of the corporate balance sheets changes. Trading in the secondary market, however, does not affect the firm's financial statements. If X buys 100 shares of the Intel common stock for $ 64, he pays $ 6400 to the seller of the shares. Intel receives nothing from the trade. Similarly, if y sells her Saturn automobile, the sale has not impact on the automobile company's financial statements. When people talk about what happened on the stock market, they usually mean the secondary market.

The economic functions of the capital markets: facilitating the flow of capital from savers to borrowers.

Continuous Price Function:

A second function of the capital markets is the continuous pricing function. It means precisely what the name indicates – prices are available moment by moment – and provides a tremendous advantage to the security investors. Consider the case of alternative investments: How much is an antique grandfather's clock worth? How about Chinese porcelain, or 50 acres of southern pine timberland? Determining the value of these items is not always cays, nor can the task always be accomplished quickly. First, an appraiser checks authenticity and condition. Having established this, we may need to check recent sales of comparable items. This could involve researching catalogs and auction reports or making numerous telephone calls. The necessary activities in this process can be time consuming and even nuisance

These problems are not an issue with financial assets as sticks and bonds. In most cases, anyone can discover the prices of the various financial assets instantly during the business day. People routinely call their broker and ask, "How's IBM? How about Texaco?" they fully expect and have come to take for granted an instant reply. Alternatively, one can always check the wall street journal or other newspaper with a business section or pull prices off the internet.

Some securities seldom trade, and we would be less confident in our ability to get a quick notation of a firm that is too small to be carried in the electronic price reporting system. Still, we could probably get a good estimate more quickly than we could for an attic full of uncategorized art or shoebox full of old coins.

The continuous price function enables market participants to get accurate, up-to-date price information.

Fair Pricing Function:

Fair pricing is the third function of the capital markets. Some people consider it the most important because it means that we can trust the system. You can tell you broker to sell your stock at the going price and be assured of getting a fair price.

This assistance is not there with most things that sell outside an organized trading ground. You would not, for instance, go to the automobile classified advertisements in the newspaper and automatically pay what someone wanted for a car that interested you if you did; you would likely pay considerably more than necessary.

A main reason capital markets prices are fair is the high number of players in the game. Many people are competing for the same business, in a sense. If you have stock to sell, thousands of people are willing to bid on it. The market ensures that you sell it to the highest bidder. Conversely, buyers confronted with numerous potential sellers can rely on the system to match their order with the best price, which from the buyer's perspective is the lowest price. The greater number of participants and the more formal the marketplace, the more assurance you have, that you are getting a good price.

Consider a well established local grocery store that is part of a national chain. Are you comfortable shopping there, or do you worry about not getting a good deal? Changes are the prevailing prices are competitive, because so many people pass through the store (and through others in the area) that stores with unreasonably high prices will simply not survive.

As another example, you might own an old coin you know to be valuable. One way to sell the coin would be to go a regional coin show, taking it to various dealers' tables and getting individual offers on it. An alternative is to offer it for sale at a coin auction. The latter choice will almost certainly result in a higher price. When many dealers look simultaneously look at a particular coin, the market is much more efficient than when the dealers individually look at the coin.

An old joke among academic people describes a business professor who was asked what is daily consulting fee was. He replied, "$2500 per day". When asked how much consulting he did, he replied, "none, but that is my rate". You can set any price you like, but when comparable services are available, the highest price is not likely to get any action from the buyers.

The fair price function removes the fear of buying or selling at rip off price. The greater number of participants and the more formal the marketplace, the greater is the likelihood that you are getting a fair price.

THE EXCHANGES:

Exchanges are not a new invention. The oldest stock market is probably the Amsterdam bourse, where shares of the East Indies trading company changed hands. Future contracts traded at the Osaka rice exchange as far back as 1754. What makes the US exchanges to respected are the member of securities traded, the quality of the trading and the oversight of the trading mechanism.

National Exchanges:

The two national exchanges in the United States were historically the New York stock exchange on Wall Street and the American stock exchange on trinity place, one block from the NYSE. In early 1999 the AMEX merged with the NASDAQ stock market. The NYSE dates back to 1792, when 24 merchants began gathering daily to exchange shares of stock. Legend has it that these people met under a buttonwood tree where they traded shares among themselves. The NYSE recognizes the bank of New York as the first corporate stock to have traded on the exchange.

The NYSE officially opened in 1817 in tontine's coffeehouse. A membership cost $25. In 1825 only 70 stocks were listed. As the capital markets grew, the need to limit the number of exchange members became obvious. Trading continued outside near the buttonwood tree, however, in the area knows as the curb exchange. The curb exchange moved indoors in 1921. It adopted the name AMEX in 1950s.

Only exchange members may trade on the floor of an exchange. A membership is commonly called a seat. Most people are not members and, in order to buy securities, must normally hire someone who is a member to make a desired trade. That person is a broker. The broker is paid commission for his or her efforts. In early 2000, discussions were underway regarding the feasibility of taking NYSE public. Instead of buying or selling seats like any other asset, the current owners of the seats would receive common stock shares. In theory, anyone could then own a piece of the NYSE simply by acquiring one or more shares.

Today, during an average day, over $40 billion worth of stock trades at the NYSE. The NYSE is colloquially called the big board. NYSE employees still sometimes refer to the AMEX as the curb exchange.

Regional Exchanges:

The NYSE is not the oldest US exchange; that distinction belongs to the Philadelphia stock exchange, organized two years before the star of NYSE. Investors call the Philly and 13 other smaller exchanges regional exchanges. Many securities are dual listed, which means they trade on both a national exchange and on one or more of the regional exchanges. Coca cola for instance, trades on the New York, Boston, Cincinnati, Chicago, pacific, and Philly stock exchanges. It also trades on the Frankfurt, Germany, and Zurich, Switzerland exchanges. Worldwide, there are approximately 150 stock exchanges throughout more than 50 countries. The oldest continuously running exchange is the London stock exchange, in business since 1773.

TRADING SYSTEMS:

People buy and sell securities through different mechanisms via the specialist system, via the matchmaker system or electronically.

The Specialist System:

The specialist system is a distinctive feature of the NYSE and the AMEX. At the exchanges, trades in a particular security are subject to the oversight of an exchange member called the specialist. The specialist is charges with making a fair and orderly market in one or more assigned securities. There are about 460 specialties, most of who handle between 5 and 10 stocks. A specialist is one of the more active stocks will likely handle only that security. A specialist is one of the more active stocks will likely handle only that security.

Suppose an individual investor has a brokerage account with Paine Webber and places an order to buy 100 share of IBM common stock. The individual's stock-broker wires the order to the floor of the NYSE, where Paine Webber employee receives it and tasks it to the specialist's post. The post is the specific location on the exchange floor where IBM stock trades. By exchange rules, IBM may only trade at the IBM trading post. The NYSE has 17 trading posts.

At the specialist's post, three prices for IBM are shown on the computer screen: the bid price, the offer price, and the price at which the last trade occurred. The bid price is the highest price anyone has expressed a willingness to pay for IBM stock. The offer price is the lowest price at which anyone is willing to sell. The computer screen might show IBM bid at 55, offered at 55¼, with the last trade at 55 1/8. The specialist's is job to keep the difference between the bid price and the offer price small. This difference is the bid spread. At the NYSE, 90% of all trades take place within $1/16^{th}$ of the previous price, and 98% take place within $1/8^{th}$. The specialist also ensures that sellers will always find a buyer for their shares, and that buyers will always find shares for sale.

The specialist can get fined for failure to perform his or her duties properly. In 1999 the NYSE fined one specialist firm $200,000 for allegedly failing to maintain a fair and orderly market in six assigned stocks on eight occasions from October 1996 to September 1998. In one instance, on October 27, 1991, the Dow Jones industrial average was down 554.20 points because of the Asian crisis. The following day city corporation opened at $113, down more than $10 from the previous day's close. The stock then rallied to $127.50 by the end of the day. Some market participants felt the specialist failed to set the opening price properly and then failed to deal with its rapid rise. The NYSE alleged that the specialist failed to participate adequately as a dealer against a market trend doing certain periods of significant price movement.

The specialist is charged with making a fair and orderly market in one or more assigned securities.

SuperDot:

SuperDot is an electronic system enabling NYSE member firms to send certain orders directly to the specialists' posts on the floor of the exchange without using a human runner to deliver the order. Specialists, in turn, use SuperDot to confirm trades back to the member firms. The NYSE reports that on a given day more than 75% of its trading volume is via SuperDot.

Any NYSE security may be traded via this system, prior to the opening of the trading day; investors may place orders for immediate execution of up to 30000 shares. Once the day's trading begins, the maximum order size drops to 2100 shares. Orders to buyer sell at a set price or better for up to 100000 shares may be placed at any time. About 85% of all orders reach the specialists via the SuperDot system. These orders comprise about 38% of total volume.

Marketmakers:

The market maker system differs from the specialist system in that a group of competing individuals (rather than a single person) maintains the fair and orderly market. Futures exchanges and the Chicago board options exchange use the market maker system

The visitor to a market maker exchange will be impressed with the activity on the trading floor. Rather than a post, the market maker system uses trading pits. In these sunken areas on the exchange floor, groups of market makers trade by open outcry, calling out theirs offers to buy and sell and eliminating any standing in line or computerized order entry. The collection of market makers in any trading pit is called the crowd.

INTRODUCTION OF MARKET PLACE Contd…

Circuit Breakers and Trading Curbs:

In listening to market reports, you will sometimes hear that trading curbs are in effect or that a circuit breaker kicked in". While both trading curbs and circuit breakers are designed to reduce temporary volatility in the market, they are slightly different. At the NYSE, anytime the Dow Jones industrial average moves up or down more than 2%, computerized trading via the SuperDot system is restricted. This happened 366 times on 277 separate trading days in 1998. Non computerized trading continues despite the circuit breaker having been activated.

Trading curbs halt all the trading at the exchange, not just computerized trades. If the Dow Jones industrial average drops 10%, trading stops for an hour or for 30 minutes if the drop was between 2:00 pm and 2:30 pm. After 2:30 pm, trading is not halted. A 20% drop halts trading for two hours if it is before 1:00 pm; for one hour if between 1:00pm and 2:00 pm; and for the rest of the trading day if after 2:00 pm. A 30% drop halts trading for the remainder of the day.

Trading has only been halted once because of there provisions. On October 27, 1997 the DJIA was down 350 points at 2:35 pm and down 550 points by 3:30 pm. This shut down trading for the remainder of the day.

THE NASDAQ STOCK MARKET:

Once a stepchild of the marketplace, the NASDAQ stock market, still sometimes called the over the counter market, is now an important part of the investment arena. Securities trading in this market range from small, unknown firms to some of the largest companies in the world.

The NASDAQ National Market:

Unlike the national and regional stock exchanges, no actual place is called the over the counter market. Rather, it is a worldwide computerized linkup brokerage firms, investment houses, and large commercial banks. The headquarters of the computer system is in Trumbull, Connecticut, with a backup system in Rockville, Maryland. Bids and offers for individual securities are posted to an electronic bulletin board. These prices appear in the financial press under a heading including the term NASDAQ, shorthand for national association of securities dealer's automated quotations. NASDAQ price quotations first appeared February 5, 1971.

In 1980, NYSE trading outnumbered NASDAQ trading two to one. Today, the numbers of share traded on each of the two systems is approximately equal. Some were very large company's trade in the NASDAQ market. Including apple computer, sun Microsystems, Microsoft, oracle, MCI communications and Intel. These companies could easily be listed on the NYSE or AMEX of they so close. While many NASDAQ firms are small, start-up companies. In fact, the phrase NASDAQ stock market is increasingly common, emphasizing the growing importance of this part of the marketplace.

Trades of up to 100 shares can be executed in less than 1 minute via the small order execution system. For most stocks, SOES historically executed orders of 1000 shares of less

against the best quotes posted in the market. This essentially means that an investor could place an order to buy or sell 1000 shares of an actively traded NASDAQ stock and be confident of getting the order filled at a single price that is the best prevailing price in the market.

After the stock market crash of 1987, member firms were required to participate in the SOES system. There were information and order flow problems during the crash that kept some market makers from honoring quotes maintaining and orderly market. Once the SOES system was put in place, a lazy market maker ran the risk of getting hit by SOES bandits who would "pick off" the slow market maker by trading 1000 shares at the untimely price and instantly earn a profit. Perhaps a stock had been trading at $25, and a market maker had posted a bid of $25. Later of stock falls, perhaps to $24¾, but the market maker fails to adjust the bid. An SOES bandit could spot this, buy 1000 at $24¾, and hit the stale bid of $25. Under SOES, the market maker would be obligated to honor a trade of 1000 at $25.

Today the 1000 share rule is no longer absolute. A market maker who posts a bid on 400 shares obliged to honor the bid for an extra 600. For liquid, actively traded stock, however, getting 1000 shares at a single price remains the norm.

Tiers of the NASDAQ Market:

The largest and most established firms in the NASDAQ market are called national market issues. These securities, which number about 4000, include firms such as Intel and Microsoft. Information about national market issues is usually readily available and normally covered the popular reference sources found in most public libraries.

Other NASDAQ securities are small-cap issues, meaning they have a low level of capitalization. There are abut 1250 of these securities, but detailed information about them is substantially more difficult to gather quickly. These firms receive limited coverage in the financial press. Most pay no dividend; many are too new to have any earning from which to pay the dividend. The newspaper listing for small-cap issues is abbreviated; generally only trading volume and closing price appears.

THE OVER THE COUNTER MARKET:

Some investors view the terms NASDAQ and OTC synonymously. This may have been accurate at one time, but not any more. Today the term OTC equity security refer to an equity security that is not listed or traded on NASDAQ or national securities exchange. On NASDAQ, there are listing standards, automated trade executions, formal corporate relationships with the underlying firms, and substantial market maker obligations. This is not true of over-the-counter securities. These trade two ways, either via the OTC bulletin board or via the pink sheets.

Over-the-Counter Bulletin Board (OTCBB):

The OTC bulletin board is a regulated quotation service providing real-time information on OTC equity securities. The OTCBB came about largely because of the penny stock reform act of 1990, which required the **SEC** to establish a system facilitating widespread dissemination of piece quotation on OTC equities. Since December 1993 firms have been required to report trades in these securities within 90 seconds of the transaction.

There are approximately 5500 OTCBB securities and about 400 firms making a market in them. It is important to note that the OTCBB is only the means of providing price

information; it does not also serve as a listing service as the NASDAQ dose. A firm can apply for listing on NASDAQ under the prices set of rules. On the OTCBB, the market makers decide how much to buy and sell of a particular security, so a firm has no assurance it will be able to sell new shares at an initial price.

Pink Sheets Stocks:

The smallest and often most speculative OTC stocks are the pink sheet issues. Information on these securities comes from the NOB, which begin providing the data in 1913. Roger Babson, founder of Babson College was largely responsibly for its origination. The name comes from the fact that historically the pricing informed appeared on narrow strips of pink paper and hung from a clipboard in brokers' offices.

The information was often limited to a dealer's name, telephone number, a bid price, and an offer price. As technology advanced and investors became accustomed to current price data on demand, the pink sheets have changed, too. Stale pricing data is not longer acceptable. Now subscribers can access real time data on pink sheet stocks via the internet at www.otcquote.com.

Some pink sheet stocks have virtually no assets or than someone with a good idea. The corporate headquarters may be a rented office with a mailbox, telephone, desk and nothing else. Others have assets and real revenue but are closely held and have no interest in exchange listing. Good ideas can make a great deal of money if they are economically feasibly. The initial capital investors provide to these firms may be used to provide living expenses for the person with the good idea who needs time to think and develop a game plan to exploit idea.

For some people, small OTC issues hold particular intrigue; buried in the list somewhere lays the next apple computer, AOL, or Netscape. Pink sheet stocks are often very inexpensive, so the analyst who can correctly spot a few winners may make huge profits if the idea takes off.

Third and Fourth Markets:

Listed securities can be traded in the NASDAQ market. General electric, for instance, trades on New York stock exchange. A brokerage firm could offer to sell 1000 shares of GE through the NASDAQ system. In essence, they post a for-sale advertisement on the inter market trading system (ITS). GE is the widely traded stock and odds are extremely goo that someone will bid on it. The trading of listed securities in the NASDAQ market is known as the third market. The third market may offer greater trading flexibility than the exchanges, particularly with regard to trading rules and fees.

Sometimes large institutions at trade bypass both the exchanges and the NASDAQ system and trade directly with other. For example, a portfolio manager at a Boston-based mutual fund might decide to sell 50000 shares of Microsoft. In such a case, some portfolio managers make it a habit to call portfolio managers at other firms and attempt a direct attempt rather than going through the changes or NASDAQ. The mutual fund manager might call a portfolio manager at an insurance company and arrange the sale. Direct trades between large institutional investors comprise the fourth market. Fourth market trading is usually motivated by reduced trading fees. These trades may be done face to face or over the telephone, but more likely they are done via institutional network, know as Instinet. Instinet users receive a proprietary fee and pay commissions at about 25% of the full service broker rate. Only financial institutions and brokers have access to Instinet. Price data on

several thousand popular stocks on 16 different exchanges are maintained on Instinet, and like NASDAQ, the system electronically searches for the best price for a particular trade.

REGULATION:

Another globally envied characteristic of the US exchanges in their oversight and consequent safety. While nothing can keep market prices from responding to economic and psychological events, effective regulation can reduce the possibilities that investors will be missed by the unscrupulous.

The Exchanges:

The exchanges established regarding the financial capacity of members serving as stock specialists. Rule 104.20 of NYSE constitution and rules requires each specialist firm to continually carry sufficient capital to assume a position of 15000 shares in each common stock in which they are registered. At the American stock exchange, rule 171 of AMEX constitution and rules require each specialist to have sufficient capital to assume 6000 shares or $600,000 whichever is greater.

In addition to the financial and market activity requirements have been established. For some foreign companies, these requirements are much more stringent than in their homeland. Until recently no German firm listed its stock on a US stock exchange. The apparent reason was dislike of these disclosure requirements and US accounting standards. Daimler Benz (manufacturer of Mercedes automobiles) broke ranks in 1993, did the additional work, and became listed on NYSE. It subsequently merged with Chrysler to become Daimler Chrysler.

The SEC:

Background:

Congress established the Securities and Exchange Commission SEC in 1934. The purpose of the SEC is to promote honest and open securities market. In particular, the SEC is to ensure full and fair disclosure of relevant corporate information to potential and current investors in the firm.

Note, however, that the mere fact that a firm has all its reporting and compliance ducks in order does not mean that its securities are a good instrument. The SEC itself states:
"Conformance with federal securities laws and regulations does not imply merit. If information essential to informed investment analysis is properly disclosed, the commission cannot bar the sale of securities which analysis may show to be of questionable value. It is the investor, not the commission, who must take the ultimate judgment of the worth of securities, offered for sale."

Some people believe congress created the SEC in response to the great crash of 1929. Actually, attempts to regulate the US securities industry date back to the late nineteenth century. As capital markets grew during the industrial revolution, so did the instances of price manipulation and other abuses.

One of the most notable instances of abuse is the infamous Ponzi scheme. In a ponzi scheme someone returns part of the investors' principal, claiming it as profit.

The primary purpose of the SEC is to ensure that investors have adequate information to make an informed investment decision.

Primary acts:

Perhaps the two most important security acts as influencing the investment industry today are the securities act 1933 and the securities exchange act of 1934. Both acts were part of President Roosevelt's new deal legislation.

The securities act of 1933 is specifically designed to protect investors against characters such as Charles Ponzi. It provides for the regulation of the initial sale of virtually all securities. It does not cover the secondary market nor does it apply to the primary market offerings of US government debt securities or to municipal or state security offerings. The act is sometimes called the truth in securities law, and is really about accurate disclosure.

The securities exchange act of 1934 deals with the secondary market. Like its forerunner, it focuses on accurate disclosure surrounding listed securities. In1964 the act was amended to cover most NASDAQ securities. Its major features include registration of exchanges and brokers, prohibition of misleading trading practices, the establishment of proxy procedures for shareholder votes, and a protocol for handling tender offers.

The NASD:

The **National Association of Securities Dealers (NASD)** is a self-regulatory body that licenses brokers and generally oversees trading practices. Congress provided for the creation of such a national securities association in a 1938 amendment to the Securities Exchange Act of 1934. The NASD is the owner and proponent of the NASDAQ price quotation system. The SEC specifically overseas the trading of listed securities, while the NASD overseas all trading. The SEC also oversees the NASD. A central theme of the 1938 amendment is the promotion of a voluntary code of business ethics.

SIPC:

In 1970 Congress passed the Securities Investor Protection Act, which established the Securities Investor Protection Corporation SIPC. This organization protects investors from loss due to brokerage firm failure, fraud, natural disaster, or theft. Since its inception, the SIPC has liquidated more than 200 firms and distributed nearly $1 billion in claims to more than 200,000 investors. It does no provide protection against loss due to bad investors, however. Brokerage firms provide a minimum of $500000 protection to each of their customers. For an added insurance premium, firms can increase their protection level. The division of market regulation of the Securities and Exchange Commission supervises the SIPC.

ETHICS:

One characteristic of the marketplace that should be mentioned in the discussion is the growing sensitivity to the importance of ethical behavior of those who can deal with the public's money. Much of the regulatory history of the markets stems from attempts to curtail questionable or downright corked behavior on the part of unscrupulous characters who seek to take advantage of those who are financially unsophisticated

Illegal vs. unethical:

A wide range of investment activities may be legal, but these activities carry substantial ethical baggage. Suppose, for instance, someone asks a finance professor about the potential of Gillette common stock. "I think it is a great investment' the company's sales will go up forever" may be the professor's opinion, which is not illegal to express.
From an ethical perspective, however, an important aspect is the basis for the opinion. If the professor knows nothing about the company but is simply stating a preference for the company' razors, then the opinion is quite different from one formed from careful company's analysis. It might not be illegal for the professor to like Gillette or to state a personal opinion, but many people would consider it unethical to give the impression that such an opinion is the result of careful analytical study.

Suppose the professor likes Gillette after reading a research report in which an analyst recommended the stock. Does this make the opinion more reasoned, and therefore give the response more ethical credibility? Take for instance, another consideration with ethical overtones. Suppose the professor has researched Gillette and does believe it as a common stock with above average potential. Can the professor now comfortably recommend Gillette when someone asks about it? Even now the answer is not clear cut. Who is asking? 30 years old professional earning $75000 per year or a 75 years old widow was living on a fixed income? It is not possible to discuss the merits of a particular investment without knowing the context in which the potential investor is asking the question.

The capital markets serve three primary functions. The economic function brings buyers and sellers together. The continuous pricing function enables traders to get market prices quickly. The fair pricing function is related to the continuous pricing function and assures both buyers and sellers of getting a market-determined price when they trade.

The two national exchanges in the United States are the New York Stock Exchange and the American Stock Exchange. The AMEX recently merged with the NASDAQ stock market, the latter having historically been called over-the-counter market. Thirteen other smaller exchanges are known as regional exchanges. Worldwide, approximately 150 exchanges exist in more than 50 countries.

Many securities trade in the over-the-counter market via the NASDAQ system. In this electronic linkup of brokerage firms, orders are placed by computer. Some very large companies are National Market Issues, with smaller firms listed as small-cap stocks. The over-the counter market is distinct from the NASDAQ Stock Market. OTC securities trade as either OTC Bulletin Board stocks or as Pink Sheet issues.

Shares are initially sold in the primary market. The sales of listed securities via the NASDAQ system are called the third market, while direct institutional trading via the Internet system is the fourth market.

Numerous organizations regulate the securities industry. The most important pieces of legislation are probably the Securities Act of 1933 and the Securities exchange Act of 1934, which significantly improved the required level of financial disclosure for public securities. The Securities Investor Protection Corporation provides protection against fraud or brokerage firm failure.

The Chartered Financial Analyst (CFA) designation is a prestigious credential for those involved in the money management business. In many businesses, enrollment in the CFA program is a prerequisite for employment.

Of all securities, common stock is probably the most familiar. Sill, many people know comparatively little about stock, why it exists, how Company A's shares differ from Company B's, and how the potential investor decides among them.

CORPORATIONS, SHARES, AND SHAREHOLDER RIGHTS

Common stock is the hallmark of the capitalist systems. Millions of people directly own a portion of U.S. business through their investment in common stock; millions more have an indirect ownership interest through their investments in mutual funds, insurance contracts and retirement annuities. People own stock have an equity interest in the organization.

Corporations:

If a business has shares of stock, it is organized as a corporation rather than a proprietorship or a partnership. Corporations very widely in their complexity and size General Motors (GM NYSE) and Intel (INTC, NASDAQ) are corporations, but so are many doctors professional athletes and inventors.

All corporations issue common stock, but it is not always possible for the general public to buy the shares. The stock of some corporations is closely held, meaning the people who own the stock do not routinely offer it for sale. The stock of outdoor sporting gear Giant L.L. Bean is closely held and not available to the public. The professional golfer Jack Nicklaus operates as "Golden Bear Golf." Until recently an individual investor could not buy shares in Golden Bear. (These shares now trade with the ticker symbol JACK) Investors can however buy shares in the Boston Celtics; they trade on the New York Stock Exchange. People who own stock in the Boston Celtics (BOS, NYSE) are part owners of the basketball organization and share in its success. You can also buy shares in the Cleveland Indians (GLEV, NASDAQ). These shares are publicly held because any investor can acquire them with a simple phone call to a stockbroker.

Shares:

In the United States, those two types of stock are common stock and preferred stock. Both are equity securities and both represent a partial ownership interest in the firm. Don't be misled by the term common. It does not mean the stock is average or routine. Common stock is really a single term rather than an adjective and a noun. In formal terms, common shareholders have a residual claim on the assets of the firm after the bondholders and other creditors.

Preferred stock (also called preference stock) has priority over common stock in the event the firm goes bankrupt and the courts direct the distribution of the remaining firm assets. To an individual investor, this is probably preferred stock only advantage. Most preferred stock pays a perpetual fixed dividend stream; it is more like a consol bond than a share fo common stock. If market interest rates change the value of existing preferred stock, moves significantly. Preferred shares actually have more interest rate risk than bonds, because they have no maturity date at which their price will return to par.

Most preferred stock is owned by other corporation because of tax advantage. A corporation avoids taxation on most of its dividend income, and preferred stock tends to pay more in dividends than common stock. The appendix to Chapter Nineteen elaborates on this point.

Shareholder Rights:

Investors in the shares of U.S. corporations are entitled to standard bills of rights unless otherwise provided in the corporate charter. A few of these are especially important to stock investors.

The Right to Receive Declared Dividends on a Pro Rata Basis:

A corporation is not required to issue any kind of dividend to its shareholders. Shareholders do not have a right to dividends; but if a dividend is declared the dividend each shareholders, receive must be in proportion to the shareholder's ownership interest in the firm. A person owning 500 shares receives five items the dividends received by a person owning 100 shares.

The Right to Vote:

Shareholders are entitled to vote on matters of interest to the corporation, such as the election of the board of directors, the selection of an auditor, and amendments to the corporation charter. The usual rule is the shareholders gets one vote for each share held.

Some companies have more than one class of stock, such as Class A and Class B. Tele-Communication, Inc is the largest operator of cable television systems in the Untied Sates. It has both Class A and Class B stock. Class A stock gets one vote per share, while Class B gets 10 votes per share. There are nearly 9,000 Class A shareholders, but fewer then 700 Class B shareholders; 69 percent of the Class B shares are closely held. Still a potential investor can buy either class.

Until recently General Motors had Class A, Class E, and Class H common stock, the automobile share are Class A. Class E shares came about as a consequence of GM's acquisition of Ross Perot's computer company EDS (hence the letter E). The income of the EDS subsidiary was the basis for any dividend declared on the Class E stock. These securities had 1/8 of a vote per share. These share no trade as Electronic Data System (EDS; NYSE). The Class H stock arose form GM's acquisition of Hughes Electronics. These shares have ½ vote each, and like the E share receive dividends based on the separate income of the associated GM, subsidiary.

Corporations hold an annual meeting at which time shareholders may exercise their right to vote. Most shareholders however, are unable to attend the meeting. These people may still exercise their right to vote by completing a proxy statement in advance of the annual meeting. This form automatically comes in the mail with the annual meeting announcement. It is really an absentee ballot the shareholder sends to a neutral party (usually an accounting or law firm) that will vote in the shareholder's absence in accordance with the shareholders wishes.

In additional to the process of voting shareholders, also have the right to propose matters to be voted upon. Any shareholder even a person with a single share, may submit a proposal for consideration at the company's next annual meeting. In general any such proposal must be included in the proxy statement the firm sends out.

It is unusual for a shareholder proposal to get enough votes to pass, but it does occasionally happen. In 1993, a person holding 100 shares of Chemical Banking Corporation (CML, NYSE) proposed that the corporate board of director be elected all at once rather than serve

staggered terms. (Staggered director terms are a common defense against hostile takeovers). The bank agreed with this idea and it was incorporated into the corporate charter.)

The Right to Maintain Ownership Percentage:

Sometimes a firm chooses to raise new capital by selling additional shares of stock. The preemptive right gives existing shareholders the right to maintain the same ownership percentage before and after the new stock sale. Suppose for instance a corporation has 10 million shares of stock outstanding and a pension fund owns one percent of them. If the corporation decides to issue an additional 1 million shares, the pension fund will be entitled to purchase 10,000 (one percent) of these new shares. If it does so after the stock issue the fund would own 110,000 of the 11 million total shares still one percent of the total.

The mechanics of the preemptive right are accomplished by a right offering; giving existing shareholders first crack at any new shares offered by the company. These rights function like store coupons. They allow their owner to buy the new stock at a below market price.

Rights are actual securities that can be bought and sold. They have a limited life usually expiring within a few weeks after they are issued. People who hold their own stock certificates will receive the rights in the mail, people who leave their securities with their brokerage firm find them listed on their next account statement.
The investor can do one of three things with these rights, (1) sell them to some one else, (2) use them to buy share, (3) let them expire. The last option is inappropriate because it amounts to throwing money away. Rights are valuable and should be exercised if you want more stock. Otherwise sell them.

Describes the terms of a right offering for the Emerging Mexico Fund (EMF, NYSE); dated February 14, 1994, the notice indicates the offering expires on March 3, 1994 As with most right offerings, shareholders have only a few weeks between the initial announcement and the expiration of the rights.

In this case, shareholders received one right for each share owned. Buying one new share required 3 rights, and each new share could be purchased at a discount of about five percent from the current market price The EMF right had a market price of about 7/3nds of a dollar apiece. While this is not a lot of money, customers are not happy about losing out because they were uninformed. Just before, expiration brokerage firms may sell customers' right on their behalf if they do not receive instruction to the contrary.

Many investors keep their stock certificates at home or in a safe deposit box at the bank. When stock rights are issued they are sent to the registered owners. Because stock rights are confusing securities to almost everyone too often they go onto, a stack on a desk and are temporarily forgotten. After a few weeks, they expire and their value is lost and can not be recovered. If instead an investor stock is held by the brokerage firm, the rights will be sent to the brokerage house, and the broker should make sure that they are not wasted.

To avoid unhappy clients, brokerage firms carefully monitor rights offerings and advise their clients appropriately.

The preemptive right is sometimes waived in the corporate charter. The face of the stock certificate might specifically say without preemptive rights.

Type of dividends:

The three types of dividends that corporations may pay to their shareholders include cash dividends stock dividends, and property dividends.

1. **Cash Dividends:**

A cash dividend not surprisingly, is paid in cash and is the most common type of dividend. Most firms have an established dividend payment schedule through which a portion of the firm's profits are returned to the shareholders. These dividends may be received as cash (via a check form the company) or they can sometimes be reinvested in additional shares of stock in the firm. This latter option is accomplished via a dividend reinvestment plan, often called a DRIP. Such a plan virtually always provides for the purchase of fractional shares with the reinvested check. If the current share price is $25, $30 dividend check would buy 1.2 shares.

More than 1,000 firms have a dividend reinvestment plan. Reinvested dividends can make a significant difference in the growth of an investment, particularly if the additional shares are acquired at a discount form the prevailing market price. About 100 firms, especially bank and utilities encourage dividend reinvestment by offering such a discount.
To see the potential impact of dividend reinvestment over the long run supposes two firms are identical in every respect except that one reinvests dividends at a 5 percent discount while the other has no dividend reinvestment plan. Assume cash earns 4 percent the two firms have a constant 5 percent dividend yield both shares initially sell for $25 and the share price rises by $1 per year for ten years. At the end of the period the account value with reinvestment would be $61.38 compared to $38.52 without reinvestment.

If an investor securities with a broker for safekeeping rather than taking them home, they are said to be held in a street name. In this case the company paying dividends pays them to the brokerage firm. The firm's subsidiary accounting then allocates the large dividend check appropriately among the clients owning this stock. Most brokerage firms have arrangements whereby any excess cash in an account is automatically transferred into an interest earning fund of some type.

One of the minor inconveniences with dividend reinvestment is that the shares usually must be registered in the individual investor name they cannot be held in a street name. Also dividend re-investment results in the holding of odd lots. An odd lot is a quantity of shares not divisible by 100. holding are either odd lots or round lots (quantities that are divisible by 100.) the opportunity to be able to buy shares at a discount from the prevailing market price through makes up for any odd lot in convenience. There is really nothing wrong with holding an odd lot anyway.

At the 1995 annual meeting of the Walt Disney Company (DIS, NYSE) shareholders voted on a stockholder proposal to reinstate the dividend reinvestment plan the firm terminated in 1990. a husband and wife owing 108 shares made the proposal in accordance with their rights as shareholders and the proposal appeared in the meeting announcement.

The company recommended voting against the proposal on cost effectiveness grounds. The company had more than 470,000 stockholders and incredibly 69 percent owned 25 shares or less 78 percent owned 50 shares or less and 83 percent owned 100 or less. The clerical task and associated expenses of the dividend reinvestment plan would be significant. The proposal failed.

2. **Stock Dividends:**

Stock dividends are paid in additional shares of stock rather than in cash. Firms announce these a as percentage such as a 10 percent stock dividend, which means the holder of 1000 shares would receive an additional stock certificate for 100 shares. The person who holds 100 shares would get 10 more.

If you hold an odd lot you will receive a check for the value of any fractional shares that cannot be distributed. Suppose you hold 221 shares worth $25 each. A 10 percent stock dividend means you are entitled to 22.1 shares. In practice you would receive an additional 22 shares plus a check for 10 percent of $25 or $2.50.

It is unclear why firms issue stock dividends but we do know several things about them. First, they are often used when firms lack the funds to pay a cash dividend. They are especially common in the infancy or adolescent stages of a firms life cycle. Second, many shareholders seem to like them. A young firm may establish a pattern of paying a cash dividend and a stock dividend on a regular basis.

3. **Property dividends:**

A property dividend is the prorate distribution of a physical asset. The asset is usually something the firms produce. Property dividends were popular in the early days of the capital markets when the number of shareholders in a particular company was small and the company produced something that could conveniently be distributed.

The London East Indies Company is an example. In 1928 the company distributed a dividend in pepper and calico interesting shareholder discussions followed regarding the merits of commodity dividends versus traditional cash dividends.

Discussions frequently occurred whether the distribution should be incommodities or money. The former was preferred by the merchant shareholders as they could realize additional profits by selling the commodities the gentry on the other hand preferred money. Subsequently there was a kind of alternation; in 1647 there was a dividend in indigo in 1649 in money, in 1650 in both pepper and money, in 1651 and 1652 in money, in 1653 in paper and money. As late as 1678, the East India Company paid a dividend in damaged calico for which it could find no market.

Early U.S. railroad companies occasionally distributed parcels of land form their land grants to their shareholders. During World War II the government rationed consumer goods. Distillers and the manufacturers of women's nylon stockings got around the ration laws by issuing these products as property dividends. Each November Swissair issues a voucher for 15 Swiss francs per shares. These can be accumulated and used as credit toward ticket prices (up to a maximum reduction of 50 percent).

Why Dividends Do Not Matter:

The company's decision to pay or not to pay dividends is a complex issue. As we will see, dividends play a role in security valuation, especially with mature Industries. Public utilities, Insurance companies, and banking still, widespread understanding exists about economic value of dividends to shareholders. In many distances, a strong case can be made for the notion that dividend do not matter at all.

When people are first told that dividends do not matter they are often skeptical; how can a check that can be cashed and spent not matter? Suppose a professor appears before a group of finance students and claims to be able to prove that dividends so not matter. The professor produces a shoe box and sets it on to the table in the front of the room but does not show the contents (if any); however a neutral party is chosen to verify that box contains nothing bad. The neutral party essentially fulfils the role of an outside audition.

As students watch, the professor counts out 100$ and place them into the shoe box. After replacing the lid on the box, the professor announces an intention to ownership interest in the show box by going public and issuing 100 shares. Anyone who buys all 100share will own the entire company. Naturally the professor wants to sell the company for as much as possible, but the marketplace will determine how much the box is worth. Each share must be worth at least one dollar. If it were worth less, a risk less profit would exist because any purchaser could be certain of receiving the $100(at least) contents of the box for less than this amount.

In practical, the share will probably sell at a sight premium over $1 exactly. Some students buy one share, other buy more, some won't buy any. Collectively though, they acquire all 100 shares. The professor takes the $100 they paid, issued the shares. And then no longer owns the shoe box or its contents.

Now the board of directors of the shoe box decides to pay a 10-cent per- share cash dividend. The outside audition reaches into the box, take out ten one dollar bills exchange them for two rolls of dimes, and proceeds to distribute the dimes to the students according to the number of shares they own. Folks who bought one share get one dime, those who bought five get dimes, the 100 dimes are distributed this way.

How will the marketplace view this activity? Will the shares in the shoe box still command a price of $1? They will not of course, because there may only be $90 left in the box, without knowing precisely what is in the box, investors/students know that its value is less now than it was before the payment of dividend. What will happen is that the market price of the shoebox shares will fall by the amount of the dividend. Shares that previously sold for $1 will now sell for 90 cents.

This scenario is generally what happens in the real world. Dividends do not fall from the sky; they are real money paid from the firm's checking account. If the firm gives the money away in this fashion, the firm is simply not worth as much after writing the checks.

A person once said, "I don't understand it; every time this stupid stock pays a dividend its price goes down. You would think it would go up." That person obviously had not heard the shoe box story.
As stated previously, the ex-dividend date determines whether a stockholder receive the dividends; consequently, on the ex-dividend date the price of a share of stock lends to fall by about the amount of dividend to be paid. Stock is normally priced in sixteenths of a dollar, so the share price may not be fall by exactly the right amount. Research into this question is also confounded by a variety of other factors that affect the price of the stock, making it difficult to isolate a pure dividend effect.

There is some evidence that the stock price drop lends to be less than full amount of the dividends especially with "low dividend" stock. One study find that while high dividend stock fall by 98% of the dividend amount, low dividend stocks fall by only 16%. See Frank Murray, and Ravi Jagannathan, "Why Do Stock Price Drop by Less than the Value of the

Dividend? Evidence from a Country without Taxes," Journal and Financial Economics (February 1998), 161-188.

An extreme example provides further intuition into why the share falls after the payment of a dividend. In late 1987 UAL Corp. (UAL, NYSE) the parent of United Airlines, decided to sell its three non airline subsidiaries. Hertz Car Rental, Hilton International Hotel, and Westin Hotels. This "extraordinary" transaction board of directors subsequently announced its intent to pay a $50 special dividend to the shareholders. Why nearly 22 million shares outstanding, payment of such a dividend would be sizable reduction in the firm's assets, and the value of the firm would be expected to fall.

To reduce the tax ability shareholders would face on the receipt of such a large dividend, the firm ultimately decided to buy back some of its own share at a premium price rather than pay the dividend. This action enabled many shareholders to take advantage of the capital gains tax break in effect at the time.

Stock splits:

Even though stock splits are common in the marketplace, the typical investor may misunderstand them. And because stock splits are generally a natural occurrence, they clearly are not a windfall for the recipient.

Why Stock Splits Do Not Matter:

Like cash dividends, a stock split neither increases nor decreases an investor's wealth as shown in the following analogy. Imagine a perfect pie make from Maine blueberries. Mom cuts the pie into fourths, and intends to dish out a piece to each of her four children. Would it make any difference if the pie was cut into eight pieces and each child receives two? In either case the amount of pie is the precisely the same. No matter how many pieces are cut the total amount available for consumption cannot be increase by increasing the number of slices.

The same is true with the value of the firm. Its ownership is represented by all the shares of stock. Simple doubling the number of shares will not change the value of the company. As a consequence, after the split the share price adjusts to reflect the stock split ratio. With a two-for-one split, the share price will fall approximately in half. The person who previously held 500 shares valued at $ 40 each will now own 1,000 worth $ 20 each. In each case the total value is $ 20, 000.

Why Firms Split Their Stock:

The primary motivation for stock split is usually to reduce the price of the shares and to increase share liquidity. This notion is largely based no survey research of corporate managers. A study bay Baker and Gallagher found that , according to the chief financial officers of a number of U.S. firms, a principal reason for splitting shares is to " broaden the ownership base". Trading range for the value of common stock, the jury is still out on the subject. Theoretically, the price of the stock is unimportant; the wealth represented by the stock is the issued. One hundred shares of a $ 100 stock should be worth just as much as one thousand shares of a $ 10 stock.

One fact remains, however; many investors shy away from high-period stocks. People seem to prefer to buy in found lots and higher pre-share prices make the purchase of 100-share lots more difficult for individual investors. If a firm's stock sell for $ 100 and management

decides this price is too high, the firm can split the stock, perhaps four-for-one, and reduce the share price to about $ 25. The lower price may attract investor who previously passed over the security because of its sleep price. At the same time, many people also have preconceptions about a stock selling for $ 1 per share. Such a low price "must" mean that the shares are risky. Financial managers will do what is prudent into order to maximize their shareholder's investment, which could mean rising or lowering the share price into the best range, as determined for that particular stock.

One of the truly classic investments books is Security Analysis by Graham and Dodd. Even though this book appeared before the development of the modern finance theory, it still occupies a place on many analysts and investors bookshelves. In the book, the author assert, "It is a commonplace of the market that an issue will rise more steadily from 10 to 40 than from 100 to 400." Many people, whether consciously or subconsciously, probably like low-priced stock for this very reason.

Management sometimes uses a reverse split for the express purpose of reducing the number of outstanding shareholders. A large reverse split, like one for two hundred, will climate the ownership interests of everyone who owns fewer than 200 shares, because after the split they would be left with less than a full share and would receive cash for this fractional holding. Management usually does this when a large shareholder wants to consolidate control of the company or perhaps take it private.

Stock Split vs. Stock Dividends:

The financial page….. Sometimes reports that a firm announced a "100% stock dividend," which means that for every share investor own, they will receive another one. How is the arrangement different from a two-for-one stock split? Similarly how is a five-for-four stock split different from a 25 percent stock dividend?

In practical terms, they are not different at all. From the investor's perspective, the impact is exactly the same. The difference between a stock split and a stock dividend is purely an accounting phenomenon. With a stock split the par value of the stock as carried on the firm's book changes by the split factor. With a stock dividend the par value is not affected, new shares are issued. Stock par value is not a meaningful statistics from an investment point of view, it is an accounting curiosity.

COMMON STOCK

Categories of Stock:

Although all common shares represent an ownership interest in the company, the investment characteristics of these shares differ widely. Some share are stable, some are volatile. Some pay dividends, some don't. Some are speculations about events years in the future, other are investments in current results; investors often place stock into a particular group according to its investment characteristics.

1. **Blue Chip Stocks:**

Of all the categories of stock, blue chip stock might be the best known. Deposit its …….. the term lacks precise meaning, investment professionals all fell they know what a blue chip stock is, but most cannot come up with a fluent definition without using a lot of examples, in some respects, the imprecision is analogous to the Supreme Court justice who said he " couldn't define pornography, but knew it when he saw it."

One common definition of a blue chip is a company with a long, uninterrupted history of dividends payments. This definition is not perfect, but it fits a great many of the consensus blue chip.

Blue chip is now a colloquial term used to imply high quality, such as blue chip high school football prospects. While high qualify is itself a different term to define in the investment business, many high qualify stocks do not meet the uninterrupted dividend history criterion. Brokerage firm newsletters routinely list recommended stocks, often calling them blue chips even though some may not even pay a dividend.

No firm likes to omit its dividend. If a company has a long history of paying them, breaking the tradition would be especially distasteful. Still, circumstances sometimes make dividend omission in the best interest of the shareholders. Citicorp paid dividends continuously from1812 to 1990- one of the longest unknown dividend period of any company. The economic recession and problems in the banking industry caused Citicorp to cut its dividend 44 percent in late 1990 and in October 1991 it was eliminated. The board of directors resumed the dividend in 1994.

In October 1991, Allied-Signal (ALD, NYSE) announced major corporate streamlining and reorganization. The board cut the dividend +1 percent from $1.80 to $1. The market cheered this wise decision and the share price rose 11.8 percent from $ 361/8 to $ 403/8 on the day of the announcement. Sometimes a dividend makes sense and will actually increase shareholder value.

2. **Income Stock:**

By law dividend must be paid out of the company's earning they cannot be paid from borrowed funds. The bottom line profit a firm makes is its net income after taxes (NIAT). The firm's board of directors may pay a dividend from the amount if they believe it to be in the shareholder's best interest. NIAT may be retained in its entirely within the firm the entire amount may be paid out of more typically a portion of these earnings might be retained and a portion paid out. The proportion of NIAT paid as a dividend in the firm's payout ratio.

Income stocks are those that have historically paid a larger than average percentage of their NIAT as dividend to their shareholders. The best examples of income stocks are public utilities such as electric companies, telephone companies and natural gas companies.

3. Cyclical Stocks:

A cyclical stock is one whose fortune is directly tied to the state of the overall national economy. When the economy is booming these stocks do well. During a recession they do poorly.

The term cyclical has nothing to do with its chart pattern nor does the term imply that the stock prices are more predictable than other issues. They are cyclical in the sense that they follow the business cycle. Good examples of cyclical stocks are those in the smokestack industries such as steel companies' industrial chemical firms and perhaps the auto mobile producers. Cyclical stocks often have higher than average market risk.

It is interesting to note the motto of U.S. steel (now USXCORP.) used to be " as steel goes so goes the nation" the company's public relation firm advised this might cause the public blame U.S steel for future down turn in the economy. As a consequence the motto was revised to "as the nation goes so goes steel".

4. Defensive Stocks:

A defensive is largely immune to changes in the macro economy. Regardless of whether the overall market is bullish or bearish, defensive stocks continuo to sell their products. As with cyclical stocks potential for misunderstanding with this term is note worthy. These issues have nothing to do whit the national defense.

Four particular industries are especially good example of defensive stocks. The best example is retail food. Grocery stores continue to sell their products regardless of what is happing else where in the economy. To of the other categories might be called the vice stocks. Tobacco and alcohol firms like grocery firms continue to have customers despite troubles economic times. The final group includes the utilities. People use the telephone and turn on the water or lights in good times and bad. Defensive stocks usually have lower than average market risk.

5. Growth Stocks:

While income stocks pay out a relatively high percentage of their earnings as dividends, growth stocks do not. Like a blue chip stock there is no universally accepted definition of a growth stocks. Some people define a growth stocks as one in which the company reinvests most of its earnings into profitable investment opportunities rather than returning them directly to the shareholders. Others define a growth stock as one in which the investor expects a total return greater than normally indicated by the level of risk associated with the stock.

Growth stocks, like beauty are in the eye of beholder. Many times firms have never paid a dividend and publicity start they have no plans to do so. By default than these stocks should be growth stocks because the stock that paid no dividends and does not increase in value would not be attractive investment.

Few experience investors would be happy with this "by default" definition of a growth stocks. A great deal of a stock analyst's time is spent trying to discover a little known

growth stocks. A better definition might be a stock that is expected to shoe above average capital appreciation in the future. Still such a judgment is a subjective one and one person's growth stock is another person's long shot.

6. **Speculative Stocks:**

There is a relationship between risk and expected return, as we have seen. Speculation by definition involves a short time horizon, and a speculative stock is one with the potential to make its owners a lot of money quickly. At the same time it carries an unusually high degree of risk. In other words a speculative stock has a high probability of a loss and a small probability of a large profit. The potential for a large profit is the attraction.

Some analysts consider speculative stocks to be a growth stock at the far end of the risks spectrum. Most people would classify the computer company DELL (DELL, NASDAQ) as a growth stock rather than a speculative stock. DELL has never paid a dividend so it clearly is not an income stock. A new formal computer software company also paying not dividends would probably be considered a speculative rather than a growth stock by most investors. Speculative stocks tend to be relatively new companies and in recent years have been heavily represented by electronic and technology terms.

7. **Penny Stocks:**

Penny stocks fall into a catch all category that refers to unusually risky specially in expensive share. Shares that sell for less than dollar 1 each would be considered penny stocks.

For example one graduate student on 250000 shares in the small companies an impressive statistics. In reality however every time he mailed a letter to a firm the stamp cost him the equivalent of 960 shares. This firm would satisfy anyone's definition of a penny stock.

MARKET MECHANICS PLACING ORDERS:

The economic function of the capital markets is to facilitate the flow of capital between suppliers and users. When someone decides to buy a security (that is, to provide capital) or sell one (take capital back), the action follows a precise protocol, both with the instructions given the broker and with the subsequent paperwork.

Order Information Flow:

Individual investors are not normally members of the stock exchanges. Consequently, they must use an agent, called a stock broker, to make trades on their behalf.

Types of Orders:

When investors place orders to buy or sell securities, they expect their instructions to be precisely understood by the people involved in processing the order. A number of standard packets of instructions are used in the brokerage business to aid in this process.

1. **Market Order:**

The most common type of order is the market order. With this order, the investor trusts the fair pricing function of the marketplace. The broker is to buy or sell at the best price

prevailing at the moment. The key element of a market order is that the order is to be executed ***as soon as possible.***

Market orders are to be executed as soon as possible after reaching the exchange floor.

2. Limit Order:

Sometimes an investor is not willing to trade at the market price, preferring to set his or her own price and not trade until that price is obtainable***. Limit order*** must specify a price and a time limit***.*** The time limit is most commonly either for the day or good till canceled (GTC). Day orders expire at the close of business if they are not executed. GTC orders remain open either until they are executed or the investor cancels them. Limit orders are useful, but they should be used reasonably. A limit order with a limit price distant from the prevailing market price is said to be ***away from the market.***

Limit order must specify a price and a time limit.

3. Stop Order:

A **Stop Order** specifies a price and time limit, just like a limit order. The difference is that a stop order is only executed if a specified price, called the **stop price** is touched.

Stop orders become market order when the stop price is reached. Therefore, it is possible for the actual sales price to be different from the stop price. The most important use of a stop order is to protect a profit and minimize losses. There is no cost to placing a stop order or raising the stop price; you only pay a brokerage commission when a trade occurs.

Moving a stop up behind a rising stock is called using a ***crawling stop order***. The question of where to place the stop price is a difficult one. If the stop is too far away from the current market price, an investor risks absorbing larger losses or giving up a good portion of any gains. Set too close to the current price, random movements across the bid-ask spread might trigger the stop in the absence of an adverse price movement.

A recent article in the *Journal of Portfolio Management* suggest a methodology whereby the investor sets a stop based on the volatility of the underlying asset, using a standard deviation of returns as a decision-making aid.

Stop orders become market order when the stop price is reached.
The most important use of a stop order is to protect a profit.

Other Orders:

Although much less common than the three discussed so far, a number of other types of orders might be placed.

- One cancels the others
- All or none
- Fill or kill
- Stop limit
- Market if triggered order (MIT)
- Good till cancel (GTC)

Settlement Procedures:

When people buy securities, they must pay for them. Similarly, when people sell securities they expect to receive cash from the sale in a timely fashion. The new owner of the security expects to receive future dividends, annual reports and the proxy statement, and anything else other shareholders receive.

The activities surrounding the transfer of ownership are called ***settlement*** procedures. Stock and bond transactions in the United States settle three business days after the **trade date**, the date the order was actually executed. Sellers have three days to deliver the stock certificates, and buyers have the same period of time to deliver a check for the purchase price.

A number of market speculators engage in a practice known as a **day trade**, which involves buying and selling securities on the same day. This practice is attractive for two reasons. First ***many brokerage firms only charge one commission on a day trade***. Second because the purchase and sale settle on the same day, technically it is not necessary to pay for the securities being purchased. If an investor buys stock and day trades it on an up day, the investor's account will be credited with the gain (three days later) without ever writing a check. If, instead, the stock declines, the investor's account will be charged difference. The merits of day trading became a lively topic in the late1990s with increased access to the internet and online brokerage accounts. The media routinely reports on fortunes made and lost by people using the stock market like a slot machine over the lunch hour. A true day trader speculates short term on the basis of some informed decision regarding a company. He or she does not merely roll the dice and hope a volatile stock moves in the desired direction.

Some people who call themselves day traders are really just gamblers. Psychologists know that a gambler who scores a big win is often prone to gamble even more, sometimes considers his or her winnings "free money" and may develop a more relaxed attitudes toward risk.

Some brokerage firms charge a single commission on a day trade.

The Specialist and the Book:

Many people misunderstand the role of the specialist. To some, the concept of a single individual through which orders must suggests monopoly power. This image is not the case, however. The specialist performs several useful functions and is instrumental in fulfilling the continuous market function of the exchange.

The Specialist and the Spread:

A common phrase associated with the ***specialist is the maintenance of a fair and orderly market.*** This worthy goal is the exchange's charge to the specialist and the primary reason for having specialists.

Specialists help maintain a fair and orderly market.

Adjusting limit and stop prices for dividend:

Limit and stock orders are normally automatically adjusted for the payment of the cash dividend. On the ex-dividend ate the share price tend to fall by the amount of the dividend

about to be paid. Unless a customer indicates a contrary wish, limit and stop prices are automatically adjusted downward to reflect the dividend. If a customer elects not to have the limit or stop prices adjusted because of dividends, the broker will circle this item and he order would be recorded accordingly. People often ask why security prices in United States have been quoted in interval of 1/8 of a Dollar for so long. Frankly, there is no particular no good reason for this practice other than tradition. In September 1999 Wall Street Leaders proposed phasing in a conversion to a decimal trading beginning in July 2000. This means investor would see a stock price such as $ 56.05. The first phase of transition would last about five weeks and would involve trading in five-cent intervals for a group of 30 or40 selected securities. The second phase, expected to last about eight weeks, would allow nickel increment trading in all stocks. The third phase, beginning in October 2000, would allow stocks to trade in whatever increment market demands. This could conceivably be in pennies.

The Ticker Tape:

The **ticker tape** is perhaps the most widely known symbol of the investment business. It appears on cable television stations, computer monitors, in restaurants and bars in financial centers, and on handheld receivers on golf courses through out the world. Customers who place an order while in the broker office enjoy watching the tape and looking for their trade. Normally a trade crosses the ticker tape within five minutes of placing a market order,

Format:

At one time the ticker tape actually appeared on paper tape, coming out of domed bell jar and piling on to the floor. Today the tape is electronic, passing by on the screen but generally not preserved for subsequent retrieval. For Active well known companies, ticker tape some time eliminates leading numbers in the price under the presumption that people who are following that particular stock know its approximate current price. The decimals separate the two trades; whole the dollars are omitted from the second trade. Information arrives on the ticker tape continuously throughout the trading day as trade occurs at the various specialist posts. An entry such as this one appears when two trades happen to be entered without any other intervening trade in another security. This may well have been a market order to buy 800 shares, with the trade filled at two prices. Different information venders use slightly different ticker tape formats. Some, for instance, also show the daily price change for each security.

Accuracy:

On heavy trading days the ticker tap cannot keep up. While electronics can work at the speed of light, the human eye cannot. There is a practical upper speed at which the tape can move. When this limit is reached, incoming trade information gets backlogged awaiting its passage across the monitor. The system is able to monitor the buffered data in queue, and on a busy day periodic notices on the ticker display indicate the length of the current delay. At a brokerage firm, some might say, "The tape is 10 minutes late." This indication of heavy volume implies that the tape should not be relied on for current price information. Punching up individual quotations on the terminal will be more accurate. Errors some time occur when people input data into the price reporting system. Clerks correct these when they discover them.

Other ticker tape information:
Notices other than price and volume sometime appear on the ticker tape. On one day in early 1981, the ticker tape announced the ominous news: "Shots fired at Reagan."

Information of this type is clearly of interest to virtually all people watching the ticker tape, and there is probably no better way to get the word out quickly.
On busy days, notices may indicate that volume is being omitted from the tape that duplicate prices are omitted, or that leading member's numerals in security prices are being left out. These omissions help the tape from becoming delayed; a delayed tape is little use.

Lesson # 5

MARKET MECHANICS

TYPES OF ACCOUNTS:

People who buy or sell stock through a brokerage firm have an individual account in which they make their trades. While a single account number is associated with each investor, these accounts have important subsidiary accounts. Two such accounts are cash account and margin account.

1. **Cash Account:**

Every investor with a brokerage account automatically has a cash account. In a cash account, an investor must come up with cash equal to the full value of the securities purchased, unless sufficient funds are already in the accounts. Dividends and interest accumulate in the cash account as they are earned. The investor did not borrow to buy the stock, so the equity on the balance sheet equals the total assets; there are no liabilities.

2. **Margin Account:**

Margin account are extremely useful, but, like most investment, need respect. A margin account permits on investor to borrow part of the cost of investment firm a brokerage firm. This account allows an investor to round up and buy a round lot, or to add leverage to investments the same way a real state speculator gets leverage by purchasing land with borrowing funds.

Buying Power:

Buying power is a measure of how much more can be spent for securities without having to put up any additional cash. One of the most common question brokers get from clients is, "What's my buying power?" The software running on a broker's desktop monitor may have a menu item enabling the broker to quickly bring up the buying power figure when a customer asks. Brokers and investors both probably should know how to compute this statistic; fortunately, it is not difficult. Regulation T currently provides an initial margin requirement of 50 percent. Therefore, an investor can borrow money from the broker up to the point at which the debt balance equals the account equity. When these two figures are equal the margin loan amounts to 50 percent of the portfolio total assets. At this point the buying power is zero. Buying power can be calculated by solving this equation;

$$B = [{}^{1}/_{m} - 1]\ E - D$$

Where B = buying power
M = initial margin requirement
D = debt
E = equity

With the current 50 percent initial requirement, the formula for determining buying power is simply the account equity minus the debt balance.

With a 50% initial margin, buying power = equity – debt balance.

Withdrawing Cash:

Buying power can also be used to withdraw cash from the account. Taking cash out reduces the total assets and the account equity; buying power is doubly reduced by a cash

withdrawal. To determine how much can be withdrawn in cash, subtract the margin balance from the account equity and divide by two.

Margin Calls:

What happens if the market moves the other way? The maintenance margin enters the picture in this scenario. If equity declines too far, the investor must deposit more assets (usually cash and cash equivalents) into the account, or some security position must be involuntarily closed out to reduce the amount of margin debt. Such a requirement is a margin call. The minimum portfolio value can be determined by dividing the debit balance by the quantity one minus the maintenance margin

$$\text{Minimum portfolio value} = \frac{\text{debit balance}}{1 - \text{Maintenance margin}}.$$

Once an investor receives a margin call, most brokerage firms require the investor to deposit sufficient funds to return the portfolio to the full initial margin condition of 50 percent equity. This investor is likely to receive a telephone call indicating that margin call is on the way. A paper notice will arrive in the mail with in a day or so. An investor who is unable to deposit sufficient funds to meet the margin calls must sell stock to get the balance sheet in order. Selling stock produces cash that immediately used to pay down the margin loan. Meeting the margin call this way requires the sale of sufficient shares to meet the dollar amount of the margin call. A margin call is inevitable if the securities in the portfolio do not appreciate or generate income. As time passes, interest accrues on the margin loan, so equity will progressively decreases. Eventually equity will decline to the 30 percent make if the investment is all dogs. Notice also that if securities must be sold because of margin call, the sale occurs when the market is down the worst possible time.

Once an investor receives a margin call, funds must usually be added to return to the 50 percent equity percent equity position.

Variations on the Margin Account:

Some brokerage firms offer products that are similar to a traditional margin account but offer additional flexibility to the customer. PaineWebber, for instance, offers a "Personal Security Loan Account" that allows customers to borrow against the securities in their accounts. This account is set up independently of the regular investment account with the loan proceeds used for education, home improvement, car payments, or other similar uses. Because the loan is not being used to purchase additional securities, the Federal Board considers such a loan to be less risky and therefore permits borrowing a great percentage of the portfolio value. An investor can borrow up to 70 percent of the value of the stocks and corporate bonds (compared to only 50 percent in a regular margin account), and up to 90 percent of the value of government securities.

Margin and Speculation:

Some market observers view the level of margin debt as a precursor of things to come with the market averages. Margin buying has historically moved in tandem with popular averages like the Dow Jones Industrial Average and the S&P 500. As margin debt has increased, so has the level of stoke prices, and vice-versa. It is always dangerous to assume the past will repeat itself, but you should not ignore past patterns, either.

According to The Wall Street Journal, in February 2000 total margin debt equaled 1.57% of overall market value. This is approximately where the percentage stood just before the October 1987 market crash. In early 2000 total margin debt exceeded $240 billion, up over one third in three months. Someone could argue that if margin debt has never been higher and the market typical follow level of margin, the market is headed down before long.

Other Types of Accounts:

Cash and margin accounts are the two most important types. Many investors will have one or more of the other types of accounts. Bonds and income-producing securities can be in a separate account called an *income account.* Convertible bonds may be segregated into their own account, as many government bonds or short positions.

Selling Short:

A short sale involves borrowing securities, selling them to someone else, eventually purchasing similar shares from someone else, and delivering these substitute shares to the original lender. The notion that you can profitably and legitimately sell something you do not own has troubled market observers since the early 1600s, when Dutch authorities attempted to outlaw short selling. While this procedure may be conceptually awkward, it need not be viewed as an antisocial act.

Short selling involves selling borrowed shares.

Rationale:

Most short sellers are bearish toward a particular stock. If the short seller is able to borrow shares and sell them at $25, the purchase of thee share a few months later at $ 19 results in a $6 profit. Instead of buying at a low prices and selling at a higher prices, the short seller simply revered the order of the two transactions.

The actual lender of the shares is normally an unknowing participant in the entire matter. For instance, investors with margin accounts at their brokerage house may be involved in the process. When an investor opens a margin account, he or she signs a hypothecation agreement giving the brokerage firm the right to lend the shares to someone else. This arrangement is of no real concern to the investor because the investor can still trade the shares and continued to earn dividend.

Short sellers sell first and buy later.

Criticisms:

Over the year many discussions have focused on the merits of short selling; these conversations occur on the floor of the Congress and in the smallest boardrooms. Those in favor of short selling point out that margin trading actually encompass two activities: buying on margin and selling short. The sticking point is the leveraged purchase of shares; why find fault with a related procedure on the other side of the market? Short –selling gurus will quickly assert that margin buyers were largely responsible for the events leading to the Great Crash of 1929, and those speculative buying forces prices up, so margin buying is inflationary. Short selling helps this influence.

The opposition will point out short selling has a checkered heritage and has, on occasion, been destabilizing to the market. Traders have a long memory for manipulation, corners,

and short squeezes, such as the 1862 Harlem Railroad incident starring Cornelius Vanderbilt and Boss Tweed. Also, people traditionally want the market to advance; few actively root for a price decline. Because the downward pressure induced by short selling runs counter to public interest, they argue, short selling is evil.

Mechanics of a Short Sale:

Regardless of where your opinion lies, short selling is a fact of life worth understanding. Figure 6-16 outline the steps of a simple short sale with common stock. Short sellers recognize that because they are selling on margin, a margin requirement must be met. An investor who buys on margin pays interest, but not when selling short because no money is borrowed. In fact, an investor actually has to deposit money.

Suppose an investor dealing through Merrill Lynch buys 100 shares of XYZ in a margin account, and Merrill subsequently lends these shares to another of its clients who wants to sell them short. The short seller then might sell these shares to an account at Kidder Peabody.

An important point here is that Merrill Lynch does not care who bought the shares, nor is Merrill Lynch informed. The short seller simply has an obligation to return what has been borrowed sometime in the future.

At this point, two investors believe thy own shares in XYZ: the lender (who bought the shares in a margin account) and the person who bought the shares from the short seller. Dividends are not a problem because the short seller, by industry practice, must pay them to the lender. The short seller is not hurt by this, because the stock price tends to fall on the ex-dividend day anyway.

At some point in the future, the short seller covers the short position by purchasing shares (it does not matter from whom) to replace the certificates borrowed earlier. Buying the shares at a price lower then that at which they were sold results in a profit to the short seller. Of course, if the shares must be purchases at a higher price, the short seller suffers a loss.

Note that while selling short is a legitimate investment activity, it is not always the best way to accomplish the purpose of making profit. On a single security, for instance, the purchase of a put option is often preferable to selling short. (This important activity will be discussed later in the book). A short sale involve losses that are potentially unlimited, because the stock prices could rise astronomically yet shares must still be repurchased.

On most exchanges there is a special trading restriction on short sales. They can only be executed on an uptick. An uptick means the last change in the stock price was up. A downtick, not surprisingly, means the last stock price change was down. The tick is based on minute-by –minute price changes; it is not relative to the previous day's closing price.

The rationale for the uptick rule is that selling short tends to put downward pressure on a stock price, and so could accelerate the decline of a stock that is in a free fall. The rule, in essence, keeps short sales from fanning the flames.

The short seller has an eventual obligation to replace the borrowed shares.
Short sellers must pay any dividends to the person from whom the stock was borrowed.

Selling Short Against the Box:

A variant of the short sale is against the box. In such a trade, the investor sells short shares that are simultaneously owned. In this phrase, the term box refers to the safe deposit box where the share certificate might be held. Selling short against the box is a riskless strategy designed to shift a tax liability into the future.

A person who sells short against the box creates a perfect hedge. What ever gain or loss occurs with the stock will be exactly off set by a loss or gain in the short position. The reason someone might engage in such a trade is almost always tax related. Suppose an investor bought XYZ at $45 years ago and, in late November, would like to sell the stock at its current market price of $ 100. Selling the shares results in a capital gain with tax implications in the current tax year. The investor could wait until after the first of the year to sell, but then faces the risk that share prices might fall. Instead, the investor sells XYZ short at $ 100. The obligation is eventually to replace the borrowed shares. In January, the investor can cover the short by delivering the shares from the safe deposit box. Regardless of the shares price in January, the investor has locked in the $ 55 per share profit, and the tax liability is pushed back another year. If the share price had fallen to $90, the investor would make$ 10 per share on the short sale, which exactly cancels the opportunity loss on the long stock position. If the share price instead rose to $110, the gain in the stock offset the loss on the short position.

Trading Fees:

In order to make a trade, an investor needs access to the marketplace. Typically that access comes through an agent called a broker who makes the trade. As mentioned in the previous chapter, only members of the exchange may trade there, so most people need someone to make the trade for them. As a fee for their services, brokerage firms charge a commission. Perhaps no part of the investment business gets as much discussion or is potentially as awkward a topic to discuss with your broker as commission. The commission cost is important, but there are other costs to trading, too.

The Cost of Trading:

While commissions are the most obvious costs of trading, there are other very important costs as well. These falls into two groups: explicit costs and implicit costs.

Explicit costs are the direct cost of trading and include brokerage fees and taxes. Taxes, in fact are the largest of these. When your tax bracket is such that you lose over a fourth of your capital gains to the tax collector, you need to consider this before deciding to take a profit. Individual investors often think much more about commission than they do about tax consequences.

Implicit costs are especially important to institutional traders because of the size of the trades they typically make. The most important implicit costs relate to the size of the bid-ask spread, the price impact of the trade, and the opportunity cost of being unable to execute the trade when you want to.

Suppose a stock routinely trades at a spread of 1/8 of a point and that its true value is the midpoint of the spread. When you buy it you pay a bit more than the true value, and when you get a bit less. Regardless of whether the stock goes up or down in the future, when you sell it you will probably do so at a price 1/8 less than the corresponding ask price. On a block trade of 10,000 shares, this spread to $1,259 and is a cost to the trader.

Price impact refers to the fact that a large trade will clear out the bids or offer prices t a particular level and cause the market price to move. A large market order to buy, for instance, will almost certainly cause the stock price to rise. You might place the order when the stock was at $ 45, but find that you purchased shares at prices ranging from $45 to $46; the very fact that you placed the trade caused you to pay more. The same thing happens when a quantity of shares is dumped all at once. Institutional investors know that they have to be careful when trading large blocks.

The opportunity cost relates to this last point. You may decide to make a trade based on your expert analysis, but discover that by the time you can actually execute the trade the other people have come to the same conclusion about the stock and its price has already moved. Your profit would have been greater had you been able to execute the trade quickly.

There are both implicit and explicit costs of trading.

The Commission Structure:

Commission Schedules:

Commission schedule vary widely among broker firms. In general, though, the size of the commission charged is a function of two things: the dollar amount of the trade and the number of shares involved. It is also common to face a minimum commission, ranging from $30 to $40 at most retail brokerage firms.

Commissions occur when a trade is actually executed; there is no charge, for instance, to raise the stop price on a stop order or to submit a limit order to buy. Only when a trade occurs is a commission paid.

Commissions are usually a function of the dollar amount involved and the number of shares in the trade.

Commission and Limit Orders:

Limit orders are useful, and many investors routinely use them to control the price at which they make their trades. Limit order user should be familiar with one particular commission issue, however.

Suppose an investor placed an order to buy 1,000 shares of Community West Bancshares (CWBC, NASDAQ) at $5 ½, good till canceled. CWBC is a thinly traded stock. Thin trading is an inexact term referring to a general lack of trading activity. Shares that are thinly traded often have a wider bid ask spread and fewer standing. Limit orders on the specialist's book. Assume the stock is trading t 5 3/8 to 5 ½ at the time the limit order is placed. Even though the CWBC ask price is $5 ½ 1,000 shares are not likely to be available at that price. Perhaps only four lots are offered at 5 ½, and once these are sold the ask price jumps to 5 5/8.

If the specialist is unwilling to enter the sell side of the market for his or her own account, the floor broker would instruct the specialist to put the other 600 in the book. The investor would then get confirmation that "you bought 400 CWBC at 5 ½ ". It would be logical for the investor to question this action, saying, "Wait a minute, I wanted 1,000". As it happened, 1.000 was not available at the specified price.

A few days later CWBC might again become available at 5 ½, and the rest of the investors order would be filled. A second confirmation would be received, indicating a purchase of

600 CWBC at $5 ½. The second confirmation would also show a second commission even though the investor placed a single order.

The policy is as follows: an order filled at various prices on a single day is charged one commission, but an order filled over several days is charged separate commissions for each day on which a trade was made. Many brokers can tell a tale of one of their clients who was unhappy upon first discovering this convention within the brokerage industry. With a thinly traded stock, the extra commission (or two) might mean an investor would have been better off buying the shares with a market order and not 'Trying to get the last eighth".

Commission Discounts:

At most brokerage firms, the broker who deals with the public personally keeps between 25 percent and 45 percent of the actual commission charged. Especially productive brokers with a large number of active clients command the highest rate. Some brokers are willing to discount their commissions with active clients. Such a discount comes from the broker's share of the commission.

Suppose a commission is $100 and the broker earns $35 from this trade. If the broker wished, he or she could reduce the commission to $65 and earn nothing on the trade. It is a broker's advantage to be good citizen, respected in the community, and active in the affairs. For this reason, many brokers reduce their commissions as much as possible for work they do for local nonprofit organizations such as YWCA endowment or a hospital building fund.

Full-Service Brokers:

Some firms are full-service brokers. A few well-known examples are Merrill Lynch, PaineWebber, Kidder Peabody, and Smith Barney/Shearson. At a full-service firm, individual brokers provide personalized service to their clients. Brokers are expected to be a familiar with their clients, their needs, and their individual circumstances. Extensive research is available, and accounts holders can ask for and receive free of charge an enormous quantity of market commentary and specific opinion regarding security issues.

A full service firm also performs a function commonly called handholding. Some people absolutely require the reassurance they get from face-to-face meeting with their financial advisor. There is nothing wrong with handholding, and a good broker understands this type of customer service is part of the job. Some investors, of the game; and they do their own research. Such investors may choose to reduce their commission burden and trade through a discount brokerage firm.

Discount Brokers:

A discount broker works for an organization that executes traders for its clients, but does little else. Account holders will receive trade confirmations and monthly accounts statements, but research will generally not be available for the asking and handholding will be limited.

In fact, most client of a discount broker never meets a broker face to face. Rather, they call a toll free telephone number and place their order with whoever answers the phone. Brokers at a discount firm are largely order takers, meaning they do what the client direct and do not question the wisdom of the trade. (They will ask for clarification of the trade or point out an invalid request.) Broker at a discount firm are salaried; they have no particular incentive to encourage trades.

An ongoing debate continues to rage within the investment community about the use of discount brokers. Some full-service brokers will claim that an investor gets better order execution at a full-service firm. Sometimes this claim is true, but it is not a general rule. Discount brokerage firms (and some financial planning people) believe that people who make their own decision are foolish to pay more than necessary in trading fees.

The difference in commission rates between a full-service house and a discount house can be significant. For example with one particular it was possible to buy 1,000 shares of a $ 5 stock, sell them at $ 5 1/8, and make a profit after the two commissions. The wall Street journal has advertisements from discount brokerage firms virtually every day in which the discounted commissions are compared with a sampling from major full-service houses. Discounts as high as 75 percent are possible.

About dozen firms, including Exxon, Ker-McGee, Texaco, and Mobil, permit individuals to buy shares of stock directly from the company. In some instances this may be done at no cost to the shareholder, while in other cases a modest commission of perhaps seven cents per share is charged. For the investor interested in one of these firms, the trading fees approach the ultimate discount: zero.

Electronic Brokers:

The advent and of online trading along with the growth of the Internet will be a significant event in the stock market history book discussion of the late 1990s. firms such as E*TRADE, Datek, Ameritrade, DLJ direct, TD Waterhouse, and numerous others make it easy for investors who know what they want to do to trade inexpensively, reliably, and quickly from their personal computer. A trade that would cost several hundred dollars on a full-service commission schedule might cost only $ 12 via one of these firms. Some pundits, in fact predict that online trading will be free in a few years. It is logical to ask how these firms make a profit with such low rates.

The typical online brokerage firm probably makes only about half its revenue from brokerage commissions. The remainder comes largely from interest charged on margin account and from payment for order flow. This latter source is extremely important, long established, and perfectly legal despite appearances of being a kick-back. When someone places an order to buy 500 shares of General Electronic this order is likely sent to a stock trading firm in exchange for a “referral fee.” Even if the customer pays no commission at all, the online brokerage will still get payment order flow. In essence, the stock trading firm is returning part of the spread to the online broker, as the volume of trades directed to a particular trading house increase, the percentage paid to the referring broker typically increases, too.

Current Event:

Broker Compensation:

There are approximately 91,000 stockbrokers in the United States. The Securities Industry association reports that in 1993, the median annual compensation for a retail stockbroker was $90,000. This figure is nearly double the amount earned a decade earlier. Broker compensation statistics frequently appear in the financial press, but they must be taken with a grain of salt. The superstar brokers can make well over $ 1 million per year. These curve busters naturally pull up the arithmetic average, making it appear that the typical broker is doing better than he or she actually is.

NASDAQ Commission:

There may be an incentive for some brokers to trade via the NASDAQ system rather than on the exchange. Most firms pay their brokers 40 percent of the gross commission charged on NASDAQ stocks for which the brokerage firm is a market maker. This rate compares to an average of about 33 percent for listed shares.

Also, spreads are sometimes wider on the over-the counter market. From the customer's perspective, the spread contributes to the cost of trading. According to an article in Forbes in May 1993, the average spread on NASDAQ National Market System firms was 59 cents, an increase from 43 cents in May1989. In contrast, the average NYSE spread remained constant at 21 cents over this period. In Forbes' words, "No question where investors get the better deal." By 1999, though, NASDAQ spread had narrowed considerably.

Forthcoming Changes in the Reward System:

The SEC is applying increase pressure on brokerage firms to alter the manner in which brokers earn commissions. The official SEC position seems to be that a commission structure in which "more trades mean more commissions" tends to encourage active trading and may lead to account churning.

Some firms are experimenting with a compensation structure based on the dollar value the broker brings into the firm rather than the level of activity within the broker's accounts. This type of structure might encourage a portfolio approach to investing rather than a stock-picking attitude. At least brokerage firm offers investors virtually unlimited trading for a flat annual fee.

A precise protocol should be followed when placing order with a broker. This protocol helps eliminate uncertainty about the investor's exact wishes. The most common types of orders are the market orders, the limit order, and the stop order. Stop orders are especially useful in protecting profits, but can also be used to minimize losses. Unfortunately, investors seldom use them.

The stock exchange specialist helps maintain a fair and orderly market in his or her assigned securities. They maintain an inventory of shares for sale and are willing to be buyers for those who wish to sell. If the spread gets too wide, the specialist may enter the market on both sides to provide better price for customers.
The ticker tape provides a chronological listing of trades at the exchange. No longer on paper, this electronic displays stock symbols, volume, and the price at which trades occurred. On busy days the tape may run late.

The two main types of accounts are the cash account in which the investor pays for the share in full, and the margin account, where a portion of the share cost can be borrowed from the brokerage firm. If the account equity deteriorates too far, the investor may get a margin call under the rules of Federal Reserve Board Regulation T, requiring the deposit of additional funds or the sale of some securities position.

Selling short involves the sale of borrowed securities in anticipation of a decline in security prices. Shares sold short must eventually be covered (brought back). Brokers receive a commission for executing customer trades. Some firms are full-service firms, providing extensive research and advice. Other are discount firms, executing orders but providing few other services. Many firms also provide for making trades via a home computer.

FUNDAMENTAL STOCK ANALYSIS

VALUATION PHILOSOPHIES:

In much the same manner as Republicans and Democrats have inherent differences in political philosophy, security analysts also may be grouped into two camps: fundamental and technical analysts. The fundamental analyst believes that securities are priced in a rational manner based on macroeconomic information, industry news, and the firm's financial statements. The technical analyst believes that prices are largely determined by investor behavior and by supply and demand, even when demand may seem irrational. Technical analysis is a controversial part of finance and is covered in its own chapter, Chapter Eight. Most investment research firms have both fundamental and technical analysts on the payroll. Despite their philosophical differences, both groups agree on certain things.

As we enter a new millennium, however, both fundamental and technical analysts wonder whether the old rules still work. The proliferation of seemingly high-priced Internet and technology stocks made everyone wonder whether the prices are reasonable. Many investors cannot decide whether they should remain on the sideline or whether the train is about to leave without them. Forbes ASAP ran an article with the tine "Is Internet Wealth Real7"1 in the same issue Forbes listed 53 Internet executives with a total wealth of $48 billion, which the writer calls a "blurry snapshot of a moving target." Ben Holmes, founder of an IPO research firm, says, "This wealth isn't like other wealth. On paper, Jay Walker's 62 million shares of Price line stock are worth about $4 billion, but nobody knows what they're really worth."

Early in the year 2000 The Wall Street Journal ran a front page article entitled "How High Is Too High for Stocks That Lead a Business Revolution?"2 The article subtitle is "Whether old valuation rules can be ignored for some is key to volatile NASDAQ." As this chapter will show, investors historically have paid considerable attention to a firm's price-earnings ratio, widely viewed as a useful measure of relative value. PEs around 15 or 20 used to be the norm. In early 2000, however, stocks with a PE ratio in excess of 100 accounted for about 20 percent of the total market value of the NASDAQ market.

Value comes from utility; utility comes from a variety of sources.
Fundamental analysts believe securities are priced according to fundamental economic data. Technical analysts think supply and demand factors play the most important role.

Investors' Understanding of Risk Premiums:

Investors are almost always risk-averse. Investors often cannot explicitly define risk, but they have an intuitive understanding of it. They do not like taking risks, but will do so in order to increase potential investment return- Preceding chapters have discussed how investors can use the variance of investment returns as a proxy for risk. This balance between risk and return is the reason un-bonds have higher yields to maturity than U.S. Treasury bonds, and why some shares of stock sell for more than others.

The Time Value of Money:

Everyone agrees on this basic principle, even those who would not know a balance sheet if they saw one. People postpone paying bills and prefer a paycheck now rather than one later

Ever tiling else being equal, the longer someone must wait for the payoff from an investment, die less the investment is worth today.

Suppose a AAA-rated firm tries to issue a zero coupon consol; at what price might it sell7 It might have some collector's value, but its investment value is nil. What good is the right to receive no interest forever? Similarly, when Coca-Cola and Disney issued the 100-year bonds described in an earlier chapter, why was their initial market price such a deep discount from par? The answer is obvious: the return of the par value is two generations from now, and people are not willing to pay much for a cash flow that distant. The bond's current value comes almost entirely from the coupon stream.3 In 75 years the eventual return of the principal will start to matter, but in 1996 it had little impact on the present value of the bond.

Everything else being equal, the longer someone must wait for the payoff from an investment, the less the investment is worth today.

The Importance of Cash Flows:

Start-up companies often have zero sales. It takes time to develop products, particularly those that are innovative and brimming with technology. Some of the great success stories of recent years, like Microsoft, Yahoo and Apple, all involved a period of time when the firms spent money at a steady pace while little was coming in. Investors understand this process arid and are willing to put up seed capital to help new ventures get off the ground.

The market's patience is not unlimited, however. Eventually, the shareholders expect to see their investment lead to product sales and to profits from those sales. Share price appreciation and cash dividends stem directly from the profitability of the company.

The importance of earnings never subsides. In fact, most investment research deals primarily with predicting future earnings. The link between earnings, dividends, and price appreciation is well established, and all analysts know that good earnings are important.

While earnings are clearly important, it is less clear how important dividends are to the contemporary investor. At one time many investors selected a stock largely on the basis of its expected dividends; the average yield was about 5% in the early 1980s. There was a bird-in-the-hand argument that placed a high priority on cash receipts now, with a much lesser emphasis on growth in corporate equity. This is much less true today. About 80% of the stocks in the SP 500 index paid a dividend in 1999. Of the top I5 performers for die year, however, 14 paid no dividend. Many highly successful, and popular, companies pay no dividends and have no plans to do so: Microsoft, Cisco Systems, AOL, MCI WorldCom, and Oracle are ready examples. It is also true that the average dividend yield has been falling for two decades. Growth of the Internet and changing attitudes toward technology are influencing the investment process in many ways, perhaps including our attitude toward dividend checks.

Most investment research deals with predicting future corporate earnings.

The Tax Factor:

Taxes are supposedly "one of the two certainties in life. Investors also know that, in addition to being a certainty, the tax code is complicated and not all investments are taxed equally. For this reason, municipal bonds (paying tax-free interest) can sell with a lower expected rate of return than a taxable corporate bond of equal risk, and some investors will

favor growth stocks (with tax deferral of appreciation) over income stocks (with immediate taxation of dividends).

EIC Analysis:

The traditional approach to security selection involves EIC analysis, which stands for economy, industry, and company. The analyst first considers conditions in the overall economy, and then determines which industries are most attractive in light of the economic conditions, and finally identifies the most attractive companies within the attractive industries.

1. **Economic Analysis:**

Every issue of common stock has a common characteristic: susceptibility to market risk. This tendency of stocks as a group means that they move together as economic conditions improve or deteriorate.

Stock prices react favorably to earnings growth, low inflation, increasing gross national product, a better balance of trade, and other positive macroeconomic news. Signs that inflation is picking up, that unemployment is rising, or that earnings estimates are being revised downward will and to depress stock prices.

In fact, this relationship is sufficiently reliable that the Standard & Poor's 500 stock index (a popular market indicator) is one of the U.S. Commerce department's leading indicators of the U.S. economy. The stock market will anticipate a recession or economic boom well in advance of signs visible to the average citizen. Research by the Federal Reserve Bank of New York found that the slope of the yield curve is the best predictor of economic growth more than three months out. A positive slope is good, while a negative slope predicts a recession.

To the investor, the implications of market risk should be obvious. When the economy appears to be moving into a recession, stocks as a group are going to be c hurt. All companies, whether they are high performing or lackluster, will suffer the effects of the recession. When the economy is surging ahead, most stocks will follow suit. During 1999, for instance, the overall stock market advanced sharply, and few investors lost money in stocks. This positive performance was not because the year's crop of CEOs was exceptionally good, but principally because of a strong economy. The shared market risk characteristic tended to pull up the price of most stocks, even those with substandard management.

2. **Industry Analysis:**

While all stocks carry market risk and are hurt by a recession, they will not suffer to the same degree. As pointed out earlier, a defensive stock (like a retail food chain) will be hurt less than a cyclical stock (like a steel company). Once the economy bottoms out, the cyclical stocks are precisely the place to be, because their sales and profits are closely tied to overall economic activity- Determining which industries are likely to fare best in the anticipated economic environment is the essence of industry analysis.
A standard approach to industry analysis is the competitive strategy analysis framework proposed by Michael Porter in 1980. Threats of new entrants measure the barriers to entry into the industry and the expected reaction of existing competitors to new competitors. In some industries a new company would have great difficulty in competing successfully. Consider the difficulty a new automobile manufacturer would have going up against Ford,

General Motors, and Daimler Chrysler. The last such effort, by De Lorean, was an expensive failure. In other industries, such as financial planning, entry is easier. New businesses simply hang out their shingle, put an ad in the yellow pages, do some local advertising, and begin to build a customer base while politics is not exactly an industry; it is a good example of how the reaction of existing competitors can be important. Most states have their own set of "existing competitors" for public office. A newcomer is often looked upon with great suspicion. Consider the negative reaction by both Democrats and Republicans to the Ross Perot presidential bid.

The rivalry among existing competitors, if intense, will slow industry growth and tend to level the playing field among the competitors. Profit margins can be depressed as firms seek to gain market share at the expense of current earnings. Much greater opportunity for product differentiation and enhanced profits exists in industries where the rivalry is modest or even friendly. Heavy competition is good for the consumer, but not necessarily good for the investor in the firm. Consider the frequent fare price wars in the airline industry. In this industry the competition for customers is intense. When one airline cuts prices, the other airlines are obligated to do the same to keep customers.

A substantial threat of substitutes means that firms are not free to raise their prices as they might wish. Too high a price means that buyers will simply choose an alternate product providing essentially the same Junction- Consider, for instance, video games such as Sega and Nintendo, These brands are direct competitors. If Sega unilaterally raises its prices, new video game customers will be favorably inclined toward Nintendo. A potential investor is concerned when a firm faces a high degree of this risk of product substitution. It puts a damper on future earnings growth.

The buyer's bargaining power is strong when a buyer accounts for a substantial percentage of a seller's sales. In such a case, profit margins tend to be low. The seller really cannot afford to lose the customer and might be forced to make concessions in order to keep the business. Consider the case of a ship-building company for whom the U.S. Navy is the principal customer. The firm may only produce two or three ships per year, and the loss of a navy contract would be disastrous- On the other hand, when a business has many small customers, as in department stores, the loss of any particular customer is not cause for concern. Customers don't have much bargaining power at JC Penney (JCP, NYSE}, but they do at Boeing (BA, NYSE).

This industry factor need not be limited to a capital-intensive industry like ship building Consider the need for consultants in a retail computer sales store. While a need will probably always exist for computer technicians to help people with their system problems, consumers in general are more sophisticated about personal computers than they were must five years ago. They are better informed and more willing to make their own decisions about their hardware and software needs. In essence, they have more power when they approach the sales staff.

A firm facing powerful supplier groups encounters more difficulty negotiating favorable contract terms. The firm needs the products supplied and has little control over their costs. If the firm is unable to raise the price of its finished goods because of the presence of substitutes or powerful buyer groups, its profit margin and earnings are tenuous. The potential investor views the presence of powerful supplier groups negatively.
By considering each of these five elements of industry structure, a financial analyst will develop a better estimate of how the industry is likely to fare in the forthcoming economic environment. Having determined which industries currently seem attractive, the next step is recommending specific firms within the industry.

Porter's competitive strategy analysis helps evaluate industry prospects.

3. Company:

Most of the rest of this chapter deals with the last part of EIC analysis: choosing specific companies. Some people refer to this activity as stock picking, or, more formally, as security analysis- Many different schools of thought offer methods on how to go about this task. We now review this topic in some detail.

VALUE VS GROWTH INVESTING:

The two factions within the fundamental analysts' camp are the value investors and the growth investors. These terms became popular in the 1980s and are now a standard part of the investment lexicon.

The Value Approach to Investing:

A value investor believes that securities should be purchased only when the underlying fundamentals (macroeconomic information, industry news, and a firm's financial statements) justify the purchase, even when these fundamentals seem to be inconsistent with the belief of the overall marketplace. Value investors consider financial statement information such as the price to book ratio, return on assets, and return on equity.7 Value players evaluate earning growth within a particular industry, many of which have low growth rates. They attempt to spot those companies that have above-average earnings growth in that industry. The value investor is willing to wait to reap the rewards from his or her research-Value investors often seek out new corporate ventures with sound ideas and experienced management, but they prefer not to chase pie-in-the-sky ideas or subscribe to the bandwagon approach to investing. They don't mind sitting out the next dance if they view it as a passing fad with no long-term prospects.

Value investors also believe in a regression to the mean. They think securities have long-term expected returns that are consistent with the level of risk associated with them. Suppose you live in an area where the average annual temperature is 59°. If the current temperature were 75°, in the absence of any other information you would predict that temperatures will fall over the next few months. Similarly, if it is currently 25° outside, your long-range forecast should be for rising temperatures. Value investors subscribe to this logic with stock prices and the associated returns- When a stack's returns have been below their expected long-term level, the stock is likely to make up the difference in the future, rising more than other securities Conversely, returns that have been unusually good probably will not persist; instead, future re- A turns are likely to be depressed until the long-term average is back in line with the associated level of risk.

Stated another way, a security may perform unusually well for a while, but this over-performance will likely be subdued in subsequent periods when the returns are less than expected. The trick is to find securities mat are currently below their long run trend and buy them. Similarly, a value investor would consider selling securities that are performing above their long-run expected rate of return. Figure illustrates this concept.
A study in the Financial Analysts Journal looked at the performance of 29 companies identified in the best-selling book In Search of Excellence: Lessons from America's Best-Run Companies, by Thomas Peters and Robert Waterman. Using the same financial ratios as in the book, the author of the FAJ article found that the financial health of these firms began to decline once the book identified them. At the same time, a control group of companies that ranked low according to the Peters and Waterman criteria showed

substantial improvement over the subsequent five years-These results are consistent with the notion of security performance reverting to some long-term mean value.

Value investors are willing to wait.

The Growth Approach to Investing:

In the investment community, the term growth is used as both an investment objective and as an investment style. In this latter case, a growth investor seeks steadily growing companies. The two factions within the growth investor camp are the information trader and the true growth investor.

The Information Trader:

The information trader is in a hurry and believes that profits are to be made by processing the news better than the next person. The information trader also believes that information differentials characterize the marketplace. That is, some people have access to better quality information than others, and some people are better at processing the available information. By using more complete information and using it more effectively than the next person, an information trader believes that above-average profits are possible.11 As an example, one of Wall Street's most widely watched statistics is the weekly unemployment figure, released every Friday morning at 8:30 EST. When the actual statistic deviates from what was expected, the bond market reacts instantly because of the implications for inflationary pressure on the economy. As an example, the keynote speaker for the annual Chicago Board of Trade/Chicago Board Options Exchange Risk Management conference is often at the podium when the unemployment data are released. The audience of portfolio managers and risk managers is extremely interested in "the number," and at about 8:32 an exchange employee hands the speaker a note to read containing the just-released statistic. If the number is a surprise, some people scurry out of the conference in their rush to get to a phone.

Information traders are in a hurry; they believe information differentials in the marketplace can be profitably exploited.

The True Growth Investor:

The true growth trader is more willing to wait than the information trader, but shares the belief that good investment managers can earn above-average returns for their clients. A growth trader often focuses on companies that are currently in favor in the financial community. The proliferation of home computers and information superhighway developments led to significant price rises for firms like Intel, Microsoft, and Gateway (GTW, NYSE). Sometimes the notion of whether the existing level of earnings is sufficient to justify a particularly high stock price is unclear. Growth traders are willing to pay more than might seem reasonable because they like the stack's future prospects; they are buying future earnings that may or may not develop.

How Price Relates to Value:

Categorizing an investment approach as either growth or value oriented is not really a new idea. The book that holds the distinction as all-time best seller in the investment business is probably Security Analysis by Benjamin Graham and David Dodd. In this book, the authors describe a precursor to the present-day value-versus-growth dichotomy called historical optimism and growth selectivity. Graham and Dodd state:

"The principle of selectivity was an old and obvious guidepost in Wall Street. It was no more than the truism that some companies are better than others, and hence some stocks will fare better than others in the market- In the 1920s, however, selectivity took on a new character by reason of the overshadowing placed on expected future growth as the prime criterion of an attractive investment."

A remarkable thing about investment theory in the early days of the market is the minor role that price played, Graham and Dodd summarize the attitude in one statement: "A stock with good long-term prospects is always a good investment" As the stock market soared in the late 1920s, the primary determinant of value, in the minds of many people at least, was its growth potential. A stock that experienced high earnings growth was a quality stock, and no external factor could change that, not even a stock price run-up to exorbitant levels.

The Great Crash of 1929 and resulting depression changed a lot of minds about the source of value. Firms whose equity was reasonably backed by assets and a popular product fared far better than firms peddling fanciful visions of what might some-day be.

Since the Depression, the economy has traversed both recessions and economic expansions. The stock market severely penalizes growth stocks without a firm foundation during the recessions, but falls in love with them during boom times. Most of today's investment managers look favorably upon a history of earnings and dividend growth, but also look at the firm's financial statements to see if future growth can reasonably be expected. Unlike their predecessors, though, contemporary analysts understand that value is inextricably intertwined with price, and that the most efficient and productive company in the world is a poor investment if the stock price is too high.

The modern perspective: Value is inextricably intertwined with price. The most efficient and productive company in the world is a poor investment if the stock price is too high.

Value Stocks and Growth Stocks:

How to Tell by Looking:

No precise definition of value stock or growth stock will satisfy everyone. However, a firm's price to book ratio and its price-earnings ratio play important roles in this segregation. *Morningstar Mutual Funds* is a popular source of information on public investment portfolios called mutual funds the principal topic of Chapter Nineteen. This service sorts mutual funds into three groups; value, blend, and growth. The placement criteria are the fund's relative price to book and PE ratios. For each fund, its PE is divided by the market average to produce a relative PE; an average fund has a relative PE of 1.0. The same thing is done with the price to book ratio. Adding these two values gives the magic number. An average fund, by definition, has a rating of 2.00. If a fund's magic number is below 1.75, Morningstar classifies the fund as a value fund. Ratings over 2-25 are growth funds, with those in between classified as blend funds. While the *Morningstar* system is not definitive, some variant of it is probably used by many value-oriented investors. *Morningstar* explains their rating rationale as follows:

We have opted to combine both the price-earnings ratio (PE) and the price to book ratio for each of the funds, thus emphasizing relative, rather than absolute, numbers. After all a PE of 15 can be cheap in one market, but dear in another; what's really important is knowing how that compares with other funds. By combining each fund's relative PE and price to book

ratios, we arrive at a multidimensional picture of where each stock fund stands on the value/growth spectrum.

Given the importance of these two ratios in determining the value or growth style, we now look at these statistics in detail.

The Price to Book Ratio:

Book value per share is an accounting concept that measures what shareholders would receive if all the firm's liabilities were paid and all its assets could be sold at their balance sheet value. The term is synonymous with equity per share or net asset value.

Share price normally is not equal book value. Depreciation methods, a firm's method of allowing for uncollectible debts, the presence of goodwill, and a host of other things can distort book value. The market value of a building usually appreciates, for instance, while the owner often can depreciate it. An apartment complex may have a book value of $250,000, but a market value of $1 million. A value- 0 oriented investor would be favorably inclined toward a stock whose market price was below its book value. It might seem curious that this would ever be the case, but it frequently occurs. Note in the guidelines from Graham and Dodd the criterion that price be less than two-thirds of book value. Of me securities in the Compustat data base, nearly one-third traded below book value at some time.13 In October 1999, 471 of the 6,135 stocks covered in the expanded Value Line Investment Survey traded below book value.

Economic obsolescence is another reason market value and book value may diverge. Consider the personal computer market. Someone might begin to depreciate a new, $2,700 personal computer over a three-year period. After two years, its book value will be $900. The way technology is moving in this industry, after two years the computer may well have virtually no resale value. If this is the case, its book value overstates the actual market value. Table 7-1 shows stocks selling at less than half their book value. The mere fact that a stock sells below book value is insufficient evidence that a value investor would recommend it. Such a stock is likely, however, to attract the value investor's attention. Additional research is necessary to discover whether any good reasons explain why the stock is selling at such a seemingly low price.

Another problem is characteristic of the price to book value ratio. It stems from the changing nature of life in the 1990s and the increasingly intangible aspects of some investment value. Rich Karlgaard, editor of Forbes ASAP, states:

"As an index, book value is dead as a doornail, an artifact of the Industrial Age. We live in the Information Age, of course, though remarkably few people have come to terms with that fact. Failure to understand the declining relevance of book value and the tangible assets that form the ratio's numerator is proof of this. Human intelligence and intellectual resources are now any company's most valuable assets."

The Price-Earnings Ratio:

The price-earnings ratio (PE) is one of the most widely followed statistics about a common stock. It is computed by dividing the current stock price by the firm's earnings per share. There are two versions of the PE ratio. A trailing PE is the current market price divided by the company's reported earnings per share from the past year. The stock market is much more concerned about what' will happen in the future than what happened in the past, so some analysts prefer to compute the PE based on expected earnings rather than on actual,

realized earnings. Although a PE calculated this way has no particular name, it is indicated by statements such as the stock sells at 15 times estimated earnings." This description means the current market price divided by the earnings estimate for the next year equals 15. Growth stocks tend to have PE ratios higher than average. Corporate management generally likes a firm's PE to be high. A higher PE ratio allows management to raise capital more easily without having to sell a large number of shares.

A number of academic studies provide evidence supporting the theory that low PE stocks are attractive. The most important of-these is probably a now-classic study by Sanjoy Basu, finding above-average performance with low PE stocks.

In general, a low price-earnings ratio implies greater risk. Higher leverage means higher risk, and higher leverage tends to produce a low PE, because leverage increases the volatility in a firm's earnings, regardless of whether the leverage comes from the fixed costs associated with capital investment or from interest payments on debt. Increased uncertainty in earnings may depress the stock price, and hence produce a lower PE ratio. You should not, however, automatically assume that a low PE stock is highly leveraged.

Stock Market investors are more concerned with future than with the past.

Differences between Industries:

Neither the price-earnings ratio nor the price to book ratio is a stand-alone statistic. Important industry differences need to be considered. A firm whose primary asset is brainpower (such as a software company) has fewer capital assets than a smokestack company (like a steel mill). The software industry would normally have a higher price to book ratio than the steel industry.

For this reason, relative ratios are commonly computed for both the PE and the price to book statistics. This calculation provides the ratio of the firm's statistic to the industry average statistic.

SOME ANALYTICAL FACTORS:

Growth Rates:

Dividend and earnings growth rates are important to both value and growth investors, but especially to the growth investor. The estimation of further growth rates is an art rather than a science. Many models that attempt to calculate a stock’s worth are quite sensitive to the growth rate used; consequently, an analyst needs to be careful in preparing this statistic.

Corporations like to establish a predictable dividend payout pattern, normally including an annual increase in the dividend payment- Some people feel that predictable dividends reduce the uncertainty surrounding the future cash flows to which shareholders are entitled.

PepsiCo (PEP, NYSE'), a familiar soft-drink company, is also the parent corporation for Frito-Lay and Tropicana Products. Table 7-4 shows historical dividend and earnings information that will be used in the examples to follow. In its 1994 annual report, the company states that its current payout target is approximately one-third of the prior year's income from continuing operations. Since 1988, the average annual payout ratio is 33.7 percent.

Of the two common ways of determining growth rates, the first method uses the company's past history of dividends. The other method uses the firm's earnings retention rate coupled with the firm's return on equity. We will look at each of these methods.

Calculate dividend growth rates using the geometric mean rather than the arithmetic mean.

The Dividend Discount Model:

Stock potentially has an infinite life. If the stack's dividends increase by a known growth rate each year, it is valued as a growing perpetuity. Standard present value tables cannot be used for a growing perpetuity, but fortunately a mathematical identity makes present value determinations a simple task. Equation (7-3) shows a relationship known as the dividend discount model (DDM), also called Gordon's growth model.

$$p_o = \frac{D_0(I+g)}{k-g} = \frac{D_1}{k-g}$$

In this equation, D_o is the current dividend; D_1 is the dividend to be paid next year; g is the expected dividend growth rate; and k is the discount factor according to the riskiness of the stock.20 the model assumes that the dividend stream is perpetual and that the long-term growth rate is constant.

The DDM is sometimes used to get an idea of how risky the market thinks a particular stock is at the moment. In equation (7-3), we can observe the current stock price and the current dividend. We can estimate the dividend growth rate. The one variable we cannot observe is the discount rate k. This value, however, can be calculated if we know the other variables in the equation. The variable k is sometimes called the shareholders' required rate of return.

$$k = \frac{D_0(I+g)}{p_0} + g$$

Note that the expression for k, the shareholders' required rate of return, is the sum of two components: the expected dividend yield on the stock and the expected growth rate. If the dividend yield is a constant, g represents the anticipated capital appreciation in the stock price.

The shareholders' required rate of return is the sum of the expected sum of the expected dividend yield and the expected stock price appreciation.

The Importance of Hitting the Earnings Estimate:

Corporate CFOs know the importance of hitting Wall Street's earnings estimates. Analysts are in frequent contact with the company, know its operations well, and usually base their estimates on sound information- The market often penalizes a company's stock substantially when the earnings report is disappointing. This is especially true when the required rate of return and the estimated growth rate are high.

Suppose a company has a dividend payout ratio of 50%, analysts expect earnings of $1.10 in the coming year, the consensus median dividend growth rate is 15%, and the current stock price is $27'/2, According to the DDM, the shareholders' required rate of return is 17%:

$$R = \frac{D_1}{p_0} + g = \frac{0.5(\$1.10)}{\$27.50} + 0.15 = 17\%$$

Suppose also that the expected earnings in the upcoming quarter are $0.29, but the company reports only $0.27- This is a negative surprise, meaning that actual earnings were below expectations. This might cause the analyst to reduce the estimate of future growth and, because of the uncertainty, to boost the discount rate. Perhaps the analyst adjusts the growth rate to 13% and the required rate of return to 18%. If future estimates for the year remain on track, the anticipated earnings per share will be only $1.08. How does this affect the stock price? You might first think that being off by two cents is not a big deal, but as the following equation shows, the stock price is hit hard by this news. It falls by nearly 61%.

$$P_0 = \frac{D_1}{k - g} = \frac{0.5\ (\$1.08)}{0.18 - 0.13} = \$10.80$$

These results indicate why the whisper number is important and why CFOs do not like to feed incomplete information to the analysts who follow their companies.

The Multistage DDM:

Small firms often show initially high levels of growth that cannot reasonably be expected to persist. In such a case, it is appropriate to use two (or more) growth rates. Suppose a firm currently pays a $1 dividend that is expected to grow by 20 percent for the net two years, and then grow by 5 percent annually thereafter. A growth rate that can reasonably be expected to persist is called a customable growth rate. What is the most an investor can pay for this stock if the required rate of return is 17%? To find out, solve for P_0 in the following equation.

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} \frac{D_2(1.g)/(k-g)}{(1+k\ )^2}$$

The term for the dividend in year three is discounted only twice because the formula for tile growing perpetuity is based on next year's dividend. Therefore, the numerator is discounted only twice, not three times.

Caveats about the DDM:

The dividend discount model is a useful tool in security analysis. It is not, however, a method to predict the future. As with most analytical techniques, the DDM helps an analyst make a better decision, but it does not make the decision. Users should understand the shortcomings of the DDM.
First, the DDM requires that g. If the dividend growth rate is greater than or equal to the shareholders' required rate of return, the equation cannot be used. Dividing by zero or by a negative number obviously gives an absurd result. Also, the results are sensitive to the estimate of g. Minor differences in the growth rate selected can materially affect the results. As shown, there are numerous ways of estimating g.

Another consideration is the assumption that the dividend yield remains constant. A change in dividend policy can affect the apparent growth rate. A change in the growth rate will produce different values from the model. Finally, the model implicitly assumes the long-term ROE is constant. The DDM does not require that every year's growth be identical. Rather, it requires that the long-term growth rate be constant in other words, a long-term trend about which the annual values fluctuate.

False Growth:

Historical data must always be scrutinized carefully when used to determine a growth rate. Remember that in the investing business the future is much more important than the past Sometimes accounting changes, mergers, or other unusual events can muddy the water for the financial analyst. One such situation occurs when one firm acquires another firm through a stock swap.

Some shareholders may-decide not to tender their shares, but most are likely to do so. In any event, after the merger, when the accounting records of the two firms are consolidated, we see that A's earnings per share have risen. This appreciation is due solely to the merger and is a phenomenon called false growth. False growth occurs anytime a firm acquires another firm with a PE ratio lower than its own. The stock price does not matter; the PE ratio determines the outcome.

When using historical data to estimate a stack's dividend growth rate, an analyst should be alert for instances of false growth contained in the data- If acquisitions occurred during the period, the analyst may need to consider that fact in arriving at an estimate of the growth rate.

False Growth occurs anytime a firm acquires another firm with a lower price-earnings ratio.

A Firm's Cash Flow:

Earnings are important to individual and institutional investors alike. Increasing earnings are a good sign, and investors like to see growth in this statistic. The trained financial analyst knows, however, that taking stated earnings at face value can be a mistake. For this reason, security analysts pay particularly close attention to cash flow, the movement of funds into and out of the firm. The Wall Street Journal once reported in an editorial.

"A lot of executives apparently believe that if they can figure out a way to boost reported earnings, their stock prices will go up even if the higher earnings do not represent: any underlying economic change. In other words, the executives think they are smart and the market is dumb. The market is smart. Apparently the dumb one is the corporate executive caught up in the earnings-per-share mystique."

The formal definition of cash flow is net: income after taxes plus non-cash expenses. The most important non-cash expense is depreciation. Depreciation is a tax-deductible business expense, but no check is written for it. No funds leave the firm to pay for depreciation expense; it is non-cash. Some financial analysts calculate a variation known as free cash flow, often defined as net income after taxes plus non-cash expenses minus required capital expenditures. This concept recognizes that even though the checking account contains certain funds, they are not necessarily available for discretionary use. If a firm must replace a fleet of trucks next month, the money to do so is encumbered and should not be viewed as profit to be distributed or invested in new ventures.

Some evidence indicates that market valuation is more a function of corporate cash flow than corporate earnings. A famous study by Kaplan and Roll examined market reaction to changes in depreciation-methods.24 Switching from straight-line to an accelerated method will decrease earnings but increase cash flow; switching from an accelerated method to

straight-line will do just the opposite. This study found that the market reacts negatively to firms that increase earnings at the expense of cash flow, and vice versa.
Statement of Financial Accounting Standard number 95 requires a firm to separate cash flows from operations, financing activities, and investment activities on its statement of cash flows. However, these numbers hold more than initially meets the eye. Cash flow from operations is the firm's lifeblood. If this statistic is weak, it calls into question the firm's health or even its ability to survive. In this example, cash flow from operations steadily declined over the four years, from $88 million in 1996 to $35 million in 1999. In the past two years the firm's operating cash flow was insufficient to cover the dividends paid. In fact, equipment sales helped provide the funds necessary for the dividend checks.

Similarly, the firm borrowed $20 million in 1997. It is not clear from this statement whether the firm used those funds productively. While net income was up the following year, operating cash flow was down. Accounts receivable and inventory rose substantially; analysts know these changes may be a bad sign. Accounts receivable can be increased by easing credit terms, and rising inventory levels may indicate that customers are not buying the firm's products. Perhaps the firm used long-term debt to finance the acquisition of current assets.

The cash flow from operations figures are widely used as a check on a firm's earnings quality. Rising earnings associated with declining operating cash flow means the earnings are of low quality- A security analyst will temper estimates of future dividend or earnings growth if the earnings are low quality. For this reason, the statement of cash flows is a useful analytical tool.

Cash Flow from operations is a firm's lifeblood.

Small-Cap, Mid-Cap, and Large-Cap Stocks:

Another consideration in fundamental stock analysis relates to the size of the firm. Currently, firms are categorized as small-cap, mid-cap, or large-cap, cap being short for capitalization. Although no precise definition has been stated for these terms most analysts consider a firm with capitalization less than $500 million to be a small cap stock' Lipper Analytical Services defines a mid-cap •firm as one with capitalization between $800 million and $2 billion. Others extend the mid-cap range up to $6 billion.
Substantial financial research finds unusually good performance from small-cap stocks; this phenomenon is sometimes called the small firm effect. Because of this effect, some analysts devote particular attention to small-cap firms.

Mid-cap firms showed average earnings growth of 15 percent during 1993, compared with 12 percent for large-cap firms. Some analysts believe the mid-caps offer particularly fertile hunting ground for the stock picker. Small-cap stocks tend to be more volatile, scaring away the more risk-averse investors. Index funds and large institutional portfolios own large-cap stocks. The likelihood of "striking oil" from superior analysis of these large-cap stocks is remote, because too many other people are -trying to do the same thing.

A study by Prudential Securities found that since 1926 mid-cap stocks returned 0-4% less than small-cap stocks but were much less volatile. Many investors find that the risk-return package historically offered by the mid-caps is superior to that offered by either the small-caps or the large-caps.

Future study on relative performance by market capitalization is going to be complicated by the definitional problem. We have traditionally defined market capitalization as the current

share price multiplied by the number of outstanding shares. This definition, however, can pose a dilemma for the thoughtful security analyst. Y Suppose you are hired as a large-capitalization common stock manager. Your job is to build and manage a portfolio of large-cap stocks. How should you view a company like Yahoo! (YHOO, NASDAQ)? In February 2000 the company's stock price of about $156 gave it a capitalization of $82-2 billion. The price-earnings ratio, however, was over 1,600. Suppose its PE were "only" 100, a figure that is still well above the market average. This would drop the capitalization into the mid-cap range. Overlay this with the fact that the company has only about 700 employees, and you might be hard pressed to call Yahoo! a large-cap firm in the historical sense.

Cooking the Books:

Ail publicly traded firms in the United States must have their financial statements audited to ensure they fairly present the company's financial position. Still, every year there is at least one story of accounting fraud at a major firm. In 1992, for instance, the women's clothing firm Leslie Fay admitted it had manipulated inventory numbers to produce earnings of $23.9 million when, in fact, it lost $13.7 million. The news cut the stock price in half and led to bankruptcy two months later. In recent years there have been accounting bombshells at other firms including Comptronix Corp., Cascade International, Maxwell Communication Corp., Chambers Development, MiniScribe, Cendant, and numerous others. Unfortunately, there is not much the analyst can do about fraud. As Patricia McConnell, a respected analyst at Bear Steams says, "A well-perpetrated fraud is impossible to detect." The important thing to remember is that the marketplace is full of many types of risk, and fraud is one of them.

Fundamental analysts believe securities are priced according to economic data; technical analysts believe supply and demand factors are most important. Most investment research deals with predicting future earnings. A value investor believes a security should only be purchased when the underlying fundamentals justify the purchase. They believe in a regression to the mean of security returns.

A growth investor seeks rapidly growing companies. Value investors place a great deal of importance on a stock’s price to book ratio and its price-earnings ratio. A future earning growth rate is unobservable. Most analysts use several methods to estimate this statistic to determine a likely range for the value rather than a single number.
The dividend discount model (also called Gordon’s growth model) can be used to value stock as a growing perpetuity. The shareholders’ required rate of return is an input to the model. False growth in earnings occurs any time a firm acquires another firm with a lower price-earning ratio. Cash flow from operations is a firm’s lifeblood. This value is often used as a check on the quality of a firm’s earnings.

The evidence shows that small-cap stocks outperform mid- or large-cap stocks. Some analysts believe that mid-cap stocks are particularly fertile hunting ground for the security analyst because they receive less attention from the marketplace. Spectacular gains are occasionally associated with initial public offerings (IPO).these gains usually disappear within the first year or two of the new stock’s life.

BEYOND FUNDAMENTAL ANALYSIS

Few facets of the investment discipline generate as much controversy as technical analysis. Some professional investors are convinced the activity is a complete waste of time and a disservice to brokerage clients. An equal number are certain that technical analysis is mandatory for every one who seeks above average investment results. Some fundamental analysts will say they use technical analysis to confirm their opinions but not as a stand-alone technique.

CHARTING:

In the mind of some people, elaborate wall charts are the classic symbol of the stock picker's art. The experience eye can divine ups and down in the same way a soothsayer can read tea leaves are astrological signs or so the folklore goes. Charting is a controversial part of finance. Future research is likely to uncover things about charting that would surprise us today. Still, even people who vehemently oppose the practice should be familiar with the basic tents.

Much about technical analysis remains a puzzle.

The Underlying logic:

Charts are an important tool of the technical analyst. He or she believes the supply and demand determine prices that changes in supply or demand will change prices and that charts can be used to predict changes in supply and demand and in investor behavior. This logic seems reasonable to many people, but it is also why charting is a trouble topic to the fundamental analyst.

The weak link in this reasoning lies in the last point: charts can be used to predict changes in supply and demand. The stock market seldom waits for things to completely unfold. Market participants are continually anticipating future events are frequently err in their anticipation.

Imagine an investment whose value is determined by a prior series of ten coins flips. A person can buy the investment at any time, with the purchase price a function of the previous ten coin flips. Suppose a large payoff is associated with a series of five consecutive heads followed five consecutive tails. How will the marketplace value the investment if the previous eight flips were five head followed by three tails? Clearly, investors will bid up the price because of the increased likelihood of the windfall gain. By so doing, they reduce the potential profit, because a rising price means a lower expected return, everything else being equal.

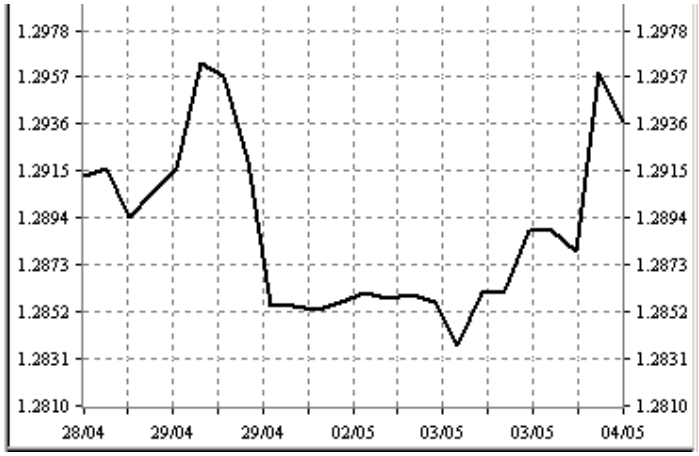
An interesting side note to this example occurs if the investment reaches a maximum value following a series of five heads and five tails. Once an investment reaches its maximum possible value, why would anyone buy it? Logically it can only decline from its peak value. Thus, a interesting interplay takes place between would-be sellers and potential buyers as the pattern develops.

The technical analyst believes charts can be used to predict changes in supply and demand.
Market participants try to anticipate events rather than merely react to them.

Types of Charts:

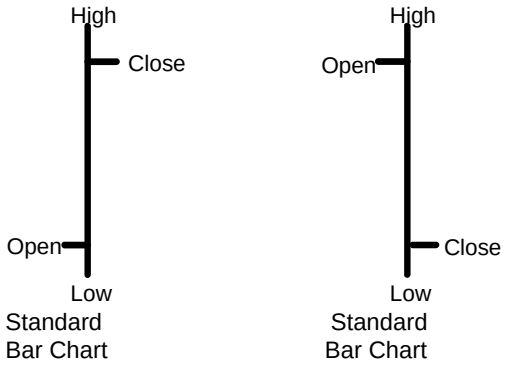
Three principal types of charts are used by the technical analyst: line charts. Bar charts and point and figure charts. A forth type, the candlestick chart, has recently gained favor and may eventually become common.

Line Chart:

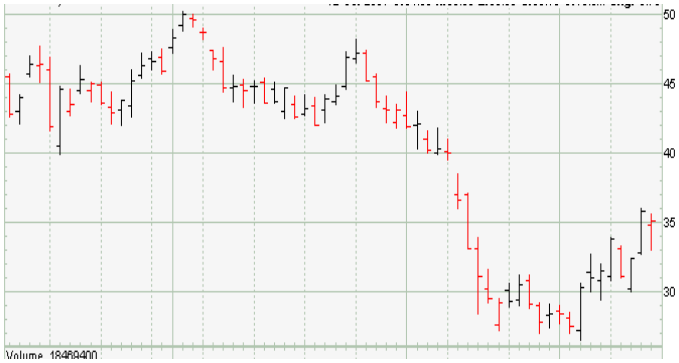


The line chart is the simplest and most familiar. It consists of a line connecting a series of data points. It may be drawn on either a linear or a logarithmic scale. Logarithmic scales are appropriately when the data move through wide ranges. This keeps the plot from going off the chart.

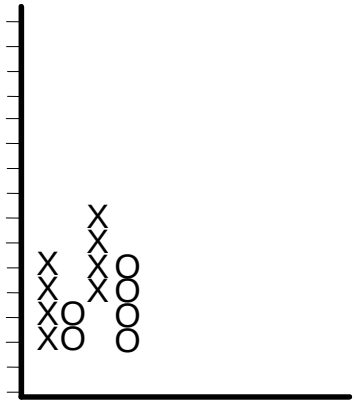
Bar Charts:



The technical analyst's bar chart is different from the bar chart commonly used to present economic data. This chart shows the periodic high, low and closing prices of a security. A vertical line connects the period's high and low prices, with a cross mark indicating the price at the close of the period. Bar charts are efficient in showing more detail about daily trading than just the closing prices from a line chart.



Point and Figure Charts



This exotic chart impresses many a brokerage firm customer. The scattered X's and O's make the document look like a football coach's play diagram. The layperson typically does not understand what they present but the chart attracts attention.

Unlike most other charts, only significant price movement appears. The X represents the prices increase and the O represents the price decline. Notice that Xs and Os never occur in the same column. Once a price reversal of significant magnitude occurs, the analyst moves a column to the right for the next entry.

An old feature of this chart is the fact that the horizontal axis has no units. Moving left to right reflects the passage of time but data points are not plotted at regular interval. Only when the price change is sufficient does a new data appear.

Some technical analyst will superimpose time information the chart.

The horizontal axis on a point and figure chart has no units.

Candlestick Chart

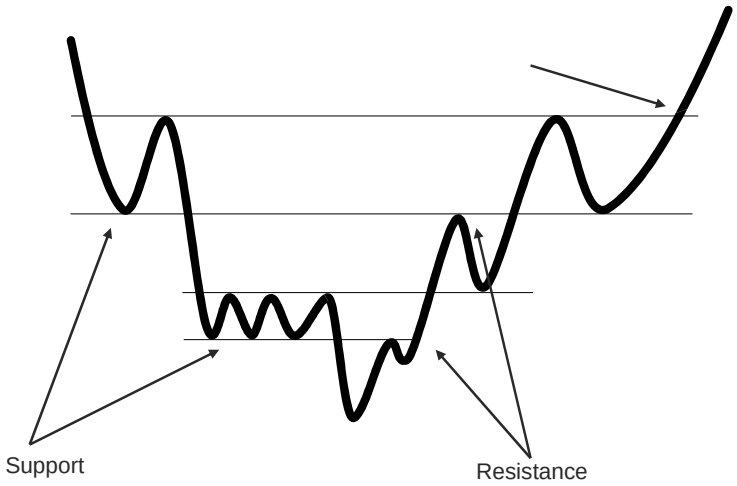
Japanese Candlestick

Japanese Candlestick

A Candlestick Chart is an enhanced version of bar chart. These charts began to appear in the United States in the mid 1980's but have been used in China for over 500 years. Such a

chart shows a stock's open, close, high and low in a modified three dimensional format. The vertical axis shows the stock price while a horizontal axis reflects the passage of time. The principle difference between a daily candlestick chart and a bar chart is the white and black candles augmenting the daily trading range lines. White candles represent stock advances, with black candle representing declines. The thick portion of an entry is called the real body, with the vertical line representing the wick. Various clusters of candles have exotic names, such as dark cloud cover, doji star, hanging man, harami cross, and two-day tweezer tops.

Other Charts Annotations:



A support level is a subjective assessment of the price level below which the stock seems disinclined to fall. **A resistance level** is an apparent upper bound on stock prices or a level presenting a barrier to further price appreciation. Both concepts are purely subjective and cannot be calculated. **A congestion area** is a region of the chart of the chart where a great many data points appear. When the stock price leaves the congestion area and pierces either a support level or a resistance level, it is called **breakout**. A rise through a resistance level is a breakout on the upside; a fall through a support level is a breakout on the downside. When someone says "the stock broke" they often refer to a decline through a support level. Breakout on the upside are bullish; breakout on the downside a bearish. Once a breakout occurs, the technical analyst will search for new resistance and support level. The institution behind these levels is easy to develop.

Chartists believe investors remember missed opportunities and look for them to return.

TECHNICAL ANALYSIS

Technical analysis is entirely different from the fundamental approach to "security analysis". Consider the following quotations from popular press articles on technical analysis:

"Engage a technical analyst in a conversation about his art, and you soon feel you're in the shadowy saloon from Star Wars, where freakish aliens lounge about speaking strange languages."

"Spend some time with a technical analyst and you almost need a Technical-to-English translation guide. Conversations art full of references to support and resistance levels, Fibonacci retracements, double bottoms and moving averages."

Although the technical approach to common stock selection is the oldest approach (dating back to the late 1800s), it remains controversial. The techniques discussed in this chapter appear at first glance to have considerable merit, because they seem intuitive plausible, but they have been severely challenged in the last three decades by evidence supporting the Efficient Market Hypothesis. Despite Burton Malkiel's (a well - known proponent of efficient markets) admission that "the market is not a perfect random walk," the-extensive evidence concerning the efficiency of the market has challenged the validity of technical analysis and -the likelihood of its success.

Those learning about investments will in all likelihood be exposed to technical analysis, because numerous investors, investment / advisory firms, and the popular press talk about it and use it. Furthermore, it may produce some insights into dimension of the market. In fact, technical analysis is becoming increasingly interrelated with behavioral finance, a popular field of study today. In effect, technical indicators are being used to measure investor emotions.

Even if this approach is incorrect, many investors act as if it were correct. Therefore, the prudent course of action is to study this topic, or indeed any other recommended approach to making investing decisions, and try to make an objective evaluation of its validity and usefulness. At the very least, an informed investor will be in a Better position to understand what is being said, or claimed, and better able to judge the validity of the claims.

Although technical analysis can be applied to bonds, currencies and commodities as well as to common stocks, technical analysis typically involves the aggregate stock market, industry sectors, or individual common stocks.

What is Technical Analysis?

Technical analysis can be defined as the use of specific market-generated data for the analysis of both aggregate stock prices (market indices or industry averages) and individual stocks. Martin J. Pring, in his book Technical Analysis, states:

"The technical approach to investing is essentially a reflection of the idea that prices move in trends which are determined by the changing attitudes of investors towards a variety of economic, monetary, political and psychological forces. The art of technical analysis for it is an art is to identify trend changes at an early stage and to maintain an investment posture until the weight of the evidence indicates that the trend is reversed."

Technical analysis is sometimes called market or internal analysis, because it utilizes the record of the market itself to attempt to assess the demand for, and supply of, shares of a stock or the entire market. Thus, technical analysts believe that the market itself is its own best source of data—as

they say, "let the market tell its own story." The theory of technical analysis is that the price movement of a security captures all the information about that security.

Economics teaches us that prices are determined by the interaction of demand and. supply. Technicians do not disagree, but argue that it is extremely difficult to assess all the factors that influence demand and supply. Since not all investors are in agreement on price, the determining factor at any point in time is the net demand (or lack thereof) for a stock based on how many investors are optimistic or pessimistic. Furthermore, once the balance of investors becomes optimistic (pessimistic), this mood is likely to continue for the near term and can be detected by various technical indicators. As the chief market technician of one New York firm says, "All I care about is how people feel about those particular stocks as shown by their putting money in and taking their money out."

Technical analysis is based on published market data as opposed to fundamental data, such as earnings, sales, growth rates, or government regulations. Market data primarily include the price of a stock or a market index and volume data (number of shares traded). Many technical analysts believe that only such market data, as opposed to fundamental data, are relevant. For example, they argue that accounting data are subject to all types of limitations and ambiguities, an argument.

Recall that in fundamental analysis, the dividend discount model and the multiplier mode produce an estimate of a stock's intrinsic value, which is then compared to the market price. Fundamentalists believe that their data, properly evaluated, can be used to estimate the intrinsic value of a stock. Technicians, on the other hand, believe that it is extremely difficult to estimate intrinsic value and virtually impossible to obtain and analyze good information consistently. In particular, they are dubious about the value to be derived from an analysis of published financial statements. Instead, they focus on market data as an indication of the forces of supply and demand for a stock or the market.

Technicians believe that the process by which prices adjust to new information is one of a gradual adjustment toward a new (equilibrium) price. As the stock adjusts from its old equilibrium level to its new level, the price tends to move in a trend. The central concern is not why the change is taking place, but rather the very fact that it is taking place at all. Technical analysts believe that stock prices show identifiable trends that can be exploited by investors. They seek to identify changes in the direction of a stock and take a position in the stock to take advantage of the trend.

The following points summarize technical analysis:

1. Technical analysis is based on published market data and focuses on internal factors by analyzing movements in the aggregate market, industry average, or stock. In contrast, fundamental analysis focuses on economic and political factors, which are external to the market itself.

2. The focus of technical analysis is on identifying changes in the direction of stock prices which tend to move in trends as the stock price adjusts to a new equilibrium level. These trends can be analyzed, and changes in trends detected, by studying the action of price movements and trading volume across time. The emphasis is on likely price changes.

3. Technicians, attempt to assess the overall situation concerning stocks by analyzing technical indicators, such as breadth of market data, market sentiment, momentum, and other indicators.

Perhaps the bottom line can be stated as: Stock prices (either for the market or individual stocks) tend to move in trends, and these trends take time to unfold. Such trends can be spotted by careful analysis, and acted upon by buying and selling.

A framework for Technical Analysis:

Technical analysis can be applied to both an aggregate of prices (the market as a whole or industry averages) and individual stocks. Technical analysis includes the use of graphs (charts) and technical indicators.

Price and volume are the primary tools of the pure technical analyst, and the chart is the most important mechanism for displaying this information. Technicians believe that the forces of supply and demand result in particular patterns of price behavior, the most important of which is the trend or overall direction in price. Using a chart, the technician hopes to identify trends and patterns in stock prices that provide trading signals.

Volume data are used to gauge the general in the market and to help assess its trends. The evidence seems to suggest that rising (falling) stock prices are usually associated with rising (falling) volume. If stock prices rose but volume activity did not keep pace, technicians would be skeptical about the upward trend. An upward surge on contracting volume would be particularly suspected. A downside movement from some pattern or holding point accompanied by heavy volume would be taken as a bearish sign.

We first consider stock price and volume technique, often referred to as charting. However, technical analysis has evolved over time, so that today it is much more than the charting of individual stocks or the market. In particular Technical indicators are used to assess market conditions (breadth) and investors' sentiments. It also includes "contrary analysis" which is an intellectual process more than a technique. The idea behind contrary is go against the crowd when those in the crowd start thinking alike.

Charts of Price Patterns:

To assess individual stock-price movements, technicians generally rely on charts or graphs of price movements and on relative strength analysis. The charting of price patterns is one of the classic technical analysis techniques. Technicians believe that stock prices move in trends, with price changes forming patterns that can be recognized and categorized. By visually assessing the forces of supply and demand, technicians hope to be able to predict the likely direction of future movements. The most basic measure of a stock's direction is the **trendline**, which simply shows the direction the stock is moving. If demand is increasing more rapidly than supply and the stock shows successively higher low points, it is in an uptrend. Consistently lower highs indicate that supply is increasing more rapidly, and the stock is in a downtrend. Obviously, investors seek to buy in an uptrend and sell on a downtrend.

Technicians seek to identify certain signals in a chart of stock prices, and use certainly terminology to describe the events. A support level is the level of price (or, more correctly, a price range) at which a technician expects a significant increase in the demand for a stock. In other words, a lower bound on price where it is expected that buyers will act, supporting the price and preventing additional price declines. A resistance level, on the other hand, is the level of price (range) at which a technician expects a significant increase in the supply of a stock. In other words, an upper bound on price where sellers are expected to act, providing a resistance to any further rise in price.

Support levels tend to develop when profit taking causes a reversal in a stock's price following an increase; investors who did not purchase earlier are now willing to buy at this price, which becomes a

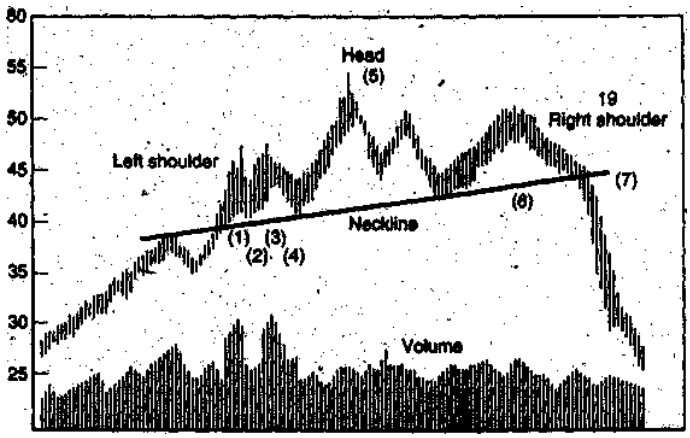
support level. Resistance levels tend to develop after a stock declines from a higher level. Investors are waiting to sell the stocks at a certain recovery point. At certain price levels, therefore, a significant increase in supply occurs, and the price will encounter resistance moving beyond this level.

As noted, a trendline is a line drawn on a chart to identify a trend. If a trend exhibits support and resistance levels simultaneously that appear to be well defined, the trend lines are referred to as *channel* lines, and price is said to move between the upper channel line and the lower channel line. *Momentum* is used to indicate the speed with which prices are changing, and a number of measures of momentum exist, referred to as momentum indicators. When a change in direction occurs in a short-term trend, technicians say that a reversal has occurred. A correction occurs when the reversal involves only a partial retracing of the prior movement. Corrections may be followed by periods of consolidations with the initial trend resuming following the consolidation..

Technical analysts rely primarily on line charts, bar charts, and point-and-figure charts, although other types of charts are also used, such as candlestick charts.

Bar Charts:

One of the most popular charts in technical analysis bar charts, are plotted with price on the vertical axis and time on the horizontal axis. Each day's price movements is represented by a vertical bar whose top (bottom) represents the high (low) price for the day.



(A small, horizontal tick is often used to design the closing price for the day). The bottom of a bar chart usually shows the trading volume for each day, permitting the simulations observation of noth price and volume activity. The Wall Street Journal carries a bar chart of the Dow Jones Averages each day on the page with New York Stock Exchange (NYSE) quotations.

The technician using charts will search for patterns in the chart that can be used to predict future price moves. The strong uptrend occurring over period of months. This trend ended with a rally on high volume that forms parts of the left shoulder of a famous chart pattern called a Head and Shoulders patterns.

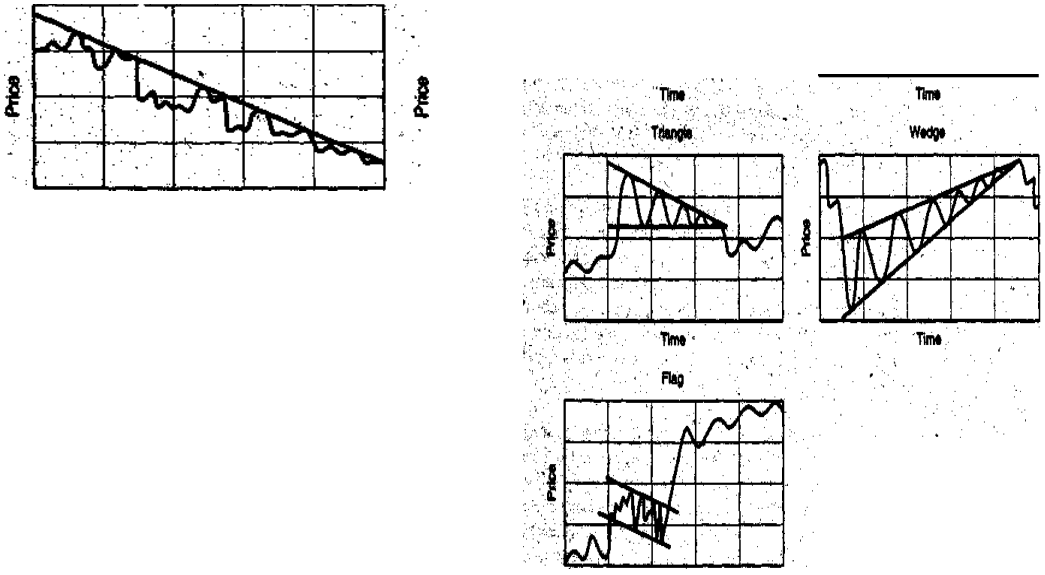
The left shoulder shows initially strong demand followed by a reaction on lower volume (2), and then a second rally, with strong volume; carrying prices still higher (3). Profit taking again causes prices to fall to the so-called neckline (4), thus completes the left shoulder. A rally occurs, but this time on low volume, and again prices sink back to the neckline. This is the head (5). The last step is the formation of the right shoulder, which occurs with light volume (6). Growing weakness can be identified as the price approaches the neckline. As can be seen, a downside breakout occurs on heavy volume, which technicians consider to be sell signal.

Technicians have considered a very large number of such patterns. Some of the possible patterns include flags, pennants, gaps (of more than one type), triangles of various types (e.g., symmetrical, ascending, descending, and inverted), the inverted saucer or dome, the triple op, the compound fulcrum, the rising (and falling) wedge, the broadening bottom, the duplex horizontal. Rectangles, and the inverted V.

Obviously, numerous patterns are possible and can usually be found on a chart of stock prices. It is also obvious that most, if not all, of these patterns are much easier to identify in hindsight than at the time they are actually occurring.

Point-and-Figure Charts:

Technicians also use point-and-figure charts, types of charts are more complex in that they show only significant price changes, and volume is not shown at all. The user determines what a significant price change is and what constitutes a price reversal {$2, $3, $4, and so forth). Although the horizontal axis still depicts time, specific calendar time is not particularly important with the passage of time is basically ignored. (Some chartists do show the month in which changes occur.)



These are the most important price patterns for investors who want to temper their hunches and the timing of their buy and sell decisions with solid empirical data.

An X is typically used to show upward movements, whereas an O is used for downward movements. Each X or O on a particular chart may represent Rs. 1 movements, Rs. 2 movements, Rs. 5 movements, and so on, depending on how much movement is considered significant for that stock. An X or O is recorded only when the price moves by the specified amount.

Moving Average:

A **Moving Average** is a smoothed presentation of underlying historical data. Each data point is the arithmetic average of a portion of the previous data. A ten-day moving average measures the average over the previous ten days. Regardless of the time period used, each day a new observation is included in the calculation and the oldest is dropped, so a constant number of points are always being averaged.

Advocates of moving average in the stock selection believe that changes in the slope of the line are important. A stock whose twenty-day moving average has been trending up might become a candidate for sale if the line turns downward.

TECHNICAL ANALYSIS Contd…

Technical Indicators:

In addition to charts, most technical analysts use a collection of technical indicators. These statistics, either calculated or directly observed, are alleged to have a relationship with the future direction of overall stock market or with an individual security. Some indicators might logically carry useful information; others are sufficiently far-fetched that only the most creative analyst could develop a caused and effect relationship with the market.

Indicators with Economic Justification:

Some technical indicators are based on economic activity that is measurable and observable. Fundamental analyst also monitor economic data, some economy based on technical indicators receive special attention in the marketplace. Many of these based on logical investment mangers behavior, especially the manager's likely reaction to prior events.. A few of the most popular technical indicators discussed next.

Short Interest:

A person who sells stock short believes that the share price will decline. Eventually, they must purchase stock in the open market to replace the shares previously burrowed. The quantity of share sold short at anytime is periodically reported in the financial press and is called **short interest. Shares sold short** must eventually be the covered (bought). It logically follows that the higher the short interest figure, the larger is the potential demand for shares.

The technical analyst believes that a large short interest figure is bullish because of the potential demand for the shares. The **short interest ratio** is the number of days it would take to cover the short interest if trading continued at the average daily trading volume of the previous month.

Short interest can also be used as an aggregate market indicator. An indicator based on the behavior of well-informed group of market participants is called a **smart money indicator**. A technical indicator that prescribes actions opposing those of the marketplace is a **contrary opinion indicator**.

Conversely, some people believe the small investor usually waits too long to make a decision and consequently makes investment decision that lag optimum behavior. Odd lots are associated with the small investor. If odd-lot short sales begin to rise relative to total odd-lot transactions, it may signal the end of a market downturn and, therefore, be a bullish signal. A technical indicator that prescribes actions opposing those of the marketplace is a contrary opinion indicator.

Margin Loans:

Another contrary opinion indicator is the margin loan indicator. It measures the extent to which market participants have borrowed money to finance their stock transaction. Increased margin buying is historically associated with rising markets. Margin buying often speaks just before market declines. A technical analyst might view this rising debt as a bearish signal.

Increased margin buying has historically been associated with rising markets.

Mutual Fund Cash Position:

Mutual funds hold an enormous quantity of stock in their port folio. As a group, the investment activities of mutual fund managers can have a significant influence on the direction of stock market prices. The **mutual fund cash position** measures the proportion of total mutual fund assets currently held in cash-equivalent securities.

Many fund managers seek to time the market to some extent. In other words, they increase their purchases when they believe conditions favor a market advance, and hold cash when they believe the market is likely to decline.

Cash held by mutual funds represent potential demand for stock in much the same way short interest does. Equity fund generally find generally invests most of its assets in common stock, holding cash only temporarily. The logic of this technical indicator is that when the mutual fund industry holds more cash than normal, the potential demand is bullish signal about the future. Similarly, when mutual funds are essentially fully invested, the potential demand is there, having already been satisfied in the marketplace.

Some analyst believes that the mutual fund cash position normally ranges between 5 percent and 15 percent. Because of the need to satisfy shares redemption and because of the constant arrival of new investment funds from account holders, a given mutual fund never lets its cash balance get to zero. Five percent or so is an effective minimum in many cases. The upper limit is subjective, as fund manager differ substantially on the percentage of assets they are willing to temporarily remove from the equity market.

Mutual fund cash is potential demand for stock.

Confidence Index:

A confidence index is a ratio of yield on high grade bonds (usually AAA) to yield on a lower grade bonds (usually BBB). Because investors are risk averse, riskier bonds yield more than safer bond, so this ratio will always be less than 1.0. To the advocate of this ratio, the important thing is how close the ratio is to the maximum value 1.0.

By definition, a BBB-rated bund carries more default risk than AAA-rated bond. An investor's willingness to take on more risk is partially determined by the investor's expectations about the future. Default is probably more likely when the economy is expected to turn down, with the associated reduction in consumer demand and product sales, conversely, a robust economy can help a company generate cash and overcome many of its corporate owes. When the confidence index gets closer to 1.0, investors are more likely to be bullish about the economy, and therefore about corporate earnings. A decline index may foretell an economic downturn.

Advance-Decline Line:

Every trading day, some issues advances, some declines and some remains unchanged. **Advance-Decline Line** is a graphical representation of the net advances over a period of time. Advances count as pluses, declines are minuses and unchanged securities count as zero.

Relative Strength Ratio:

Relative Strength Ratio is a method of comparing one statistic to some benchmark statistic.

Moving Average:

A Moving Average is a smoothed presentation of underlying historical data. Each data point is the arithmetic average of a portion of the previous data. A ten-day moving average measures the average over the previous ten days. Regardless of the time period used, each day a new observation is included in the calculation and the oldest is dropped, so a constant number of points are always being averaged.

Advocates of moving average in the stock selection believe that changes in the slope of the line are important. A stock whose twenty-day moving average has been trending up might become a candidate for sale if the line turns downward.

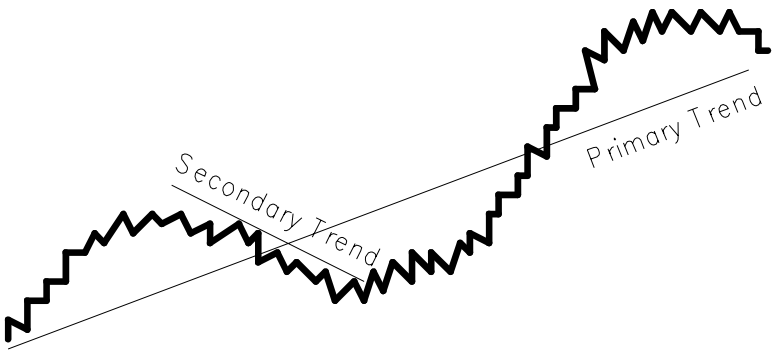
Closing Thoughts on Indicators:

Marketing statistics are an interesting topic. Tools such as the advance-decline line and relative strength figures my help some people make decisions, but they should not be more than that. Managers make decisions, not black boxes or technical indicators.

Fundamental analysts and technical analyst both use market indicators. Indicators can help present data in a more intuitive way and may suggest areas for further investigation. It is dangerous, thought, to believe that a collection of market indicators of any kind will function as an oracle predicting future movements of a stock or of the overall market.

TECHNICAL ANALYSIS Contd…

Dow Theory:



Charles Dow was one of the founders of Dow Jones & Co. (DJ, NYSE), publisher of The Wall Street Journal. He is sometimes credited with being the inventor of the point and figure chart. The ***Dow Theory*** holds that there are three components in the movement of stock prices. The ***primary trend*** is the long-term direction of the market and is the most important. The terms bull and bear originated with the direction of Dow Theory primary trend. The ***secondary trend*** refers to a temporary reversal in the primary trend, one that does not persist long enough to become the primary trend. Finally, daily fluctuations in the stock price are meaningless and contain no useful information.

The Dow Theory is often illustrated by an ocean analogy. The tide is either is coming in or going out – the primary trend. Even when the tide is going out, waves still wash ashore – the secondary. And as everyone who has ever spread a blanket on the beach knows, sometimes for no apparent reason ripples from the waves reach far up the sand and soak your belongings.

The Dow Theory is based on the price movement of the Dow Jones Industrial Average (DJIA). Changes in the primary trend of the DJIA are confirmed by the Dow Jones Transportation Average. The logic is that industrial firms make products, and transportation companies ship them. When both averages are advancing, the economy is in good shape. An explanation of the technical points of this famous market technique is available in the most public libraries.

Surprising, Charles Dow had little to do with the development of this theory. The Wall Street Journal, in fact, suggests that the entire field of technical analysis may have originated from "the distortion and selective editing of Mr. Dow's ideas." While Dow were believed highly correlated with the business cycle.

In Charles H. Dow and the Dow Theory, George W. Bishop, a financial historian, states, "there is no evidence that Dow looked upon the averages as containing anything more than an indication of statistical nature of the trend." There is also no evidence Dow ever suggested prices would be predicted by interpreting charts. The term "Dow Theory" appears to have first been used in a 1902 book by Samuel Armstrong Nelson entitled the ABC of stock speculation.

OLD PUZZLES & NEW DEVELOPMENT:

Fibonacci Numbers:

Fibonacci Numbers have intrigued mathematics and scientist for hundreds of years. Leonard Fibonacci (1170-1240) was a medieval mathematician who discovered the series of numbers while studying the reproductive behavior of rabbits. The beginning of the Fibonacci series is shown below.

1,1,2,3,5,8,5,13,21,34,55,89,144,233,……

After the initial pairs of ones, each succeeding number is simply the sum of the previous two.

The remarkable thing about these numbers is the frequency with which they appear in the environment. Sunflowers have seeds spirals around the center of the plant. Some spirals contain seeds leaning counterclockwise, with other spirals going the other way. On most sunflowers, the number of clockwise spirals and the number of counter clockwise spirals are adjacent Fibonacci numbers. A blossom might have 34 counterclockwise spirals and 55 clockwise spirals. The structure of pine cones, the number of chambers in a nautilus seashell, the topology of spiraling galaxies, and the ancestry of bees all reveal Fibonacci numbers. Even a professional journal, the Fibonacci quarterly, is devoted to the study of this series.

Technical Analyst who follows Fibonacci numbers usually makes use of the number 1.618. This number is called the golden mean and appears in ancient writings and architecture. (The golden mean features prominently in the dimensions of the Parthenon). After the first 10 or so numbers in the series, each Fibonacci number divided by its immediate predecessor equals 1.618. For example, 89/55=1.618; 134/89= 1.618 and so on. This magic number is used to calculate Fibonacci ratios.

Many Fibonacci advocates in the investment business use the first two ratios, 0.382 and 0.618, to "compute retrenchment levels of a previous move." For instance, a stock that falls from $50 to $35(a 30 percent drop) will encounter resistance to further advances after it recoups 38.2 percent of its loss (that is, after it rises to $40.73).

Some technical analysts keep close tabs on resistance and support levels as predicted by the Fibonacci ratios. Even people who do not subscribe to this business know that many other people do, and that when stock prices approach important Fibonacci levels, unusual things can occur.

Fibonacci numbers occur frequently and inexplicably in nature.

Kondratev Wave Theory:

Nikolay Kondratev was a Russian economist and statistician born in 1892. He helped develop the first soviet five-year plan. From 1920 to1928 he was Director of the study of business activity at the Timiriazev Agriculture Academy. While there he devoted his attention to the study of Western capitalist economies. In the economies of Great Bertain and United states, he identified long term business cycles with a period of 50 to 60 years. He became well known after the U.S. crash of 1870. His hypothesis of a long-term business cycle is the called **Kondratev wave theory.**

Note that the market crashof 1987 occurred 58 years after the crash of 1929, a period consistent with Kondratev's theory. Some modern economists believe that significant macroeconomics changes, such as floating exchange rates, the elimination of the gold standard, and the reduction of barriers to free trade, make the business cycle less predictable. Still, many market analysts consider Kondratev's work in their assessment of the stock market and its risks.

Nikolay Kondratev made the mistake of criticizing Stalin openly. For his crimes, he was executed in 1928. He was posthumously cleared of all charges in 1987, the year of the most recent market crash.

Kondratev wave theory states there is a 50- to 60-year business cycle.

Chaos Theory:

At recent finance conferences, a few researchers have presented papers on **chaos theory** and its application to the stock market. In physics, chaos theory is a growing field of study examining instances in which apparently random behavior is, in fact, quite systematic or even deterministic. Scientists apply this theory to weather prediction, population growth estimates, and fisheries biology.

As an example of the later application, a given volume of ocean water, left free from human interference, will not necessarily reach an equilibrium population of the various species that inhibit in it. As fish grow, they consume the smaller fry (of their own or different species) in increasing numbers. Fewer young fish are left to mature; this couple with the natural death of the older fish, eventually results in a sudden drastic reduction in fish population, causing dismay to fisherman and excitement in the local media. At the same time, it results in reduced predation and food competition by the surviving fry, so the population begins to grow dramatically, and the cycle continues. Interactions between species add complexity to the process.

Investment analysts have sought a pattern in stock market behavior since the origin of the exchanges. Many remains unknown about how security prices are determined and chaos theory may eventually provide some partial answers. If the apparent randomness of security price changes can be shown to be nonrandom, much of the theory of finance would need revision.

Chaos theory sees systematic behavior amidst apparent randomness.

Neural Networks:

A neural network is a trading system in which a forecasting model is trained to find a desired output from past trading data. By repeatedly cycling through the data, the neural net work eventually learns the pattern that produces the desired output. If the desired output remains elusive, more data is included until a pattern is found. Neural networks may also include a feedback mechanism whereby experience is gained from past errors.

This topic is a hot one in the investment community. National conferences have been organized dealing exclusively with the topic, and the trade literature publishes many articles on the topic. A problem with the concept of a neural network is that the stock market is seldom deterministic. Situations constantly change, and what may have been true a few years ago will not necessarily prevail tomorrow. Financial academics are especially leery of backtests, or research that tests a hypothesis using past data. Mining the data will almost

always result in some apparent cause and effect between past events and stock market performance. Research that tests a hypothesis using a subsequent data is much more useful. An article in the popular press describes Wall Street's response to this criticism:

One way to get around this hazard is to build something called a genetic algorithm into your neural network. A sexy term that currently causes Wall Street rocket scientists to swoon, genetic algorithms enable neural nets to adapt to the future by spawning schools of baby nets, each of which is sent to swim against the changing flow of data, Where only the fittest survive to take over the role of the mother.

No matter what someone's field of study, they are interested in the search for a better mousetrap. Essentially, what all security analysts seek to do is find improvements in their methodology for security selection.

Indicators of the Witchcraft Variety:

Even in this era of political correctness, some indicators are less worthy than others. If there is no logical connection between what an indicator measures and what it purports to show, the indicator probably should not receive much study time. A few such indicators are well established in market folklore, and while they may have no logical place in the investment decision-making process, an awareness of them is helpful.

The Super Bowl Indicator:

This well-known market statistic will bring a smile to the face of many investment professionals when asked about it. The ***super bowl indicator*** states that the stock market will advance the following year if the super bowl football game is won by a team from the original National Football League (NFL). This indicator was correct 28 of 33 times over the period 1967 through 1999. Such a percentage might seem unlikely to have occurred by chance.

There is a statistical problem with this indicator, however. For one thing, there are more original NFL teams that there are teams in the other conference, the American Football Conference (AFC). The Indianapolis Clots, Pittsburgh Steelers, and Cleveland Browns (all AFC teams) are original NFL teams. Couple this information with the fact that the stock market rises more often than it falls and the odds favor the indicator.

Few people admit to being persuaded by the super bowl indicator; most will agree it is unlikely that any true cause-and –effect relationship exist between the game and the market. Still, many professional investment managers and individual investors alike subconsciously root for the NFL team, just in case.

Sunspots:

The public began to associate sunspots with the stock market through five works of William Stanley Jevons published between 1862 and 1897. While the notion of using the eleven-year solar cycle as a forecasting device has few advocates today, it was the focus of much discussion 100 years ago.

Jevons found that rainfall and temperature appeared to be related to solar activity:

The success of the harvest in any year certainly depends upon the weather, especially that of the summer and autumn months. Now if this weather depends upon the solar period, it

follows that the harvest and the price of grain will depend more or less the solar period, and will go through periodic fluctuations in periods of time equal to those of the sun spots.

The essence of his history is that increased sunspot activity leads to warmer temperatures and more rain, leading to an improved harvest and a stronger economy, and finally to higher stock prices. He tested this theory on English grain prices between 1259 and 1400. Jevons observed a ten-to eleven-year cycle in the money market and believed this might be, at least in part, because of the solar influence on crops and the economy.

Hemline Indicator:

Like the super bowl indicator, the hemline indicator is market folklore that few people take seriously, but many like to talk about it. The essence of the hemline indicator is this:

As shorter dresses for women become the fashion, the market advances, and vice versa. Simultaneously plotting skirt lengths and market levels reveals a remarkable correlation. In the 1920s the market rose and so did hemlines. During the Great Depression, dresses touched the ground. There was gradual rise in the market and in hemlines through World War II; the rest of the forties and the fifties peaked in the go-go days of 1960s with miniskirts. The 1970s saw peasant dresses and mixiskirts and an economic recession. During the prosperity of the 1980s things moved back up. During one stretch in the early 1990s the market was nearly flat for over a year. What was the dress fashion? Slits on the side of skirts presumably the marked did not know what to make of them.

All these "indicators," of course, are likely to be purely spurious correlations. What economic cause and effect could possibly be at work? The lack of an economic underpinning is the reason technical indicators of this type are called witchcraft.

Breadth Indicators:

The Advance-Decline Line (Breadth of the Market):

The advance-decline line measures, on a cumulative daily basis, the net difference between the number of stocks advancing in price and those declining in price for group of stocks such as those on the NYSE. Subtracting the number of declines from the number of advances produces the net advance for a given day (which, of course, can be negative). This measure may include thousands of stocks.

The advance-decline line, often referred to as the breadth of the market, results from plotting a running of these numbers across time. The line can be based on daily or weekly figures, which are readily available from daily newspaper such as The Wall Street Journal.

The advance-decline line is compared to a stock average, in particular in DJIA in order to analyze any divergence that is, to determine whether movements in the market indicator have also occurred in the market as a whole. Technicians believe that divergence can signal that the trend is about to change.

The advance-decline line and the market averages normally move together. If both are rising (declining), the overall market is said to be technically strong (weak). If the advance-decline line is rising while the market average is declining, the decline in the market average should reverse itself. Particular attention is paid to a divergence between the two during a bull market. If the market rises while the line weakens or declines to reverse itself and start declining.

New High and Lows:

Part of the information reported for the NYSE and other stocks is the 52-week high and low prices for each stock. Technicians regard the market as bullish when a significant number of stocks each day hit 52-week highs. On the other hand, technicians see rising market indexes and few stocks hitting new highs as a troublesome sign.

Volume:

Volume is an accepted part of technical analysis. High trading volume, other things being equal, is generally regarded as a bullish sign. Heavy volume combined with rising prices is even more bullish.

Sentiment Indicators:

Short-Interest Ratio:

The short interest for a security is the number of shares that have been sold short but not yet bought back. The short interest ratio can be defined relative to shares outstanding or average daily volume, as in;

Short interest ratio = Total shares sold short / Average daily trading volume

The NYSE, Amex and NASDAQ report the short interest monthly for each stock. The NYSE and Amex indicate those securities where arbitrage or hedging may be important, but the significant of these activities cannot be determined. For investors interested in th short interest, each month. The Wall Street Journal reports NYSE and Amex issues for which a short interest position of at least 100,000 shares existed or for which a short position change of 50,000 shares occurred from the previous month. A list of stocks with the largest short interest ratios broken down by exchange can be found at www.trading-ideas.com

In effect, the ratio indicates the number of days necessary to "work off" the current short interest. It is considered to be a measure of investor sentiment, and many investors continue to refer to it.

Investors sell short when they expect prices to decline; therefore, it would appear the higher the short interest, the more investors are expecting a decline. A large short interest position for an individual stock should indicate strong negative sentiments against a stock.

Many technical analysts interpret this ratio in the opposite manner as a contrarian indicator a high short interest ratio is taken as bullish sign, because the large number of shares sold short represents a large number o shares that must be repurchased in order to close out the short sales. In effect, the short seller must repurchase regardless of whether or not his or her expectations were correct. The larger the short interest ratio, the larger the potential demand that is indicated. Therefore, an increase in the ratio indicates more "pent-up" demand for the shares that have been shorted.

The short interest ratio for a given method should be interrupted in relation to historical boundaries, which historically were in the range of 1 to 2 for the NYSE. The problem is that the boundaries keep changing. In the 1960s, 1970s and 1980s, a ratio of 2 was bullish. More recently, the ratio has been in the 3 to 6 range regardless of the market.

Mutual Fund Liquidity:

Several indicators are based on the theory of contrary investing. The idea is to trade contrary to most investors, who supposedly almost always lose. This is an old idea on Wall Street, and over the year technicians have developed several measures designed to capitalize on this concept. As mentioned above, the short interest is often used as a contrarian indicator, with high short levels in a stock viewed as being overly pessimistic.

Mutual fund liquidity can be used as a contrary opinion technique. Under this scenario, mutual funds are viewed I a manner similar to odd - lotters, that is, they are presumed to act incorrectly before a market turning point. Therefore, when mutual fund liquidity is low because the funds are fully invested, contrarian believes that the market is at, or near a peak. The funds should be building up cash (liquidity); instead, they are extremely bullish and are fully invested. Conversely, when funds hold large liquid reserves it suggests that they are bearish. Contrarians would consider this a good time to buy, because the market may be at, or near, its low point.

The Opinions of Investment Advisory Newsletter:

Investors' intelligence an investment advisory service, samples weekly the opinions of about 150 investments advisory services and calculates an index of investments service opinions. It has found that on average, these services are most bearish at the market bottom and last bearish at the market top. This index, published since 1963, is now available weekly and is widely quoted in the investing community.

The "bearish sentiment index" is calculated as the ratio of advisory services that are bearish to the total number with an opinion. When this index approaches 55 or 60 percent, this would indicate a bearish indicate a bearish attitude on the part of investment advisory services. As this ratio approaches 20 percent, the opposite occurs. Thus, a contrarian should react in the opposite direction of the sentiment this ratio is exhibiting. As the ratio nears 60 percent, the contrarian becomes bullish, because a majority of the investment advisory services are bearish, and around 20 percent the contrarian becomes bearish, because most of the investment advisory services are not bearish.

The reason for this seeming contradiction to logic that investment advisory services are wrong at the extremes is attributed to the fact these services tend to follow trends rather than forecast them. Thus, they are reporting and reacting to what has happened rather than concentrating on anticipating what is likely to happen.

The Future of Technical Analysis:

Although there is much in finance that we do not completely understand, technical analysis has persisted from more than 100 years, and it is not likely to disappear from the investment scene anytime soon. Improved quantitative methods coupled with improved behaviorist Werner De Bondt, for instance, recently reported substantial evidence that the public expects the continuation of past price trends. That is, they are bullish in bull markets and pessimistic in bear markets.

Technical analysis is a controversial topic. While it currently has little standing in the academic literature, a great deal about price movements has yet to be discovered.

Technical analysts like to use charts. They believe that supply and demand determines security prices, that changes in supply and demand cause prices to change, and that charts can be used to predict changes in supply and demand and in investor behavior. Popular types of charts are the line chart, bar chart point and figure chart, and the candlestick chart.

Technical indicators are measure of economic and non-economic activity that purportedly have a relationship to subsequent market behavior. Some of these indicators, such as the mutual fund cash position or short interest ratio, have economic underpinnings, while others (the super bowl or hemline indicators) do not. All are part of market folklore.

Fibonacci numbers are inexplicably common in nature. Some people believe that the Fibonacci series is helpful in predicting changes in security trading patterns. Popular areas of research today among technical analysts include chaos theory (the search for patterns in randomness) and neural networks (the notion that computer algorithms can be taught to look for optimum patterns).

Conclusions about Technical Analysis:

Technical analysis often appeals to those who are beginning a study of investments, because it is easy to believe tat stock prices form repeatable patterns over time or that certain indicators should be related to future market price movements. Most people who look at a chart of a particular stock will immediately see what they believe to be patterns in the price changes and clear evidence of trends that should have been obvious to anyone studying it.

On the one hand, academicians are highly skeptical of technical analysis, to say the least. Most academics discussions at the college level dismiss, or seriously disparage, this concept. A primary reason is that thorough tests of technical analysis techniques typically fail to confirm their value, given all costs and considering an alternative, such as a buy-and-hold strategy.

In addition to these reasons, other troubling features of technical analysis remain. First, several interpretations of each technical tool and chart pattern are not only possible but usual. One or more of the interpreters will be correct (more or less), but it is virtually impossible to know beforehand who these will be. After the fact, we will know which indicator or chart or whose interpretations was correct, but only those investors who used that particular information will benefit. Tools such as the Dow Theory are well known for their multiple interpretations by various observers who disagree over how the theory is to be interpreted.

Lesson # 11

FUNDAMENTAL ANALYSIS

VALUATION PHILOSOPHIES:

Value comes from utility; utility comes from a variety of sources. Fundamental analysts believe securities are priced according to fundamental economic data. Technical analysts think supply and demand factors play the most important role.

Investors' Understanding of Risk Premiums:

Investors are almost always risk-averse. Investors often cannot explicitly define risk, but they have an intuitive understanding of it. They do not like taking risks, but will do so in order to increase potential investment return- Preceding chapters have discussed how investors can use the variance of investment returns as a proxy for risk. This balance between risk and return is the reason un-bonds have higher yields to maturity than U.S. Treasury bonds, and why some shares of stock sell for more than others.

The Time Value of Money:

Everything else being equal, the longer someone must wait for the payoff from an investment, the less the investment is worth today.

The Importance of Cash Flows:

Most investment research deals with predicting future corporate earnings.

The Tax Factor:

Taxes are supposedly "one of the two certainties in life. Investors also know that, in addition to being a certainty, the tax code is complicated and not all investments are taxed equally. For this reason, municipal bonds (paying tax-free interest) can sell with a lower expected rate of return than a taxable corporate bond of equal risk, and some investors will favor growth stocks (with tax deferral of appreciation) over income stocks (with immediate taxation of dividends).

EIC Analysis:

4. Economic Analysis
5. Industry Analysis
6. Company

VALUE VS GROWTH INVESTING:

The two factions within the fundamental analysts' camp are the value investors and the growth investors. These terms became popular in the 1980s and are now a standard part of the investment lexicon.

The Value Approach to Investing
The Growth Approach to Investing

The Information Trader:

Information traders are in a hurry; they believe information differentials in the marketplace can be profitably exploited.

The True Growth Investor
How Price Relates to Value:

The modern perspective: Value is inextricably intertwined with price.
The most efficient and productive company in the world is a poor investment if the stock price is too high.

Value Stocks and Growth Stocks:
How to Tell by Looking
The Price to Book Ratio
The Price-Earnings Ratio
Differences between Industries

Neither the price-earnings ratio nor the price to book ratio is a stand-alone statistic. Important industry differences need to be considered. A firm whose primary asset is brainpower (such as a software company) has fewer capital assets than a smokestack company (like a steel mill). The software industry would normally have a higher price to book ratio than the steel industry.

For this reason, relative ratios are commonly computed for both the PE and the price to book statistics. This calculation provides the ratio of the firm's statistic to the industry average statistic.

SOME ANALYTICAL FACTORS:

Growth Rates:

Calculate dividend growth rates using the geometric mean rather than the arithmetic mean.

The Dividend Discount Model:

$$p_o = \frac{D_0(I+g)}{k-g} = \frac{D_1}{k-g}$$

In this equation, D_o is the current dividend; D_1 is the dividend to be paid next year; g is the expected dividend growth rate; and k is the discount factor according to the riskiness of the stock.20 the model assumes that the dividend stream is perpetual and that the long-term growth rate is constant.

$$k = \frac{D_0(I+g)}{p_0} + g$$

Note that the expression for k, the shareholders' required rate of return, is the sum of two components: the expected dividend yield on the stock and the expected growth rate. If the dividend yield is a constant, g represents the anticipated capital appreciation in the stock price.

The shareholders' required rate of return is the sum of the expected sum of the expected dividend yield and the expected stock price appreciation.

The Importance of Hitting the Earnings Estimate:

Corporate CFOs know the importance of hitting Wall Street's earnings estimates. Analysts are in frequent contact with the company, know its operations well, and usually base their estimates on sound information- The market often penalizes a company's stock substantially when the earnings report is disappointing. This is especially true when the required rate of return and the estimated growth rate are high.

Suppose a company has a dividend payout ratio of 50%, analysts expect earnings of $1.10 in the coming year, the consensus median dividend growth rate is 15%, and the current stock price is $27'/2, According to the DDM, the shareholders' required rate of return is 17%:

$$R = \frac{D_1}{p_0} + g = \frac{0.5(\$1.10)}{\$27.50} + 0.15 = 17\%$$

Suppose also that the expected earnings in the upcoming quarter are $0.29, but the company reports only $0.27- This is a negative surprise, meaning that actual earnings were below expectations. This might cause the analyst to reduce the estimate of future growth and, because of the uncertainty, to boost the discount rate. Perhaps the analyst adjusts the growth rate to 13% and the required rate of return to 18%. If future estimates for the year remain on track, the anticipated earnings per share will be only $1.08. How does this affect the stock price? You might first think that being off by two cents is not a big deal, but as the following equation shows, the stock price is hit hard by this news. It falls by nearly 61%.

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} \frac{D_2(1.g)/(k-g)}{(1+k\ )^2}$$

These results indicate why the whisper number is important and why CFOs do not like to feed incomplete information to the analysts who follow their companies.

The Multistage DDM:

Small firms often show initially high levels of growth that cannot reasonably be expected to persist. In such a case, it is appropriate to use two (or more) growth rates. Suppose a firm currently pays a $1 dividend that is expected to grow by 20 percent for the net two years, and then grow by 5 percent annually thereafter. A growth rate that can reasonably be expected to persist is called a customable growth rate. What is the most an investor can pay for this stock if the required rate of return is 17%? To find out, solve for equation in the following equation.

The term for the dividend in year three is discounted only twice because the formula for tile growing perpetuity is based on next year's dividend. Therefore, the numerator is discounted only twice, not three times.

Caveats about the DDM:

The dividend discount model is a useful tool in security analysis. It is not, however, a method to predict the future. As with most analytical techniques, the DDM helps an analyst make a better decision, but it does not make the decision. Users should understand the shortcomings of the DDM.

First, the DDM requires that g. If the dividend growth rate is greater than or equal to the shareholders' required rate of return, the equation cannot be used. Dividing by zero or by a negative number obviously gives an absurd result. Also, the results are sensitive to the estimate of g. Minor differences in the growth rate selected can materially affect the results. As shown, there are numerous ways of estimating g.

Another consideration is the assumption that the dividend yield remains constant. A change in dividend policy can affect the apparent growth rate. A change in the growth rate will produce different values from the model. Finally, the model implicitly assumes the long-term ROE is constant. The DDM does not require that every year's growth be identical. Rather, it requires that the long-term growth rate be constant in other words, a long-term trend about which the annual values fluctuate.

Small-Cap, Mid-Cap, and Large-Cap Stocks:

Another consideration in fundamental stock analysis relates to the size of the firm. Currently, firms are categorized as small-cap, mid-cap, or large-cap, cap being short for capitalization. Although no precise definition has been stated for these terms most analysts consider a firm with capitalization less than $500 million to be a small cap stock' Lipper Analytical Services defines a mid-cap •firm as one with capitalization between $800 million and $2 billion. Others extend the mid-cap range up to $6 billion.

Substantial financial research finds unusually good performance from small-cap stocks; this phenomenon is sometimes called the small firm effect. Because of this effect, some analysts devote particular attention to small-cap firms.

Mid-cap firms showed average earnings growth of 15 percent during 1993, compared with 12 percent for large-cap firms. Some analysts believe the mid-caps offer particularly fertile hunting ground for the stock picker. Small-cap stocks tend to be more volatile, scaring away the more risk-averse investors. Index funds and large institutional portfolios own large-cap stocks. The likelihood of "striking oil" from superior analysis of these large-cap stocks is remote, because too many other people are -trying to do the same thing.

A study by Prudential Securities found that since 1926 mid-cap stocks returned 0-4% less than small-cap stocks but were much less volatile. Many investors find that the risk-return package historically offered by the mid-caps is superior to that offered by either the small-caps or the large-caps.

Future study on relative performance by market capitalization is going to be complicated by the definitional problem. We have traditionally defined market capitalization as the current share price multiplied by the number of outstanding shares. This definition, however, can pose a dilemma for the thoughtful security analyst. Y Suppose you are hired as a large-capitalization common stock manager. Your job is to build and manage a portfolio of large-cap stocks.

Cooking the Books:

Ail publicly traded firms in the United States must have their financial statements audited to ensure they fairly present the company's financial position. Still, every year there is at least one story of accounting fraud at a major firm. In 1992, for instance, the women's clothing firm Leslie Fay admitted it had manipulated inventory numbers to produce earnings of $23.9 million when, in fact, it lost $13.7 million. The news cut the stock price in half and led to bankruptcy two months later. In recent years there have been accounting bombshells

at other firms including Cascade International, Maxwell Communication Corp., Chambers Development, MiniScribe, Cendant, and numerous others. Unfortunately, there is not much the analyst can do about fraud. As Patricia McConnell, a respected analyst at Bear Steams says, "A well-perpetrated fraud is impossible to detect." The important thing to remember is that the marketplace is full of many types of risk, and fraud is one of them.

Fundamental analysts believe securities are priced according to economic data; technical analysts believe supply and demand factors are most important. Most investment research deals with predicting future earnings. A value investor believes a security should only be purchased when the underlying fundamentals justify the purchase. They believe in a regression to the mean of security returns.

A growth investor seeks rapidly growing companies. Value investors place a great deal of importance on a stock's price to book ratio and its price-earnings ratio. A future earning growth rate is unobservable. Most analysts use several methods to estimate this statistic to determine a likely range for the value rather than a single number.

The dividend discount model (also called Gordon's growth model) can be used to value stock as a growing perpetuity. The shareholders' required rate of return is an input to the model. False growth in earnings occurs any time a firm acquires another firm with a lower price-earning ratio. Cash flow from operations is a firm's lifeblood. This value is often used as a check on the quality of a firm's earnings.

The evidence shows that small-cap stocks outperform mid- or large-cap stocks. Some analysts believe that mid-cap stocks are particularly fertile hunting ground for the security analyst because they receive less attention from the marketplace. Spectacular gains are occasionally associated with initial public offerings (IPO).these gains usually disappear within the first year or two of the new stock's life.

Intrinsic Value and Market Price:

After making careful estimates of the expected stream of dividends and the required rate of return for a common stock, the value of the stock today is estimated using the DDM. The value is often called intrinsic value of the stock, which we denote as $V_{o.}$ Note that intrinsic value simply means an estimated value or a formula value. This is the end objective of a discounted cash flow technique such as the DDM.

If $V_o > P_o$, the asset is undervalued and should be purchased or held if already owned.

If $V_o < P_o$, the asset is overvalued and should be avoided, sold if held, or possibly sold short.

If $V_o = P_o$, this implies an equilibrium in that the asset is correctly valued.

Security analysis has traditionally been thought of as the search for undervalued or overvalued stocks. To do this, one can calculate the estimated or intrinsic value of the stock or compare this value to the current market price if the stock. Most investors believe that stocks are not always priced at their intrinsic values, thereby leading to buy and sell opportunities.

The P/E Ratio or Earnings Multiplier Approach:

The P/E ratio or earnings multiplier approach is the best-known and most widely used valuation technique. Analyst are more comfortable talking about earnings per share (EPS)

and P/E ratios, and this is how their reports are often worded. Talk about EPS and P/Es ratios is the typical language of Wall Street. Without question, the P/E ratio is one of the most widely mentioned and discussed variables pertaining to a common stock, and will almost always appear in any report from an analyst or an investment advisory service. For this reason, we develop the P/E ratio in detail.

What is the P/E Ratio?

As a definition, the P/E ratio is simply the number of times investors value earnings as expressed in the stock price. For example, a stock priced at $100, With most recent 12-month earnings of $5, is said to selling for a multiple of 20, In contrast, if another stock had earnings of $2.50 and was selling for $100, investors would be valuing the stock at 40 times earnings, thus, the P/E ratio as reported daily in such sources as The *Wall Street Journal is* simply an identity calculated by-dividing the current market price of the stock by the latest 12-month earnings. As such, it tells investors the price being paid for each $1 of-most recent 12-month earnings.

Determinants of P/E Ratio:

What variables affect the P/E ratio? To shed some light on this question, the P/E ratio can be derived from the dividend discount model, which, as we have seen, is-the foundation of valuation for common stocks. Note, however; that this process *directly applies only for* the case *of* constant growth. If a multiple period growth model is applicable to the' stock being considered, a different formulation from the one presented here will be needed. In fact, using the P/E ratio for multiple growth rate companies can be misleading and should be done with care.

Understanding the P/E Ratio:

Most investors intuitively realize that the P/E ratio should be higher for companies whose earnings are expected to grow rapidly. However, how much higher is not an easy question to answer? The market will assess the degree of risk involved in -the expected future growth of earnings, if the higher growth rate carries a high level of risk, the P/E ratio will be affected accordingly. Furthermore, the high- growth rate may be attributable to several different factors, some of which are more desirable than others. For example, rapid growth in unit sales owing to strong demands for a firm's products is preferable to favorable tax situations, which may change, or liberal accounting procedures, which one day may cause reversal in the firm's situation.

P/E ratios reflect investors' expectations about the growth potential of a stock and the risk involved. These two factors can offset each other. Other things being equal, the greater the risk of a stock, the lower the P/E ratio; however, growth prospects may offset the risk and lead to a higher P/E ratio. The Internet companies that were so popular in the late 1990s were clearly very risky, but investors valued their potential very highly, and were willing to pay very high prices for these companies.

The P/E ratio reflects investor optimism and pessimism. It is related to the required rate of return. As the required rate of return increases, other things being equal, the P/E ratio decreases.

The required rate of return, in turn, is related to interest rates, which are the required returns on bonds. As interest rates increase, required rates of return on all securities, including stocks, also generally increase. As interest rates increase, bonds become more attractive compared to stocks on a current return basis. Based on these relationships, an inverse relationship between

P/E ratios and interest rates-is to be expected. As interest rates rise (decline), other things being equal, P/E ratios should decline (rise).

Which Approach to Use?

We have described the two most often used approaches in fundamental analysis, discounted cash-flow techniques and relative valuation techniques. Which should be used?

In theory, the discounted cash-flow approach is a correct, logical, and sound position. Conceptually, the best estimate of the current value of a company's common stock is the present value of the (estimated) cash flows to be generated by that company. However, some analysts and investors feel that this model is unrealistic. After all; they argue, with regard to the DDM, no one can forecast dividends into the distant future with very much accuracy. Technically, the model calls for an-estimate of all dividends from now to infinity, which is an impossible task. Finally, many investors want capital gains and not dividends, so for some investors focusing solely on dividends is not desirable.

The previous discussion dealt with these objections that some raise about the dividend discount model. Can you respond to these objections based on this discussion?

Possibly because of the objections to the dividend discount model cited here, or possibly because it is easier to use, relative valuation techniques such as the earnings multiplier or P/E model remain a popular approach to valuation. They are less sophisticated less formal and more intuitive models. In fact, understanding the P/E model can help investors to understand the DDM. Because dividends are paid out of earnings, investors must, estimate the growth in earnings before they can estimate the growth in dividends or dividends themselves.

Lesson # 12

FUNDAMENTAL ANALYSIS Contd…

Ratio Analysis:

Financial ratio analysis is a fascinating topic to study because it can teach us so much about accounts and businesses. When we use ratio analysis we can work out how profitable a business is, we can tell if it has enough money to pay its bills and we can even tell whether its shareholders should be happy.

Ratio analysis can also help us to check whether a business is doing better this year than it was last year; and it can tell us if our business is doing better or worse than other businesses doing and selling the same things.

In addition to ratio analysis being part of an accounting and business studies syllabus, it is a very useful thing to know anyway.

The overall layout of this section is as follows: We will begin by asking the question, what do we want ratio analysis to tell us? Then, what will we try to do with it? This is the most important question. The answer to that question then means we need to make a list of all of the ratios we might use: we will list them and give the formula for each of them.

Once we have discovered all of the ratios that we can use we need to know how to use them, who might use them and what for and how will it help them to answer the question we asked at the beginning?

At this stage we will have an overall picture of what ratio analysis is, who uses it and the ratios they need to be able to use it. All that's left to do then is to use the ratios; and we will do that step- by-step, one by one.

By the end of this section we will have used every ratio several times and we will be experts at using and understanding what they tell us.

LIQUIDITY RATIOS:

1. **The Current Ratio:**

The current ratio is also known as the **working capital ratio** and is normally presented as a real ratio. The formula to calculate the current ratio is;

Current Ratio = Current Assets / Current Liabilities

The ratio is mainly used to give an idea of the company's ability to pay back its short-term liabilities (debt and payables) with its short-term assets (cash, inventory, receivables). The higher the current ratio, the more capable the company is of paying its obligations. A ratio under 1 suggests that the company would be unable to pay off its obligations if they came due at that point. While this shows the company is not in good financial health, it does not necessarily mean that it will go bankrupt - as there are many ways to access financing – but it is definitely not a good sign.

The current ratio can give a sense of the efficiency of a company's operating cycle or its ability to turn its product into cash. Companies that have trouble getting paid on their receivables or have long inventory turnover can run into liquidity problems because they are

unable to alleviate their obligations. Because business operations differ in each industry, it is always more useful to compare companies within the same industry.

This ratio is similar to the acid-test ratio except that the acid-test ratio does not include inventory and prepaid as assets that can be liquidated. The components of current ratio (current assets and current liabilities) can be used to derive working capital (difference between current assets and current liabilities). Working capital is frequently used to derive the working capital ratio, which is working capital as a ratio of sales.

The working capital means the amount that current assets exceed the current liabilities. In simple words, it is the difference current assets and current liabilities.

Working Capital = Current Assets – Current Liabilities

Positive working capital means that the company is able to pay off its short-term liabilities. Negative working capital means that a company currently is unable to meet its short-term liabilities with its current assets (cash, accounts receivable and inventory).

2. **The Acid Test Ratio:**

The acid test ratio is also known as the liquid or the quick ratio. The idea behind this ratio is that stocks are sometimes a problem because they can be difficult to sell or use. That is, even though a supermarket has thousands of people walking through its doors every day, there are still items on its shelves that don't sell as quickly as the supermarket would like. Similarly, there are some items that will sell very well.

Nevertheless, there are some businesses whose stocks will sell or be used slowly and if those businesses needed to sell some of their stocks to try to cover an emergency, they would be disappointed. Engineering companies can have their materials in stock for as much as 9 months to a year; a greengrocer should have his stocks for no longer than 4 or 5 days - a good greengrocer anyway.

We'll look at the acid test ratio;

Acid Test Ratio = (Current Assets - Inventory) / Current Liabilities

PROFITABILITY RATIOS:

1. **Gross Profit Margin:**

Gross Profit Margin = Gross Profit / Net Sales * 100

Remember;

Gross Profit = Sales – Cost of Goods Sold

The gross profit margin ratio tells us the profit a business makes on its cost of sales, or cost of goods sold. It is a very simple idea and it tells us how much gross profit per Rs. 1 of turnover our business is earning.

Gross profit is the profit we earn before we take off any administration costs, selling costs and so on. So we should have a much higher gross profit margin than net profit margin.

2. **Operating Margin:**

A ratio used to measure a company's pricing strategy and operating efficiency. Calculated as:

Operating Margin = Operating Income / Net Sales

Operating margin is a measurement of what proportion of a company's revenue is left over after paying for variable costs of production such as wages, raw materials, etc. A healthy operating margin is required for a company to be able to pay for its fixed costs, such as interest on debt.

Operating margin gives analysts an idea of how much a company makes (before interest and taxes) on each dollar of sales. When looking at operating margin to determine the quality of a company, it is best to look at the change in operating margin over time and to compare the company's yearly or quarterly figures to those of its competitors. If a company's margin is increasing, it is earning more per rupee of sales. The higher the margin, the better it is.

3. **Net Profit Margin:**

Net Profit Margin = Net Profit / Net Sales *100

Remember;

Net Profit = Gross Profit - Expenses

Why do we have two versions of this ratio - one for net profit and the other for profit before interest and taxation? Well, in some cases, you will find they use the term net profit and in other cases, especially published accounts, they use profit before interest and taxation. They both mean the same. The net profit margin ratio tells us the amount of net profit per Rs. 1 of turnover a business has earned. That is, after taking account of the cost of sales, the administration costs, the selling and distributions costs and all other costs, the net profit is the profit that is left, out of which they will pay interest, tax, dividends and so on.

4. **Earnings per share (EPS):**

The portion of a company's profit allocated to each outstanding share of common stock. EPS serves as an indicator of a company's profitability. Calculated as:

Earnings per Share = Profit Available to Shareholders / Average common shares outstanding

Earnings per share (EPS) is the profit attributable to shareholders (after interest, tax, and everything else) divided by the number of shares in issue. It is the amount of a company's profits that belong to a single ordinary share.

LEVERAGE RATIO:

Any ratio used to calculate the financial leverage of a company to get an idea of the company's methods of financing or to measure its ability to meet financial obligations.

A general term describing a financial ratio that compares some form of owner's equity (or capital) to borrowed funds. Gearing is a measure of financial leverage, demonstrating the degree to which a firm's activities are funded by owner's funds versus creditor's funds.

Leverage = Long term debt / total equity

The higher a company's degree of leverage, the more the company is considered risky. As for most ratios, an acceptable level is determined by its comparison to ratios of companies in the same industry. The best known examples of gearing ratios include the debt-to-equity ratio (total debt / total equity), times interest earned (EBIT / total interest), equity ratio (equity / assets), and debt ratio (total debt / total assets).

A company with high gearing (high leverage) is more vulnerable to downturns in the business cycle because the company must continue to service its debt regardless of how bad sales are. A greater proportion of equity provides a cushion and is seen as a measure of financial strength.

1. Interest Coverage Ratio:

A ratio used to determine how easily a company can pay interest on outstanding debt. The ratio is calculated by dividing a company's earnings before interest and taxes (EBIT) of one period by the company's interest expenses of the same period:

The interest cover ratio tells us the safety margin that the business has in terms of being able to meet its interest obligations. That is, a high interest cover ratio means that the business is easily able to meet its interest obligations from profits. Similarly, a low value for the interest cover ratio means that the business is potentially in danger of not being able to meet its interest obligations.

Here's a reminder of the formula:

Interest Coverage Ratio = Earnings before interest and tax / interest expense

ECONOMY AND MARKET ANALYSIS

INVESTMENT RATIOS:

1. **Dividend per Share:**

The DPS ratio is very similar to the EPS: EPS shows what shareholders earned by way of profit for a period whereas DPS shows how much the shareholders were actually paid by way of dividends. The DPS formula is:

DPS = Dividends paid to Shareholders / Average common shares outstanding

2. **Dividend Yield:**

The dividend yield ratio allows investors to compare the latest dividend they received with the current market value of the share as an indictor of the return they are earning on their shares. Note, though, that the current market share price may bear little resemblance to the price that an investor paid for their shares. Take a look at the history of a business's share price over the last year or two and you will see that today's share price might be a lot higher or a lot lower than it was a year ago, two years ago and so on.

We clearly need the latest share price for this ratio and we can get that from newspapers such as the Financial Times, The Times, The Guardian and the Daily Telegraph. We can also find the share prices on the Internet. The formula for the dividend yield is:

Dividend Yield = Annual Dividends / Current Market Share Price

3. **Price Earning Ratio:**

The P/E ratio is a vital ratio for investors. Basically, it gives us an indication of the confidence that investors have in the future prosperity of the business. A P/E ratio of 1 shows very little confidence in that business whereas a P/E ratio of 20 expresses a great deal of optimism about the future of a business. Here's the formula;

P/E = Current Market Share Price / EPS

The Business Cycle:

The business cycle reflects the movements in economic activity as a whole, which comprises many diverse parts. The diversity of the parts ensures that business cycles are virtually unique, with no two parts being identical. However, cycles do have a common framework, with a beginning, a peak, and an ending. Thus economic activity starts in depressed conditions, builds up in the expansionary phase, and in the ends in a downturn, only to start again. The word trough is used to indicate when the economy has hit bottom.

The National Bureau of Economic Research (NBER), a private nonprofit organization, measures business cycles and officially decided on the economic “turning pints”. The NBER’s Business Cycles Dating Committee determines the turning points of the business cycle, which are the dates at which the economy goes from an expansion mode to a contraction mode and vice versa. These turning points typically are determined well after the fact, so that observers do not know on a current basis, at least officially, when a peak or trough has been reached.

It is possible to identify those components of economic activity that move at different times from each other. Such variables can serve as indicators of the economy in general.

Standard practice is to identify the leading, coincident and lagging **Composite Economic Indexes.** The leading indicators consist of variables such as stock prices, index of consumer expectation, money supply, and interest rates spread. The coincident indicators consist of four variables such as industrial production and manufacturing and trade sales, and the lagging indicators consist of seven variables such as duration of unemployment and commercial and industrial loans outstanding.

The composite indexes are used to indicate peaks and troughs in the business cycle. The intent of using all three is to summarize and reveal turning points patterns in economic data better. Note that a change in direction in a composite index does not automatically indicate a cyclical turning point. The movement must be of sufficient size, duration and scope.

The Stock Market and the Business Cycle:

The stock market is, of course, a significant and vital part of the overall economy. Clearly, a strong relationship exists between the two. If the economy is doing badly, most companies will also be performing poorly, as will the stock market. Conversely, if the economy is prospering, most companies will also be doing well, and the stock market will reflect this economic strength.

The relationship between the economy and the stock market is interesting; stock prices generally lead the economy. Historically it is the most sensitive indicator of the business cycle. Therefore, we must take into account this leading relationship when we are using the economy's condition to evaluate the market. The market and the economy are closely related, but the stock prices typically turn before the economy.

How reliable is this relationship between the stock market and the business cycle? Although it is generally considered to be reliable, it is widely known that the market has given false signals about future economic activity, particularly with regard to recessions. The old joke goes something like this "the market has predicted nine out of the last five recessions."

Forecasts the Economy:

Good economic forecasts are of obvious significant value to investors. Since the economy and the market are closely related, good forecasts of macroeconomics variables would be very useful. How good are such forecasts which are widely available?

McNees concluded that forecasts made by the prominent forecasters are similar and that differences in accuracy are very small, suggesting that investors can use any of a number of such forecasts. Obviously, not all forecasters are equally accurate, and all forecasters make errors. The only good news is that forecast accuracy apparently has increased over time.

Because of its vital role in the economy, monetary policy traditionally has been assumed to have an important effect on the economy, stock prices and interest rate. Almost all theories of the macroeconomic postulate a relationship between money and future economic activity with the relationship depending on whether changes in money stock can be attributed to shifts in money supply or money demand. For example, increases in money supply tend to increase economic activity whereas increases in money demand tend to reduce economic activity.

Insights for the Yield Curve:

The yield curve depicts the relationship between bond yields and time, holding the issuer constant, and in effect shows how interest rates vary across time on any given day. It should contain valuable information, because it reflects bond traders' views about the future of the economy. Several studies suggest that the yield curve is very useful in making economic forecasts. The professionals use the yield curve as an indicator of how the Fed is managing the economy.

It has long been recognized that the shape of the yield curve is related to the stage of the business cycle. In the early stages of an expansion, yield curves tend to be low and upward sloping and as the peak of the cycle approaches, yield curves tend to be high and downward sloping. More specifically:

A steepening yield curve suggests that the economy is accelerating in terms of activity as monetary policy stimulates the economy.

When the yield curve becomes more flat, it suggests that economic activity is slowing down.

An inverted yield curve, however, carries an ominous message-----expectations of an economic slowdown. Every recession since World War II has been preceded by a downward-sloping yield curve.

Understanding the Stock Market:
What Do We Mean By The Market?

When most investors refer to the "market", they mean the stock market in general as poxied by some market index or indicator. Because the "market" is simply the aggregate of all security prices, it is most conveniently measured by some index or average of stock prices.

Most market indexes are designed to measure a particular market segment, such as blue-chip New York Exchange (NYSE) stocks, all stocks on the NYSE, the NASDAQ market and foreign stocks. When discussing the market, it is possible to use a broad market index, such as the Wilshire 500 index. Typically, however, most investor's to\day, when they refer to the market, use as their indicator of the market either the Dow Jones Industrial Average or the S & P 500 composite index. Therefore, when we discuss the market, we are referring to the market as measured by one of these two market indexes.

Uses of the Market Measures:

Market measures tell investors how al stocks in general are doing at any time or given them a "feel" for the market. Many investors are encouraged to invest if stocks are moving upward, whereas downward trends may encourage some to liquidate their holdings and invest in money market assets or funds.

The historical records of market measures are useful for gauging where the market is in particular cycle and possibly for shedding light on what will happen. Assume, for example, that the market has never fallen more than X percent, as measured by some index, in a six-month period. Although this information is no guarantee that such a decline will not occur, this type of knowledge aids investors in evaluating their potential downside risk over some period of time.

Market measures are useful to investors in quickly judging their overall portfolio performance. Because stocks tend to move up or down together, the rising or falling of the market will generally indicate to the investor how he or she is likely to do. Of course, to determine the exact performance, each investor's portfolio must be measured individually.

Technical analysts need to know the historical record of the market when they are seeking out patterns from the past that may repeat in the future. Detection of such patterns is the basis for forecasting the future direction of the market using technical analysis.

ECONOMY AND MARKET ANALYSIS Contd…

A Framework for Fundamental Analysis:

Under either of these fundamental approaches, an investor will obviously have to work with individual company data. Does this mean that the investor should plunge into a study of company data first and then consider other factors such as the industry within which a particular company operates or the state of the economy, or should the reverse procedure be followed? In fact, each of these approaches is used by investors and security analysts when doing fundamental analysis. These approaches are referred to as the "top-down" approach and the "bottom-up" approach.

Bottom-Up Approach to Fundamental Analysis:

With the bottom-up approach, investors focus directly on a company's basics, or fundamentals. Analysis of such information as the company's products, its competitive position, and its financial status leads to an estimate of the company's earnings potential and, ultimately, its value in the, market.

Considerable time and effort are required to produce the type of detailed financial analysis needed to understand even relatively small companies. The emphasis in this approach is on finding companies with good long-term growth prospects, and making accurate earnings estimates. To organize this effort, bottom-up fundamental research is often brokers into two categories, growth investing and value investing.

Value versus Growth:

Growth stocks carry investor expectation of above-average future growth in earnings and above-average valuations as a result of high price/earnings ratios. Investors expect these stocks to perform well in the future, and they are willing to pay high multiples for this expected growth. Recent examples include Microsoft, Cisco Systems, and Intel.

Value stocks, on the other hand, feature cheap assets and strong balance sheets. Value investing can be traced back to the value-investing principles laid out by the well-known Benjamin Graham, who coauthored a famous book on security analysis in the 1930s that has been the foundation for many subsequent security analysts.

Top-Down Approach to Fundamental Analysis:

The top-down approach is the opposite of the bottom-up approach. Investors begin with the economy and the overall market, considering such important factors as interest rates and inflation. The next consider future industry prospects or sectors of the economy that are likely to do particularly well (particularly poorly). Finally, having decided that macro factors are favorable to investing, and having determined which parts of the overall economy are likely to perform well, individual companies are analyzed.

There is no "right" answer to which of these two approaches to follow. However, fundamental analysts can be overwhelming in its detail, and a structure is needed. This text takes the position that the better way to proceed in fundamental analysis is the top-down approach: **first**, analyze the overall economy and securities markets to determine if now is a good time to commit additional funds to equities; **second**, analyze industries and sectors to

determine which have the best prospects for the future, and finally analyze individual companies.

Thus, the preferred order for fundamental security analysis used here is (1) the economy and market, (2) the industry/sector, and (3) The company .this approaches is used in Part IV ,which explains fundamentals security analysis in detail. Here we consider only the justification for this approach.

Economy/Market Analysis:

It is very important to access the state of the economy and the outlook for primary variables such as corporate profits and interest rates. Investors are heavily influenced by these variables in making their every day investment decisions. If a recession is likely, or under way, stock prices will be heavily affected at certain times during the contraction. Conversely, if a strong economics expansion is under way, stock prices will be heavily affected, again at particular times during the expansion. Thus, the status of economic activity has a major impact on overall stock prices. It is, therefore, very important for investors to access the state of the economy and its implications for the stock market.

In turn, the stock market impacts each individual investor. Investors cannot very well go against market trends. If the markets goes up (or down) strongly, most stocks are carried along. Company analysis is likely to be of limited benefit in a year such as 1974, when the stock was down 25 percent. Conversely, almost all investors did well in 1995 regardless of their specific company analysis, because the market was up about 37 percent as measured by the S & P 500.

Industry / Sector Analysis:

After completing an analysis of the economy and the over all market, an investor can decide if it is a favorable time to invest in common stocks. If it is, the next step should industry or sector market analysis. King identified an industry factor as the second component (after market movements) affecting the variability in stock returns.

Individual companies and industries tend to respond to general market movements, but the degree of response can vary significantly. Industries undergo significant movements over both relatively short and relatively long periods. Industries will be affected to various degrees by recession and expansions. For example, the heavy good industries will be severely affected in recession. Consumer's goods will probably be much less affected during such a contractionary period. During a severe inflationary period such as the late 1970s and very early 1980s, regulated industries such as utilities were severely hurt by their inability to pass along all price increases. Finally, new "hot" industries emerge from time to time and enjoy spectacular growth. Examples include synthetic fuels and genetic engineering.

Company Analysis:

Although the first two steps are important and should be done in the indicated order, great attention and emphasis should be placed on company analysis. Security analysts are typically organized along industry lines, but the reports that they issue usually deal with one or more specific companies.
The bottom line for companies, as far as most investors are concerned, is earnings per share. There is a very close relationship between earnings and stock prices, and for this reason most attention is paid to earnings. Dividends after all are paid out of earnings. The

dividends paid by companies are closely tied to earnings, but not necessarily the current quarterly or even annual earnings.

A number of factors are important in analyzing a company. However, because investors tend to focus on earnings and dividends, we need to understand the relationship between these two variables and between them and other variables. We also need to consider the possibilities of forecasting earnings and dividends.

Because dividends are pad out of earnings, we will concentrate on earnings in our discussion of company analysis. Earnings are the real key to the fundamental analysis of a common stock. A good understanding of earnings is vital if an investor is to understand, and perform, fundamental analysis.

Assessing the Economy:

A basic measure of the economy is Gross Domestic Product (GDP), defined as the market value of final goods and services produced by an economy for some time period. GDP numbers are prepared quarterly and released a few weeks following the end of the quarter. These numbers constitute a basic measure of the economic health and strength of the economy.

We can measure and observe GDP on both a nominal and real basis. The shaded areas indicate officials' periods of recession. Note the ups and downs up to about 1990 and the long upward movements from early 1991 into 2000, the greatest economic expansion in US history.

GDP is revised twice in the first three months after its initial release. The bureau of Economic Analysis initially releases an advance estimate of quarterly GDP in the first month following quarter end. In the second month, it provides a preliminary estimate, and in the third month, it provides a final estimate. The cycle then starts over again. Over the last 30+ years, the average revision of GDP growth from the advance to the final estimate has been about two-third of a percentage point. It should e noted that almost 90 percent of the time the advance estimate correctly predicts the direction of quarterly change in real GDP growth.

What Determines Aggregate Stock Prices?

We examined the variables that are used to estimate the intrinsic value of stocks with the dividend discount model----dividends are required rate of return----and with the P/E ratio model-----earnings and the P/E ratio. The same models apply to the aggregate stock market as represented by a market index such as the S&P 500 index.

To value the stock market using the fundamental analysis approach explained in chapter 10, we use as our foundation the P/E ratio or multiplier approach, because a majority of investors focus on earnings and P/E ratios. Estimates of index earnings and the earnings multiplier are used in equation 13-1. As explained in chapter 10, this model uses a forward P/E ratio. We will use the S&P500 Index as our measure of the stock market:

$$\mathbf{P_0 = P_0/E_1 \times E_1;}$$

Where;

E_1 = expected earnings on the S&P500 index
P_0/E_1 = the forward price earning ratio or multiplier

We consider each of these variables in turn.

The Earning Stream:

Estimating earnings for purposes of valuing the market is not easy. The item of interest is the earnings per share for a market index or, in general corporate profits after taxes.

Corporate profits are derived from corporate sales, which in turn are related to GDP. A detailed, top down fundamental analysis of the economy/market would involve estimating each of these variables, starting with GDP, then corporate sales, working down to Corporate earnings before taxes, and finally to corporate earnings after taxes. Each of these steps involves various levels of difficulty.

Looking at real (inflation-adjusted) earnings growth, we would expect it to correlate closely with real GDP growth in the long run and, in fact, of the last 30 or so years, real GDP growth has averaged about 3.1% annually, whereas real earnings for the S&P500 index has averaged 2.7% annually. Therefore, when estimating real earnings growth for the future, the best guide may be expected real GDP growth.

It is reasonable to expect corporate earnings to grow, on average, at about the rate of the economy as a whole. However, for the last years of the 20th century, operating earnings per share for the S&P500 grew an average of 10.2% per year versus a rate of 5.56% for economic growth. This simply illustrates how difficult it is to forecast earnings accurately. Extenuating factors can cause some divergences, for example, share repurchases by firms; any increase the rate of earnings growth relative to historical rates.

Since earnings have to be allocated over fewer shares, as firm repurchase shares, earnings/share increases. Estimate are that this could add anywhere from one-half to one and one-half% points to the growth rate of real earnings.

Which Earnings Should We Use?

Note that an annual EPS for the S&P500 index, as obtained at www.spglobal.com, can be instructed in various ways. For example as of June 02, all four quarters for 02 were estimates-of 4 quarter total of $51.23. One year ahead estimate could involve the last two quarters of 02 and the first two quarters of 03. The past years EPS numbers could be taken to be the calendar year 01, or the last two quarters of 01 and the first two quarters of 02.

This is further complicated by the fact that for the S&P500, S&P provides both top-down and bottom up estimate and both “as reported” estimates and operating estimates. Furthermore, S&P is now providing its “core earnings” for the S&P500 index, which focuses on companies after tax earnings generated from their Principal businesses. S&P has determined that the primary reasons the core earnings and as-reported earnings differ are pension income and stock options grant expenses, with the treatment of pension gains having a very significant impact. The differences between these two numbers can be substantial.

The Multiplier or P/E ratio:

The multiplier to be applied to the earnings estimate is as important as the earnings estimate, and often more so. Investors sometimes mistakenly ignore the multiplier and concentrate only on the earnings estimate. But earnings growth is not always the leading

factor in significant price changes in the market. Instead, low interest rates may lead to high P/E ratios, which in turn may account for the majority price changes.

The multiplier is more volatile than the earnings component and, therefore, it is even more difficult to predict. Consider figure 13-3, which shows the P/E ratio for S&P500 index, since 1947. A trend line has been included to show the general upward swing of P/E ratio across time. Also, 3 different levels of P/Es are identified with the bars showing that at different times (the 60s and early 70s, the late 70s and early 80s and the late 80s and the early 90s), P/Es tended to cluster together.

The P/E ratio begin to rise in the early 50s, reached a peak by 1960, and declined to the 16 to 18 area and remained around the level through 1972. as inflation heated up in 1973, and interest rates rose, the multiplier started to decline and by 1974 it was around 7, less than half its previous level, a drastic cut for such a short time. Therefore, what was considered normal (about17), in the 60s and early 70s was not the norm in the late 70a and early 80's? Most investors did not estimate P/E ratio this low for this length of time. The lesson from this analysis is obvious: investor cannot simply extrapolate P/E ratios, because dramatic changes occur over time. Perhaps the most that can be said is that in the post war period; P/E ratios of broadly based indices have ranged from an average of 7 to an average of about 17. For the S&P500 composite index, the average P/E for the period 1920 to 2001 was approximately 17, and for the period 1950 to 2001 it was 17. The variation however can be dramatic. The P/E ratio for the S&P500 was 7.8 in 1978 and 32.6 in 1998. By 2000, the P/E had decreased to 26.

P/E ratios are generally depressed when the interest rates and the rates of inflation are high, such as around 1980-81. P/E ratios tend to be high when inflation and interest rates are low, such as the period of the mid –to-late-1990s, when P/E ratios were at quite high levels by historical standards. When earnings are growing and the upward profit trend appears to be sustainable, investors are willing to pay, more for today's earnings. Think of the following relationships between interest rates and P/E ratios. In 1982, yields on 10- year treasury bonds were approximately 13%, and the P/E ratio on the S&P500 index was around 11. In the late 1990s interest tares were around 65 and the P/E ratio for 1998 was 32.6, and for 1999, 30.5. In 2001, it was 46.

Investors must be careful when using P/E ratios to place them in the proper context. P/E ratios can refer to historical data, an average for the year, or for a prospective period as such as the year ahead. Obviously, a significant difference can exist between P/E ratios calculated using these different definitions. Furthermore as noted earlier, various definitions of earnings for an index such as the S&P500 are available.

Using the Business Cycle to Make Market Forecasts:

Earlier we established the idea that certain composite indexes can be helpful in forecasting or ascertaining the position of the business cycle. However, stock prices are one of the leading indicators, tending to lead the economy's turning points, both peaks and troughs.

What is the investor who is trying to forecast the market to do? This leading relationship between the stock prices and the economy must be taken into account in forecasting likely changes in stock prices. Stock prices generally decline in recessions, and the steeper the recession, the steeper the decline. However, investors need to think about the business cycle's turning points months before they occur in order to have a handle on the turning points in the stock market. If a business cycle downturn appears to be likely in the future, the market will also be likely to turn down some months ahead of the economic downturn.

We can be somewhat more precise about the leading role of the stock prices. Because of this tendency to lead the economy, the total return on stocks (on an annual basis) could be negative (positive) in the years in which the business cycle peaks(bottoms). Stock prices have almost always rising as the business cycle is approaching a trough. These increases have been large, so that investors do well during this period. Furthermore, stock prices often remain steady or even decline sharp rise as the bottom is approached, a period of steady prices or even a decline typically occurs. The economy, of course, is still moving a head based on the above analysis.

Based on the above analysis:

1. If the investor can recognize the bottoming out of the economy before it occurs, a market price can be predicted, at least based on past experience, before the bottom is hit. In previous recessions since World War II, the market started to rise about half way between GDP starting to decline and staring to grow again.
2. The market average gain over the 12 months following its bottom point at about 36%.
3. As the economy recovers, stock prices may level off or even decline. Therefore, a second significant movement in the market may be predictable, again based on past experience.
4. Based on the most recent ten economic slumps in the 20th century, the market P/E usually rises just before the end of the slump. It then remains roughly unchanged over the next year.

The value of being able to analyze business cycle turning points as an aid to market timing is obvious. Investors would have increased their returns, over the entire sweep of US economic history, by switching into cash before the business cycle peaks and into stock before the cycle reaches its trough. It is particularly important to switch into stocks before business cycle troughs. However, as our discussion in Chapter 11 about market timing indicated, the chances of timing the market successfully on a regular basis are small.

Using the Fed's Model to Make Market Forecasts:

The Fed has developed a market forecasting model that has captured considerable attention both because of its relative accuracy over some time periods and because of its simplicity. This model has a simple-premise--- because investors can and do easily switch between stocks and bonds, based on the asset with the higher yield, stock returns will tend to restore an equilibrium relationship between the two assets.

To measure bond yields, the Fed uses the yield on 10-year Treasuries. Of course, this number can be observed on an updated basis every day. To measure stock yields, the earnings yield is used---earnings divided by stock price, using the S & P500 index. The earnings figure used is a forward 12-month earnings estimate based on operating earnings. Thus, on January 1, 2004, we would use an estimate of operating earnings for the S&P500 Index for the next 12 months through the end of the year. On April 1, 2004, we would use an estimate of the next 12 month earnings through April 1, 2005.

The Fed model can be used to formulate decision rules in the following ways:

- When the earnings yield on the S&P500 is greater than the 10-year Treasury yield, stocks are relatively attractive.
- When the earnings yield is less than the 10-year Treasury yield, stocks are relatively unattractive.

An alternative way to use the Fed model is to estimate the "fair value" level of the S&P500 Index and compare it to the actual current index value.

- If the estimated fair value of the market is greater than the current level of the market, stocks are undervalued.
- If the estimated fair value of the market is less than the current level of the market, stocks are overvalued.

Finally, note that the Fed model implies that the reciprocal of the yield on 10-year Treasuries is an estimate of the S&P500's equilibrium P/E ratio. That is,

Equilibrium estimate of the S&P500 P/E Ratio = 1/Yield on 10-year treasuries

- If the S&P 500's actual P/E ratio is less than the estimated equilibrium P/E ratio, equities are relatively attractive.
- If the S&P500's actual P/E ratio is greater than the estimated equilibrium P/E ration, equities are relatively unattractive.

Potential Problems with the Fed Model:

The Fed Model has the great virtue of simplicity and has given some useful signals, but it is not without its problems and limitations, which are important to note.

1. As noted above, the model implies a linear relationship between the reciprocal of the Treasury bond yield and the estimated equilibrium P/E ratio. This means that with a Treasury bond yield of 4 percent, the predicted equilibrium P/E ratio is 25. However, with a Treasury bond yield of 2 percent, predicted P/E is 50, and at 1 percent it is 100. Therefore, it is highly probable that the Fed model is not as reliable when interest rates are unusually low, because the implied linear relationship overstates the estimated equilibrium P/E ratio.
2. The model relies on the estimated earnings for the S&P500 Index for the next 12 months. There are different estimates of this number, involving top-down, bottom-up and S&P's core earnings, and they are revised often. Therefore, it is difficult to determine exactly which number to use at any given time.
3. The model is derived by assuming that the yield on 10-year treasuries can be substituted for the required rate of return on equities and for the return on equity on the S&P500 Index. Historically, this has often not been the case.

In conclusion, the Fed model may offer some valuable insights to investors trying to forecast the future direction of the stock market, but the model should be used with care. It is by no means a simple solution to the forecasting problem, and could easily mislead investors, particularly when interest rates are unusually low.

SECTOR AND INDUSTRY ANALYSIS

The Importance of Industry/Sector Analysis:

Why Industry Analysis Is Important Over The Long Run:

Sector and industry analysis is important to investor success, because over the long run, very significant differences occur in the-performance of industries and major economic sectors of the economy. To see *this,* we will examine the performance of industry groups over long periods of time using price indexes for industries.

Standard & Poor's calculates weekly and monthly stock price indexes for a variety of industries, with data being available for approximately 60 years. Since the data are reported as index numbers, long-term comparisons of price performance can be made for any industry covered. Note that the base number for these S&P data is 1941-1943 =10; therefore, dividing the index number for any industry for a particular year by 10 indicates the number of times the index has increased over that period.

What is an industry?

At first glance, the term *industry* may seem self-explanatory. After all, everyone is familiar with the auto industry, the drug industry, and the electric utility industry. But arc these classifications as clear-cut as they seem? Apparently not, because although we have had, industry classification schemes for many years, the classification system for industries continues to evolve, as shown below. Furthermore, different organizations use different classification systems.

Classifying Industries:

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Regardless of the problems, analyst's and. investors need methods with which to classify industries. One well-known and widely used system is the Standard Industrial Classification (SIC) System based on census data and developed *to* classify firms on the basis of what they produce. SIC codes have 11 divisions, and within each of these divisions are several major industry groups designated by a two-digit code. The major industry groups within-each division are further subdivided into three-, four-, and five-digit SIC codes to provide more detailed classifications. The larger the number of digits in the SIC system, the more specific the breakdown.

SIC codes have aided significantly in bringing order to the industry classification problem by providing a consistent basis for describing industries and companies. Analysts using SIC codes can focus on economic activity in as broad or as specific a manner as desired.

Other Industry Classifications:

The SIC system of industry classification is probably the most consistent system available. However, in the Investments field, various well-known organizations have developed their own industry groupings. For example, the Standard & Poor's (S&P) Corporation has provided weekly stock indexes on 11 sectors and approximately 115 industry groups for a long time. These weekly indexes have often been used to assess an industry's performance over time.

Other providers of information use different numbers of industries in presenting data. The important point to remember is that multiple industry classification systems are used.

Analyzing Sectors / Industries:

Sectors and industries, as well as the market and companies, are analyzed through the study of a wide range of data, including sales, earnings, dividends, capital structure, product lines, regulations, innovations, and so on. Such analysis requires considerable expertise, and is usually performed by industry analysts employed by brokerage firms and other: institutional investors.

A useful first step is to analyze industries in terms of their stage in the life cycle. The idea is to assess the general health and current position of the industry. A second step involves a qualitative analysis of industry characteristics designed to assist investors in assessing the future prospects for an industry. Each of these steps is examined in turn.

The Industry Life Cycle:

Many observers believe that industries evolve through at least four stages: the pioneering stage, the expansion stage, the stabilization stage, and the deceleration in growth and/or .decline stage. There is an obvious parallel in this idea to human development. The concept of an industry life cycle could apply to industries or product lines within industries.

1. **Pioneering Stage:**

In the pioneering stage, rapid growth in demand occurs. Although a number of companies within a growing industry will fail at this stage because they will not survive the competitive pressures, most experience rapid growth in sales and earnings, possibly at an increasing rate. The opportunities available may attract a number of companies, as well as venture capital. Considerable jockeying for position occurs as the companies' battle each other for survival, with the weaker-firms failing and dropping out.

Investor risk in an unproven company is high, but so are expected returns if the company succeeds. Profit margins and profits are often small or negative. At the pioneering stage of an industry, it can be difficult for security analysts to identify the likely survivors, just when the ability to identify the future strong performers is most valuable: By the time it becomes apparent who the real winners are, their prices may have been bid up considerably beyond what they were in the earlier stages of development.

In the early 1980s, the microcomputer business—both hardware and software— offered a good example of companies in the pioneering stage. Given the explosion in expected demand for these products, many new firms entered the business hoping to 'capture some share of the total market. By 1983, there were estimated 1JC manufacturers, of home computers, a clearly unsustainable number over the longer run.

2. **Expansion Stage:**

In the second stage of an industry's life cycle, the expansion stage, the survivors from the pioneering stage are identifiable. They continue to grow and to prosper, but the rate of growth is more moderate than before.

At the expansion stage of the cycle, industries are improving their products and perhaps lowering their prices, they are more stable and solid, and at this stage they often attract considerable investment funds Investors are more willing to invest in these industries now that their potential has been demonstrated and the risk of failure has decreased.

Financial policies become firmly established at this stage. The capital base is widened and strengthened. Profit margins are very high. Dividends often become payable, further enhancing the attractiveness of these companies to a number of investors.

3. **Stabilization Stage:**

Industries eventually evolve into the stabilization stage (sometimes referred to as the maturity stage), at which point the growth begins to moderate. This *is* probably the longest part of the industry life cycle. Products become more, standardized and less innovative, the marketplace is full of competitors, and costs are stable rather than decreasing through efficiency moves, for example. Management's ability to control costs and produce operating efficiencies becomes very important in terms of affecting individual company profit margins.

Industries at this stage continue to move along, but typically the industry growth rate matches the growth rate for the economy as a whole.

4. **Declining Stage:**

An industry's sales growth can decline as new products are developed and shifts in demand occur. Think of the industry for home radios and black-and-white televisions. Some firms in an industry experiencing decline face significantly lower profits or even losses. Rates of return on invested capital will tend to be low.

Qualitative Aspects of Industry Analysis:

The analyst or investor should consider several important qualitative factors that can characterize an industry. Knowing about these factors will help investors to analyze a particular industry and will aid in assessing its future prospects.

The Historical Performance:

As we have learned, some industries perform well and others poorly over long periods of time. Although performance is not always consistent and predictable on the basis of the past, an industry's track record should not be ignored.

Investors should consider the historical record .of sales and earnings growth and price performance. Although the past cannot simply be extrapolated into the future, it does provide some useful information.

Competition:

The nature of the competitive conditions existing in an industry can provide useful information in assessing its future. Is the industry protected from the entrance of new competitors as a result of control of raw materials, prohibitive cost of building plants, the level of production needed to operate profitably, and so forth?

Michael Porter has written extensively on the issue of competitive strategy, which involves the search for a competitive position in an industry. The intensity of competition in, an industry determines that industry's ability to sustain above-average returns. This intensity is not a matter of luck, but a reflection of underlying factors that determine the strength of five basic competitive factors:

1. Threat of new entrants
2. Bargaining power of buyers
3. Rivalry between existing competitors
4. Threat of substitute-products or services
5. Bargaining power of suppliers

The five competitive forces determine industry profitability because these influence the components of return on investment. The strength of each of these factors is a function of industry structure.

The important point of the Porter analysis is that industry profitability is a function of industry structure. Investors must analyze industry structure to assess the strength of the five competitive forces, which in turn determine industry profitability.

Government Effects:

Government regulations and actions can have significant effects on industries. The investor must attempt to assess the results of these effects or, at the very least, be well aware that they exist and may continue.

Consider the breakup of AT&T as of January 1*1984.' This one action has changed the telecommunications industry permanently and perhaps others as well. As a second example, the deregulating of the financial services industries resulted .in banks and savings and loans competing more directly with" each other, offering consumers many of the same services. Such an action has to affect the relative performance of these two industries as well as some of their other competitors, such as the brokerage-industry (which can now also offer similar services in many respects).

Structural Changes:

A fourth factor to consider is the structural Changes that occur in the economy, As_ the United States continues to move from an industrial society to an information-communications society, major industries will be affected. New industries with tremendous potential are, arid will be, emerging, whereas some traditional industries, such as steel, may never recover to their former positions.

Evaluating Future Industry Prospects:

Ultimately, investors are interested in expected performance in the future. They realize that such estimates are difficult and are likely to be somewhat in error, but they know that equity prices are a function of expected parameters, riot past, known values. How then is an investor to proceed?

Assessing Longer-Term Prospects:

To forecast industry performance over the longer run, investors should ask the following questions:

1) Which industries are obvious candidates for growth and prosperity over, say, the next decade?
2) Which industries appear to be likely to have difficulties as the United States changes from an industrial to an information-collecting and information- processing economy?

Picking Industries for Next Year:

On a shorter-run basis, investors would like to be able to estimate the expected earnings for an industry and the expected multiplier and combine them to produce an estimate of value. However, this is not easy to do? It requires an understanding of several relationships and estimates of several variables. Fortunately, considerable information is readily available to help investors in their analysis of industries. Investors should beware of the primary sources of information about industries.

Te determines industry performance for shorter periods of time (e.g., one year), investors should ask themselves the following question: Given the current and prospective economic situation, which industries are likely to-show improving earnings? In many respects, this is the key question for industry security analysis. Investors can turn to IBES, .which complies institutional brokerage earnings estimates, for analysts' estimates of earning'; for various industries, which are revised during the year.

Business Cycle Analysis:

A useful procedure for investors to assess industry prospects is to analyze industries by their operating ability in relation to the economy as a whole. That is, some industries perform poorly during a recession, whereas others are able to weather it reasonably well. Some industries move closely with-the business cycle, outperforming the average industry in good times and underperforming it in bad times. Investors should be aware of these relationships when analyzing industries.

Growth Industries:

Most investors have heard of, and are usually seeking; growth companies. In growth industries, earnings are expected to be significantly above the average of all industries, and such growth may occur regardless of setbacks in the economy. Growth industries in the 1980s included genetic engineering,-microcomputers, and new medical devices! Current and future growth industries include robotics and cellular telephones. Clearly, one of the primary goals of fundamental security analysis is to-identify the growth industries, of the near and far future.

Defensive Industries:

At the opposite end of the scale are the defensive industries, which are least affected by recessions and economic adversity. Food has long been considered such an industry. People must eat, and they continue to drink beer, eat frozen yogurt, and so on, regardless of the economy. Public utilities might also be considered a defensive industry.

Cyclical Industries:

Cyclical industries are most volatile—they do unusually well when the economy prospers and are likely to be hurt more when the economy fakers. Durable goods are a good example of the products involved in cyclical industries. Autos, refrigerators, and stereos, for example, may be avidly sought when times are good, but such purchases may be postponed during a recession, because consumers can often make do with the old units.

Cyclical are said to be "bought to be sold." When should investors pursue cyclical industries? When the prices of companies in the industry are low, relative to the historical record and P/Es are high. This seems counterintuitive to many investors, but the rationale is

that earnings are severely depressed in a recession and therefore the P/E is high, and this may occur shortly before earnings turn around.

These three classifications of industries according to economic conditions do not constitute an exhaustive set. Additional classifications are possible and logical. For example, **interest-sensitive industries** are particularly sensitive to expectations-about changes in interest rates; the financial services, banking, and real estate industries are obvious examples of interest-sensitive industries. Another is the building industry.

COMPANY ANALYSIS

Fundamental Analysis:

Fundamental analyst at the company level involves analyzing basic financial variables in order to estimate the company's intrinsic value. These variables include sales, profit margins, depreciation, the tax rate, sources of financing, asset utilization, and other factors. Additional analysis could involve the firm's competitive position in its industry, labor relations, technological changes, management, foreign competition, and so on. The end result of fundamental analysis at the company level is a good understanding of the company's financial variables and an assessment of the estimated value and potential of the company.

Investors could use the dividend discount model to value common stocks; alternatively, for a short-run estimate of intrinsic value, the earnings multiplier model could be used. Intrinsic (estimated) value is the product of the estimated earnings per share (EPS) for next year and the expected multiplier or P/E ratio,

Stocks estimated value = V_0 -/Estimated EPS X expected P/E ratio

Where;

Ei = earnings expected for the next year and P/E == the price/earnings ratio expected for the next year. Many investors use relative valuation techniques, comparing a company's P/E ratio, P/B ratio, and/or P/S to various benchmarks in order to assess the relative value of the company. Using these techniques, it is' not necessary to make a. point estimate of intrinsic value. Instead, investors are simply trying to determine if a stock is reasonably valued, overvalued, or undervalued without being too precise about the absolute amount. For many investors, this is an effective method of analysis.

For purposes of discussion, we concentrate on earnings and P/E ratios for several reasons. First, this is what investors encounter most frequently when analyzing stocks. Despite all the uproar recently about accounting scandals, EPS is still the major variable of interest to a majority of investors. Second, the close correlation between earnings changes and stock-price changes is well documented. As Siegel states in his book, *Stocks for the Long Run,* "stock values are based on corporate earnings."

Alternatively, consider the relationship between earnings growth and price performance. A study by Elton, Gruber, and Gultekin examined the risk-adjusted excess returns available from buying stocks on the basis of next year's growth in earnings. They found that those stocks with the highest future growth in EPS showed the highest risk-adjusted returns. For the 30 percent of the companies with the highest growth in EPS, the Risk-adjusted excess return was 7.48 percent; for the 30 percent with the lowest growth, the risk-adjusted excess return was 4.93 percent.

The Financial Statements:

Investors rely heavily on the financial statements of a corporation, which provide the major financial data, about companies. To illustrate the use of financial statements in doing company analysis, we examine the 2002 financial statements for the Coca-Cola Company, a famous company with a brand name known worldwide, and a company that epitomizes the global nature of business in today's world.

The Balance Sheet:

The balance sheet shows the portfolio of assets for a corporation, as well as its liabilities and owner's equity, at one point in time. The amounts at which items are carried on the balance sheet are dictated by accounting conventions. Cash is the actual dollar amount, whereas marketable securities could be at cost or market value. Stockholders equity and the fixed assets are on a book value basis.

It is important for investors to analyze a company's balance sheet, carefully. Investors wish to know which companies are undergoing true growth, as opposed to companies that are pumping up their performance by using a lot of debt they may be unable to service.

Income Statement:

This statement is used more frequently by investors, not only to assess current management performance but also as a guide to the company's future profitability. The income statement represents flows for a particular period, usually one year.

The key item for investors on the income statement is the after-tax net Income, which, divided by the number of common shares outstanding, produces earnings per share. Earnings from continuing operations typically are used to judge the company's success and are almost always the earnings reported in the financial press. Nonrecurring earnings, such as net extraordinary items that arise from unusual and infrequently occurring transactions, ate separated from income from continuing operations.

The Cash-Flow Statement:

The third financial statement of a company is die cash flow statement, which incorporates elements of the balance sheet and income statement as well as other items. It is designed, to track the how of cash through the firm. It consists of three parts:

1. Cash from operating activities
2. Cash from investing activities
3. Cash from financing activities

The cash-flow statement can help investors examine the quality of the earnings. For example, if inventories are rising more quickly than sales, as happened in late 2000 and early 2001 for several companies, this can be a real sign pf trouble—demand may be softening. If a company is cutting back on its capital expenditures, this could signal problems down the road. If accounts receivable are rising at a rate greater than sales are increasing, a company may be having trouble collecting money owed to it. If accounts payable are rising too quickly, a company may be conserving cash by delaying payments to suppliers, a potential sign of trouble for the company.

Certifying the Statements:

The earnings shown on an income statement are derived on the basis of generally accepted accounting principles (GAAP). The company adheres to a standard set of rules developed by the accounting profession on the basis of historical costs, which can be measured objectively. An auditor from an independent accounting firm certifies that the earnings have been derived according to accounting standards in a statement labeled the "auditor's report."

Reading the Footnotes:

Regardless of how closely a company adheres to good accounting practices, and how carefully the auditors do their job, investors still need to examine the. "Notes to the Financial Statements," or footnotes, if they- are really-to understand the company's financial situation! The footnotes often provide important information about the accounting methods being used, any ongoing litigation, how revenue is recognized, and so forth. The footnotes can help, an investor better understand the quality of the reported earnings. The footnotes are located after the consolidated financial statements, and can be found in 10-K and 10-Q Reports.

The Problems with EPS:

Reported Earnings:

Earnings derived under GAAP and reported on the income statement are known as reported, earnings. Although the financial statements are derived on the basis of GAAP and are certified in an auditor's report, problems exist with reported earnings: The basic problem simply stated; is that-reported EPS for a company (i.e., accounting EPS) is the product of very complex GAAP principles, which are subject 10 subjective judgments. EPS is not a precise figure that is readily comparable over time, and the EPS figures for different companies often are not comparable to each other. Alternative accountings principles can be, and are, used-to prepare the financial statements."

Many of the items in the balance sheet and income statement can be accounted for in more than one way. Given the number of items that constitutes the financial statements, the "possible number of acceptable (i.e., that conform to GAAPs). Combinations that "could be used is large. A company could produce several legal and permissible EPS figures depending solely on-the accounting principles used. The question that investors must try to answer is, "Which EPS best represents the true position of a company?"

Because reported EPS is a function of the many alternative accounting principles in use, it is extremely difficult, if not impossible, for the true performance of a company to be reflected consistently in one figure. Since each company is different, is it reasonable to expect one accounting system to capture the true performance of all companies? With the business world so complex, one can make a case for the necessity of alternative treatments of the same item or process, such as inventories or depreciation.

Accountants are caught in the middle between investors, who want *a* clean, clear-cut *EPS* figure, and company, management, which wants to present the financial statements in the most favorable light. After all, management hires the accounting firm, and, subject to certain guidelines, management can change accounting firms. As long as the company follows GAAP, the accountant may find it difficult to resist management pressure to use particular principles. At some point, an accounting firm may resign as a company's auditor as a result of the problems and pressures that can arise.

The FASB faces conflicting Remands when it formulates or changes accounting principles, because various interest groups want items accounted for in specific ways. The end result has been that the "standards" issued by the FASB were often compromises that did not fully resolve the particular issue; in some cases, they created additional complications.

COMPANY ANALYSIS

Analyzing a Company's Profitability:

On a company level, EPS is the culmination of several important factors going on within the company. Accounting variables can be used to examine these determining factors by analyzing key financial ratios. Analysts examine the components of EPS in order to try to determine whether a company's profitability is increasing or decreasing and why.

We start with the following accounting identity, which establishes the relationship between EPS and ROE:

EPS = ROE x Book value per share

Where ROE is the return on equity and book value per share is the accounting value of the stockholder's equity on a per share basis. Book value typically changes rather slowly, making ROE the primary variable on which to concentrate. Using Coca-cola's data, we calculate EPS for 2002 as follows:

	For Coca-Cola=	$	% Return	
EPS = Net income after taxes = Shares Outstanding	$3,050,000,000 / 2,478,000,000	=	$1.23	—
ROE = Net income after taxes = Stockholder's equity	$3,050,000,000 / $11,800,000,000	=	—	25.9
Book value per share =	Stockholder's equity / Shares Outstanding	=	$4.76	—

ROE is the accounting rate of return that stockholders are in on their portion of the total capital used to finance the company; in other words, the stockholder's return on equity. Book value per share measures the accounting value of the stockholders' equity.

Primary emphasis is on return on equity (ROE), because it is the key Component determining earnings growth and dividend growth. The return on equity is the end result of several important variables. Analysts and investors seek to decompose the ROE into its critical components in order both to identify adverse impacts on ROE and to help predict future trends in ROE.

Different combinations of financial ratios can be used to decompose ROE—in other words; there are several ways to do this analysis. We will use the multiplicative relationship that consists of important financial ratios that easily can be calculated from a company's financial statements.

Analyzing Return on Equity (ROE):

ROE = ROA × Leverage

A major complement of ROE is Return on Assets (ROA), an important measure of a company's profitability. ROA measures the return on assets, whereas ROE measures the

return to the stockholders, who financed only part of the assets (the bondholders finance the other part).

To go from ROA to ROE, the effects of leverage must be considered. The leverage ratio measures how the firm finances its assets. Basically, firms can finance with either debt or equity. Debt, and although a cheaper source of financing, is a riskier method, because of the fixed interest payments that must be systematically repaid on time to avoid bankruptcy. Leverage can magnify that returns to the stockholders (favorable leverage) or diminish them (Unfavorable leverage). Thus, any given ROA magnified into a higher ROE by the judicious use of debt financing. The converse, however, applies; injudicious use of debt can lower the ROE below the ROA.

To capture more easily the effects of an average, we use an equity multiplier rather than a debt percentage. This measure reflects the amount of assets financed per dollar of stockholders' equity. For example, a ratio of 2 would indicate that $2 in assets are being financed by $1 in stockholders' equity.

Leverage = Total Assets/Stockholder's equity

Analyzing Return on Assets (ROA):

ROA is an important measure of the firm's profitability. It is a product of two factors,

ROA = Net income margin × Turnover

Net income margin = Net income/Sales

Turnover = Sales/ Total Assets

The first ratio affecting ROA, the net income margin, measures the firm's earning power on its sales (revenues). How much net return is realized from sales given all costs? Obviously, the more the firms earns per dollar of sales, the better.

Asset turnover is a measure of efficiency. Given some amount of total assets, how much sales can be generated? The more sales per dollar of assets, where each dollar of assets has to be financed with a source of funds bearing a cost, the better it is for a firm. The firm may have some assets that are unproductive, thereby adversely affecting its efficiency.

$$\text{ROA} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}}$$

ROA is a fundamental measure of firm profitability, reflecting how effectively and efficiently the firm's assets are used. Obviously the higher the net income for a given amount of assets, the better is the return. For Coca-Cola and the return on assets is 12.45%. The ROA is improved by increasing the net income more than the assets (in percentage terms) or by using the existing assets even more efficiently.
One of the determinants of ROA may be able to offset poor performance in the other. The net income margin may be low, but the company may generate more sales per dollar of assets than compatible companies. Conversely, poor turnover may be partially offset by high net profitability. In either case, analysts and investors are trying to understand how these factors are impacting Coke, and how they are likely to do so in the future.

Earnings Estimates:

The EPS that investor used to value stocks is the future (expected) EPS. Current stock price is a function of future earnings estimates and the P/E ratio, not the past. If investors knew what the EPS for a particular company would be next year, they could achieve good results in the market.

In doing fundamental security analysis using EPS, an investor needs to (1) know how to obtain an earnings estimate; (2) consider the accuracy of any earnings estimate obtained; and (3) understand the role of earnings surprises in impacting stock prices. We consider each of these topics in turn.

A Forecast of EPS:

Security Analysts' Estimates of Earnings Among the most obvious sources of earnings estimates are security analysts, who make such forecasts as a part of their job. This type of earnings information is widely available. The value line investment survey, for example, forecasts quarterly earnings for several quarters ahead for each company covered. IBES international is a well-known New York firm that tracks earnings estimates by analysts and makes them available.

Several studies suggest that individual analysts are by and large undistinguishable in the ability to predict EPS. The Practical implication of these findings is that the consensus forecast is likely to be superior to the forecasts of individual analysts.

Mechanical Estimates of Earnings An alternative method of obtaining earnings forecast is the use of mechanical procedures such as time series models. In deciding what type of model to use, some of the evidence on the behavior of earnings over time should be considered.

Time series analysis involves the use of historical data to make earnings forecasts. The model used assumes that the future will be similar to the past. The series being forecast, EPS is assumed to have trend elements, an average value, seasonal factors, and error. The moving average technique is a simple example of the time series model for forecasting EPS. Exponential Smoothing, which assigns differing weights to past to values, is an example of a more sophisticated technique. A regression equation would represent another technique for making forecasts; the regression equation could handle several variables, such as trend and seasonal factors. More sophisticated models could also be used.

Studies of behavior of time path of earnings have produced mixed results. Most of the early studies indicated randomness in the growth rates of earnings. Other studies found some evidence of non randomness. More recent studies, particularly those of quarterly earnings, have indicated that the time series behavior of earnings is not random.

Earnings Surprises:

We have established that changes and earnings and stock prices are highly correlated. We have also discussed the necessity of estimating EPS and how such estimates can be obtained. What remains is to examine the role of expectations about earnings in selecting common stocks.

The association between earnings and stock prices is more complicated than simply demonstrating a correlation (association) between earnings growth and stock price changes. Elton, Gruber, and Gultekin found that investors could not earn excess returns by buying and selling stocks on the bases of the consensus estimate of earnings growth. (The

consenses estimate was defined as the average estimate of security analysts at major brokerage houses.) They also found that analysts tended to overestimate earnings for companies they expected would perform well and to underestimate for companies they expected would perform poorly.

Investors must form expectations about EPS, and these expectations will be incorporated into stock prices if markets are efficient. Although these expectations are often inaccurate, they play an important role in affecting stock prices. Malkiel and Cragg concluded that in making accurate one year predictions, "It is far more important to note what the market will think the growth rate of earnings will be next year rather than to note the realized long-term growth rate."

As Latane and Jones pointed out, new information about the stock is unexpected information. The important point about EPS in terms of stock prices is the difference between what the market was expecting the EPS to be and what the company actually reported. Unexpected information about earnings calls for revision in investor probability beliefs about the future and therefore an adjustment in the price of the stock.

To assess the impact of surprise factor in EPS, Latane and Jones developed a mortal to express and use the earnings surprise factor in the quarterly EPS of companies. This standardized unexpected earnings (SUE) is discussed as a part of the market anomalies associated with the evidence concerning market efficiency.

$$\text{SUE} = \frac{\text{Actual quarterly EPS} - \text{Forecast quarterly EPS}}{\text{Standardization variable}}$$

The SUE concept is designed to capture the surprise element in the earnings just mentioned— in other words, the difference between what the markets expects the company to earn and what it actually does earn. A favorable earnings surprise, in which the actual earnings exceed the market's expectation, should bring about an adjustment to the price of the stock as investors revise their probability believes about the company's earnings. Conversely, an unfavorable earnings surprise should lead to a downward adjustment in price; in effect, the market has been disappointed in its expectations.

In conclusion, prices are affected not only by the level of and growth in earnings but also by the market's expectations of earnings. Investors should be concerned with what the forecast for earnings and the difference between the actual earnings and the forecast— that is, the surprise. Therefore, fundamental analysis of earnings should include more than a forecast, which is difficult enough; it should involve the role of the market's expectations about earnings.

P/E Ratio:

The other half of the valuation framework in fundamental analysis is the price/earnings (P/E) ratio, or multiplier. The P/E ratio indicates how much per dollar of earnings investors currently are willing to pay for a stock; that is, the price for each dollar of earnings. In a sense, it represents the market's summary evaluation of a company's prospects.

Determinants of the P/E Ratio:

The expected P/E is conceptually a function of three factors:

$$\mathbf{P/E = \frac{D_1/E_1}{k - g}}$$

Where;

D_1/E_1 = the expected dividend payout ratio
k = the required rate of return for the stock
g = expected growth rate in dividends

Investors attempting to determine the P/E ratio that will prevail for a particular stock should think in terms of these three factors and their likely changes.

- The higher the expected payout ratio, other things being equal, the higher the P/E ratio. However, "other things" are seldom equal. If the payout rises, the expected growth rate in earnings and dividends, g, will probably decline, thereby adversely affecting the P/E ratio. This decline occurs because less funds will be available for reinvestment in the business, thereby leading to a decline in the expected growth rate, g.
- The relationship between k and the P/E ratio is inverse. Other things being equal, as k rises, the P/E ratio declines; as k declines, the P/E ratio rises. Because the required rate of return is a discount rate, P/E ratios and discount rates move inversely to each other.
- P/E and g are directly related; the higher the g, other things being equal, the higher the P/E ratio.

Analyzing the P/E Ratio In analyzing a particular P/E ratio, we first ask what model describes the expected growth rate for that company. Recent rapid growth and published estimates of strong expected future growth would lead investors not to use the constant-growth version of the dividend valuation model. Instead, we should evaluate the company using a multiple-growth model. At some point, however, this growth can be expected to slow down to a more normal rate.

$$\mathbf{\frac{P}{E_{n+1}} = \frac{D_{n+1}/E_{n+1}}{k - g}}$$

Where n is the year that the abnormal growth ends.

Relative to the discussion above on the earnings game, investors must be increasingly concerned with the impact of managing earnings expectations on the P/E ratio. If a fast-growing company is being conservative in guiding the estimates of its earnings, and it regularly reports earnings higher than the consensus, then the forward P/E ratio is actually lower than it appears to be based on the current consensus estimate of earnings. In other words, a company may appear to sell for 50 times next year's earnings, but this is based on an underestimate of next year's earnings, because the consensus estimate has been guided to be below what actually occurs. For much of the 1990s Dell Computer fit this model, regularly reporting significantly larger earnings than the consensus estimate.

Fundamental Security Analysis in Practice:

We have analyzed several important aspects of fundamental analysis as it is applied to individual companies. Obviously, such a process can be quite detailed, involving an analysis of a company's sales potential, competition, tax situation, cost projections, accounting practices, and so on. Nevertheless, regardless of detail and complexity, the underlying process is as described. Analysts and investors are seeking to estimate a company's earnings and P/E ratio and to determine whether the stock is undervalued (a buy) or overvalued (a sell).

In doing fundamental security analysis, investors need to use published and computerized data sources both to gather information and to provide calculations and estimates of future variables such as EPS.

The Value Line Investment Survey is the largest investment advisory service in the United States and is available in many libraries. This information can be very helpful in terms of estimates for EPS and in terms of a prediction as to the timelines of each stock for the coming year.

In modern investment analysis, the risk for a stock is related to its beta coefficient. Beta reflects the relative systematic risk for a stock, or the risk that cannot be diversified away. The higher the beta coefficient, the higher the risk for an individual stock, and the higher the required rate of return. Beta measures the volatility of the stocks returns— its fluctuations in relation to the market.

In trying to understand and predict a company's return and risk, we need to remember that both are a function of two components. The systematic component is related to the return on the overall market. The other complement is the unique part attributable to the company itself and not to the overall market. It is a function of the specific positive or negative factors that affect a company independent of the market.

It should come as no surprise that because security analysis always involves the uncertain future, mistakes will be made, and analysts will differ in their outlooks for a particular company.

As we might expect, security analysis in the 21st century is often done differently than it was in the past. The reason for this change is not so much that we have a better understanding of the basis of security analysis the cost of mortars we have discussed earlier— value as a function of expected return and risk— remain the basis of security analysis today. Rather the differences now have to do with the increasingly sophisticated use of personal computers to perform any calculations quickly and objectivity.

COMPANY ANALYSIS Contd…

Financial statements (or financial reports) are formal records of business financial activities. These statements provide an overview of a business profitability and financial condition in both short and long term. There are four basic financial statements:

1. **Balance sheet** is also referred to as statement of financial position or condition, reports on a company's assets, liabilities and net equity as of a given point in time.
2. **Income statement** is also referred to as Profit or loss statement, reports on a company's results of operations over a period of time.
3. **Statement of retained earnings** explains the changes in a company's retained earnings over the reporting period.
4. **Statement of cash flows** are reports on a company's cash flow activities, particularly it's operating, investing and financing activities.

For large corporations, these statements are often complex and may include an extensive set of notes to the financial statements and management discussion and analysis. The notes typically describe each item on the balance sheet, income statement and cash flow statement in further detail. Notes to financial statements are considered an integral part of the financial statements.

Objective of Financial Statements:

The objective of financial statements is to provide information about the financial strength, performance and changes in financial position of an enterprise that is useful to a wide range of users in making economic decisions. Financial statements should be understandable, relevant, reliable and comparable. Reported assets, liabilities and equity are directly related to an organization's financial position. Reported income and expenses are directly related to an organization's financial performance.

Financial statements are intended to be understandable by readers who have a reasonable knowledge of business and economic activities and accounting and who are willing to study the information diligently.

1. **Balance sheet:**

In financial accounting, a balance sheet or statement of financial position is a summary of the value of all assets, liabilities and owners' equity for an organization or individual on a specific date, such as the end of its financial year. A balance sheet is often described as a "snapshot" of a company's financial condition on a given date. Of the four basic financial statements, the balance sheet is the only statement which applies to a single point in time, instead of a period of time.

A company balance sheet has three parts: assets, liabilities and shareholders' equity. The main categories of assets are usually listed first and are followed by the liabilities. The difference between the assets and the liabilities is known as the net assets or the net worth of the company. According to the accounting equation, net worth must equal assets minus liabilities.

- **Assets:**

Current assets:

In accounting, a current asset is an asset on the balance sheet which is expected to be sold or otherwise used up in the near future, usually within one year, or one business cycle whichever is longer. Typical current assets include cash, cash equivalents, accounts receivable, inventory, the portion of prepaid accounts which will be used within a year, and short-term investments.

On the balance sheet, assets will typically be classified into current assets and long-term assets. The current ratio is calculated by dividing total current assets by total current liabilities. It is frequently used as an indicator of a company's liquidity, its ability to meet short-term obligations.

- **Inventories:**

Inventory is a list for goods and materials, or those goods and materials themselves, held available in stock by a business. Inventory are held in order to manage and hide from the customer the fact that manufacture/supply delay is longer than delivery delay, and also to ease the effect of imperfections in the manufacturing process that lower production efficiencies if production capacity stands idle for lack of materials.

- **Accounts receivable:**

Accounts receivable is one of a series of accounting transactions dealing with the billing of customers who owe money to a person, company or organization for goods and services that have been provided to the customer. In most business entities this is typically done by generating an invoice and mailing or electronically delivering it to the customer which is to be paid within an established timeframe called credit or payment terms.

On a company's balance sheet, accounts receivable is the amount that customers owe to that company. Sometimes called trade receivables, they are classified as current assets. To record a journal entry for a sale on account, one must debit a receivable and credit a revenue account. When the customer pays off their accounts, one debits cash and credits the receivable in the journal entry. The ending balance on the trial balance sheet for accounts receivable is always debit.

- **Cash and cash equivalents:**

Cash and cash equivalents are the most liquid assets found within the asset portion of a company's balance sheet. Cash equivalents are assets that are readily convertible into cash, such as money market holdings, short-term government bonds or Treasury bills, marketable securities and commercial paper. Cash equivalents are distinguished from other investments through their short-term existence; they mature within 3 months whereas short-term investments are 12 months or less, and long-term investments are any investments that mature in excess of 12 months.

Long-term assets:

Long-term assets or non-current assets are those assets usually in service over one year such as lands and buildings, plants and equipment, and long-term investments. These often

receive favorable tax treatment over current assets. Tangible long-term assets are usually referred to as fixed assets.

- **Property, plant and equipment:**

Non-current asset, also known as property, plant, and equipment (P, P&E), is a term used in accountancy for assets and property which cannot easily be converted into cash. This can be compared with current assets such as cash or bank accounts, which are described as liquid assets. In most cases, only tangible assets are referred to as fixed.

Fixed assets normally include items such as land and buildings, motor vehicles, furniture, office equipment, computers, fixtures and fittings, and plant and machinery. These often receive favorable tax treatment (depreciation allowance) over short-term assets.

- **Intangible assets:**

Intangible assets are defined as those non-monetary assets that cannot be seen, touched or physically measured and which are created through time and /or effort. There are two primary forms of intangibles - legal intangibles (such as trade secrets (e.g., customer lists), copyrights, patents, trademarks, and goodwill) and competitive intangibles (such as knowledge activities (know-how, knowledge), collaboration activities, leverage activities, and structural activities).

- **Liabilities:**

- **Accounts payable:**

Accounts payable is a file or account that contains money that a person or company owes to suppliers, but hasn't paid yet. When you receive an invoice you add it to the file, and then you remove it when you pay. Thus, the A/P is a form of credit that suppliers offer to their purchasers by allowing them to pay for a product or service after it has already been received.

Commonly, a supplier will ship a product, issue an invoice, and collect payment later, which creates a cash conversion cycle, a period of time during which the supplier has already paid for raw materials but hasn't been paid in return by the final customer.

- **Equity:**

The net assets shown by the balance sheet equals the third part of the balance sheet, which is known as the shareholders' equity. Formally, shareholders' equity is part of the company's liabilities: they are funds "owing" to shareholders (after payment of all other liabilities); usually, however, "liabilities" is used in the more restrictive sense of liabilities excluding shareholders' equity. The balance of assets and liabilities (including shareholders' equity) is not a coincidence. Records of the values of each account in the balance sheet are maintained using a system of accounting known as double-entry bookkeeping. In this sense, shareholders' equity by construction must equal assets minus liabilities, and are a residual.

- Numbers of shares authorized, issued and fully paid, and issued but not fully paid
- Par value of shares
- Reconciliation of shares outstanding at the beginning and the end of the period
- Description of rights, preferences, and restrictions of shares
- Treasury shares, including shares held by subsidiaries and associates

- Shares reserved for issuance under options and contracts
- A description of the nature and purpose of each reserve within owners' equity

2. Income statement:

An Income Statement, also called a Profit and Loss Statement (P&L), is a financial statement for companies that indicates how Revenue (money received from the sale of products and services before expenses are taken out, also known as the "top line") is transformed into net income (the result after all revenues and expenses have been accounted for, also known as the "bottom line"). The purpose of the income statement is to show managers and investors whether the company made or lost money during the period being reported.

Charitable organizations that are required to publish financial statements do not produce an income statement. Instead, they produce a similar statement that reflects the fact that the charity is not operating to make a profit.

- **Cost of goods sold:**

Cost of goods sold, COGS, or "cost of sales", includes the direct costs attributable to the production of the goods sold by a company. This amount includes the materials cost used in creating the good along with the direct labor costs used to produce the good. It excludes indirect expenses such as distribution costs and sales force costs. COGS appear on the income statement and can be deducted from revenue to calculate a company's gross margin.

COGS is the cost that go into creating the products that a company sells; therefore, the only costs included in the measure are those that are directly tied to the production of the products. For example, the COGS for an automaker would include the material costs for the parts that go into making the car along with the labor costs used to put the car together. The cost of sending the cars to dealerships and the cost of the labor used to sell the car would be excluded.

- **Gross profit:**

Gross profit or sales profit or gross operating profit is the difference between revenue and the cost of making a product or providing a service, before deducting overheads, payroll, taxation, and interest payments.

In general, it is the profit shown on a transaction if one disregards the indirect costs. It is the revenue that remains once one deducts the costs that arise only from the generation of that revenue.

For a retailer, gross profit is the shop takings less the cost of the goods sold. For a manufacturer, the direct costs are the costs of the materials and other consumables used to make the product. For example, the cost of electricity to operate a machine is often a direct cost while the cost of lighting the machine room is an overhead. Payroll costs may also be direct if the workforce is paid a unit cost per manufactured item. For this reason, service industries that sell their services by time units often treat the fee-earners' time cost as a direct cost.

Gross profit is an important guide to profitability but many small businesses fail because they overlook the regular demand to meet the fixed costs of the business. The indirect costs are considered when calculating net income, another important guide to profitability.

- **Operating section:**
    - **Revenue:**

Cash inflows or other enhancements of assets of an entity during a period from delivering or producing goods, rendering services, or other activities that constitute the entities on going major operations. Usually presented as sales minus sales discounts, returns, and allowances.

    - **Expenses:**

Cash outflows or other using-up of assets or incurrence of liabilities during a period from delivering or producing goods, rendering services, or carrying out other activities that constitute the entity's ongoing major operations.

    - **General and administrative expenses (G & A):**

It represent expenses to manage the business (officer salaries, legal and professional fees, utilities, insurance, depreciation of office building and equipment, stationery, supplies).

    - **Selling expenses:**

It represents expenses needed to sell products (e.g., sales salaries and commissions, advertising, freight, shipping, depreciation of sales equipment).

    - **R & D expenses:**

It represents expenses included in research and development.

    - **Depreciation:**

It is the charge for the year with respect to fixed assets that have been capitalized on the Balance Sheet.

- **Non-operating section:**
    - **Other revenues or gains:**

Revenues and gains from other than primary business activities (e.g. rent, patents). It also includes unusual gains and losses that are either unusual or infrequent, but not both (e.g. sale of securities or fixed assets).

    - **Other expenses or losses:**

Expenses or losses not related to primary business operations.

- **Earnings before Interest & Tax (EBIT):**

An indicator of a company's profitability, calculated as revenue minus expenses, excluding tax and interest. EBIT is also referred to as "operating earnings", "operating profit" and "operating income", as you can re-arrange the formula to be calculated as follows:

EBIT = Revenue - Operating Expenses

- **Net earnings:**

Gross sales minus taxes, interest, depreciation, and other expenses. Net earnings are one of the most important measures of a company's performance, since the pursuit of earnings is the primary reason companies exist. Sometimes net earnings include one-time and extraordinary items, and sometimes it does not also called net earnings or net income or bottom line.

- **Retained earnings:**

In accounting, retained earnings refer to the portion of net income which is retained by the corporation rather than distributed to its owners. Similarly, if the corporation makes a loss, then that loss is retained. Retained earnings are cumulative from year to year.

Retained earnings are reported in the Shareholders' equity section of the balance sheet. A complete report of the retained earnings or retained losses is presented in the Statement of retained earnings or Statement of retained losses.

When assets are greater than liabilities, you have a positive equity (positive book value). When liabilities are greater than assets, you have a negative stockholders' equity also sometimes called stockholders' deficit. Stockholders' deficit does not mean that stockholders owe money that they may safely go away from such a company. It just means that the value of the assets of the company will have to rise above its liabilities before the stockholders will reap any value (above zero) from owning the company's stock.

GATHERING INVESTMENT INFORMATION

Introduction:

The business of choosing investments is an art rather than a science; there is no best way to do it, nor is there even a right or wrong way. Chapter seven and eight discussed the fundamental and the technical analysis school of though on stock selection. Chapter nine discussed market efficiency and why investor should be realistic with their expectations for the outcome of the investment research. Regardless of the stand investors taken on the matter of predicting the future, they need to organize their research efforts efficiently. This chapter provides a summary of some of the most popular reference material. Before using it though an investor needs a game plan.

RESEARCH PHILOSPHY:

Someone once said that it is hand to accomplish your goals until you know what it is you want to accomplish. This motto is a good one for the investment analyst to follow. The conduct of investment research should be a part of a boarder activity. As a preamble to the process of gathering information, an investor should ask two questions.

1. What kind of information do I want?
2. Why should this information be useful to me?

Keeping these thoughts in mind will contribute to a more discipline and logical approach to investment research.

Before conducting any research, formally decide what kind of information will be useful.

Know Thyself:

Most people have internal bases or preconceptions that are generally difficult to overcome. Perhaps some people are not even interested in trying to overcome all of them. Knowing their own attitudes towards various issues can be a big help in allowing investors to make productive use of their research time.

1. Fundamental Analysis:

An investor needs to consider the following question: Are you a fundamental analyst at heart? Do you believe the financial statements provide useful information and that the marketplace focuses on them in determining investment values? If so, an investor will want to investigate these accounting records.

The more someone explores and learn about accounting records, the more that person can learn from them. As shown previously, a firm can have rising net income at the same time its cash follow from operations is falling. The informed fundamental analyst knows that facts and will generally not be content with summary information of the type presented in some of the research sources described in this chapter. Anyone can do a cursory job of reviewing the numbers; the experts are going to work at it a lot harder than the hobbyist.

2. Technical Analysis:

A plethora of academic research exists showing the title relationship between some people technical indicators and subsequent stock market performance. Despite this discrepancy, many efficient market advocates are unwilling to dismiss technical analyst techniques; they routinely incorporate technical tools such as a chart into their decisions-making process. If some people truly believe technical analysis is of no value as the efficient market hypothesis indicates why would they read technical comments in investment advisory services or look at charts?

There is nothing wrong, with considering a particular type of information. Investors act illogically, however, when they say something is worthless but still spend time studying it. Looking charts is not a crime; there is no need to study them in the dark of night when no one is around.

To prove a thing is not enough; you must convince someone to accept it.

3. The Experts' Approach:

Some people would do well to realize that their investment decision are largely made on the basis of what someone else says and are seldom the result of their own research. Much of the research emanating from brokerage houses and investment advisory services is quite good. Investors should consider it carefully and give it substantial weight in security selection.

Screening:

Understanding personal attitudes toward the investment selection process is helpful in constructing a useful sector of the security universe. Screening is the term used to describe the process of sorting though the list of potential investments. The use of some type of screen is almost always necessary in security selection, because too many different alternatives make through investigation of them all impossible, even with the aid of a computer.

Not only are thousands of potential investment listed on the New York NASDAQ Exchanges, thousands more are traded in the over-the-counter market. An investor who spent five minutes looking at each of 500 possible picks would need 2,500 minutes (a 40 hour work week) to check out this sample.

The reminder of this chapter will look at some of the most important sources of information to both the individual investor and to the security analyst.

Screening is the process of sorting through the list of potential investments.

RESOURCES AT THE LIBRARY:

Newcomers to the business reference section of the library quickly discover that two names dominate much of the stock market reference material on the shelves: Standard & Poor's and Moody's. These two companies are widely respected and, to a large extent, duplicate each other's services. Many people eventually develop a preference for one company's material over the other, becoming either an "S&P person" or a "Moody's person". Both companies provide excellent material.

Standard & Poor's and Moody's publish easy-to-use reference material that can be found in most public libraries.

Standard and Poor's Publications:

The Standard & Poor's Corporation publishes a wide variety of reports on the company, on industries and on about 5,500 individual stocks. Seven of these publications can be especially useful in helping from investment decisions.

1. ***Stock Guide:***

The S&P Stock Guide is published monthly; it contains summary statistics on several thousand common stock, preferred stocks, warrants, and mutual funds. This publication is small enough to carry conveniently in a coat pocket.

Most users of the Stock Guide use to get a company's stock symbol, its line of business, its recent price, or its price earning ratio. It provides other information too, and for this reason is standard equipment in many briefcases.

Standard & Poor's rates a common stocks earning and dividends in the same manner as with bonds. Some historical price ranges appear after a brief description of the company's line of business. The next set of columns shows price activity for the previous month, followed by annualized total returns for the past 12, 36 and 60 months.

The company information continues across the fold of the booklet. The next two sets of columns give actual and indicated dividend information. Then come two columns of balance sheet information.

The last two sets of columns provide income statement information, focusing on earning. The guide shows earning for the last five years plus intern earnings for the fiscal year to date. The symbol "y" indicates the earning shown are fully diluted rather than primary.
A number of footnotes and other codes are used and may be important in the listing.
The paragraph mark indicates the company is part of the S&P 500 index. The symbol indicates options trade on the stock, the superscript indicates cycle two on the Chicago Board Options Exchange (option expiring in March, June, September and December). The check mark indicates "stock for which research reports, investment reports or street reports are available".

Information about stock split and stock dividends from the last five years appears in footnotes on the right side of the listing. While a complete stock analysis will require more information than that presented in the stock guide, a substantial amount of information lies within its pages. It is a handy tool for investors.

2. ***Stock Report:***

If an investor needs more information than the stock guide provides, the S&P stock report is a good place to go next. This one page front and back document provides a surprisingly through description of a company and estimate of what the future holds for it. These reports are updated quarterly and appear in a loose-leaf binder in most public libraries. Many investors like graphs, as discussed earlier. The Stock Report provides a bar graph of the stock price along with the line graph showing 10 and 30 week moving averages and relative

strength line. Standard & Poor's recently begin providing a specific option on the stock it follows.

A few paragraphs indicate current corporate events, statistical data, and anticipated future activities. The flip side of the report is more detailed balance sheet and income statement information than provided in the Stock Guide. Note in the "ratio analysis" section that five commonly used financial indicators appear: a liquidity ratio (the current ratio), a debt ratio (percentage of capital from long term debt) a profit margin (net incomes as a percent of revenues) and two profitability measures (ROA and ROE). The footer provides a corporate address, telephone number and name of the corporate officers.

It is logical to compare these ratios with industry average reported in Dun & Bradstreet's key business ratio as we did in the chapter on fundamental analysis. If an investor asks a broker or investment advisor for information on a particular company, a copy of the S&P stock report is a likely candidate for emulsion in the information packet. The stock report is available on every stock traded on the New York and American stock exchanges, and on more than 1,000 NASDAQ securities.

3. Bond Guide:

The S&P bond guide is a companion publication in the stock guide. It contains summary information about corporate and many municipal debt issues.

4. Outlook:

The S&P outlook is a weekly loose-leaf publication providing summary options and statistics on a variety of stock and bond market indicators as well as individual issue. Weekly section includes rising and falling stars, rapid growth stock, and stocks with high dividend growth. One industry is usually highlighted for special comment in each issue.
We see a short summary of Standard's and Poor's thought about the appropriate investment behavior at present. The graph shows fewer firms raising dividends, a relationship followed by technical and fundamental analysis alike.

5. Stock Market Encyclopedia:

The S&P stock market encyclopedia contains a description of each of the stocks making up the S&P 500 stock market index. It is a competition of the appropriate S&P Stock Reports.

6. Earning Forecaster:

The S&P earning forecaster is a competition of the earning per share estimates of about 60 investments analysis firm. The publication covers approximately 1,600 different stocks. Of particular interest to investor are those firms that show a change in the earning estimate.

7. Corporation Records:

S&P Corporation Records provides a comprehensive summary of the firm's capital structure. The terms of its debt agreements, a listing of subsidiaries, and recent news reports about the firm arranged alphabetically by firm (about 7,000) in seven loose-leaf volumes. New security issue and bond rating changes receive particular attention. It comes with a daily, weekly and biweekly cumulative index. The corporation records are published annually with daily updates.

Mergent / Moody's Publications:

Moody's is a well-known statistical service that was recently acquired by Mergent Inc. These publications are likely to be known by both names for a number of years.

1. ***Manuals:***

While investors can satisfy most quickly information needs whit the stock reports, the stock guide on the Bond guide, on occasions they cannot find what they need in these sources. Moody's manuals are a good place to turn next. This publication contains several sets of volumes: one each on industrial firms, municipals and governments, over-the-counter industrial, public utilities, transportation issues banking and finance, and international firms. An especially common problem is when an investor seeks information about a company that does not have publicity traded stock because the firm is subsidiary of another company or because the firm is privately held. The blue pages section in the Moody's Manuals book contains a cross reference of subsidiaries. Look up Taco Bell for instance, and you will find that this firm is a subsidiary of Pepsi Co.

Moody's Manual also contain detailed news reports about a firm, more detailed financial statements, another relevant information that is not included in the S&P stock report because of space limitations. This information source is a heavy book, expensive to acquire, and not conveniently taken far from its shelf.

Most quick information needs can be satisfied with the S&P Stock Report, Stock Guide, or Bond Guide.

2. ***Dividend Record:***

When it is necessary to investigate the recent dividend history of a company (payment dates, ex-dividend dates, etc.), Mergent Dividend Record is one of the most convenient place to get this information quickly. The reference room in most public libraries carries this weekly service.

3. ***Bond Record:***

Mergent Bond Record is a comprehensive document on virtually all aspects of debt securities. It provides the Moody's bond rating, interest payment dates, sinking fund provisions, call dates, the historical high and low price of the bond, and the bond's yield to maturity. It also contains a listing of municipal securities by state.

4. ***Handbook of Common Stock:***

Moody's handbook of common stock is much like the S&P stock market encyclopedia. It is broader, though, covering about 950 stocks "with high investor interest", according to the introduction. The stock report is a single page front and back, while the write up in the handbook is a single page that comes out quarterly.

COMPANY INFORMATION:

Numerous publications are required for publicly traded firms. Because the financial statements are audited, investors can generally place substantial reliance upon them. Company publications are usually free sources to anyone who requests them.

Annual Reports:

Every publicly traded company issues an annual report. An annual report is a useful publication containing a statement from corporate management about results from the previous year and about prospects for the future. Financial statements appear here too. Readers will also find information about most of the firm's principal activities including its subsidiaries.

One of the first items in the annual report is the president's letter to the shareholders. This document usually runs one page or it can run much longer and be annotated with graphs and tables.

One of the traditional shareholder rights is the right to vote on matter of interest to the corporation. Whenever a vote is to be held, shareholders have the option of voting in person at a company meeting or voting by proxy (the choice made by most investors). Accompanying the announcement of a forthcoming vote is the proxy statement which outlines the matter to be decided and management's position on them.

In recent years an increasing number of shareholders proposals have been included in the proxy statement. Any shareholder has the right to arrange for a question to be included in the proxy statement. Shareholder initiatives usually fail but often make for the most interesting reading in the proxy statement.

Many annual reports can be ordered by calling a toll-free number listed in the WSJ.

SEC Filings:

The Securities and Exchange Commission requires certain technical filing that may also be helpful to investors and analysts.

1. ***10-K Report:***

The 10-K report is the Securities and Exchange Commission equivalent of the annual report. It contains more detailed financial information here than in the annual report. A shareholder is entitled to receive a copy of the 10-K report at no charge. Some firms will provide them to anyone who asks whether they are a shareholder or not. A full service brokerage firm will usually provide their customers any 10-K they request at little or no charge.

2. ***10-Q Report:***

The 10-Q report is the quarterly equivalent of the 10-K report. It contains much less information than the 10-K but has the advantage of being the most current performance figures. Shareholders may receive these reports upon request.

3. ***Schedule 14A:***

Schedule 14A is the firm's proxy statement for shareholders. It can be of interest to potential investors for two reasons. First it lists the company's board of director's and tells you something about them. Many investors find an impressive accomplished board of directors a reassurance that management's decisions will be wise and not half cocked. The second piece of potentially useful information is the stock holdings of the corporate officers and directors. When these people have a substantial ownership interest in the firm stock. It

seems they would be less likely to put shareholders wealth in jeopardy by ill-conceived or un-usually risky ventures.

4. Form 144:

Form 144 is another SEC document that investors often review. A corporate insider who intends to sell some of their personal share must file this "intent to sell" document. While insiders frequently sell to raise cash like anyone else it can be thought provoking if a number of insiders are reducing their holdings in their firm's stock.

The Prospectus:

Corporations often issue new debt securities sell more stock acquire another firm or spin off a subsidiary. Actions of this sort usually require complete disclosure of the terms of the transaction and often shareholder approval. The prospectus is the document that outline the terms of the intended transaction.

Sometimes the final details of a transaction are not known in time for the prospectus mailing. A preliminary prospectus is called a red herring because of its traditional red lettering around the front cover.

Any investor considering the purchase of a newly issued security particularly from a firm with no other publicly traded securities should find the prospectus crucial. For one thing little else is likely to be available for study beyond news releases or stories in the financial press. The prospectus should provide a complete outline of the firm's plans for the capital and a projection of future operating results an investor's own analysis will help in deciding whether the projections are reasonable and if their present value is sufficient to justify the offering price.

The prospectus tends to be written in a conservative fashion. Companies try to cover every risk in this document because our litigious society seems anxious to blame someone else when things go wrong. Companies are sometimes forces to reimburse someone's investment losses because of "undisclosed risks" in the prospectus.

INVESTMENT LETTERS:

Besides company provided information and library reference material investors often consider publications that make investment recommendations or forecasts. These other publications generally fall into two categories. One category includes services that offer specific investment recommendations such as "buy, sell or hold". Another category is more general although recommended investor behavior may still be suggested.

Advisory Letters:

1. Value Line:

One of the best known subscription services is the Value Line Investment Survey. This week publication follows about 1700 common stocks and rates each of them in two categories timelines and safety. The expanded version covers over 6000 stocks.
The timelines ranking refers to precisely what you would expect the advisability of buying this stock now. The safety ranking refers to the confidence the Value Line analysis has in their forecast about the firm.

Statements such as "Value Line rates the stock 1 and 2" are commonly heard. The timelines ranking is normally mentioned first which means Value Line ranks this particular stock 1 for time lines and 2 for safety. In other words Value Line feels the future price appreciation of this stock will rank in the top 100 of the 1700 followed in the basic survey the safety ranking indicates they are rather confident about their estimate.

The quality of Value Line's research is excellent. Many market analysts attach considerable significant to the Value Line report on a stock. This section provides a useful screening tool. Someone might be interested in a stock prices below $15 rated at least 3 for timelines and a PE below 25. The stock price and the timelines rating are beside each other in the index, and an investor could quickly scan through the 1700 companies to find those that pass the screen.

Value Line also ranks the approximately 100 industries contained within its securities universe. The industry ranked 1 is the most attractive with higher numbers being less attractive.

Each company covered by Value Line receives one full page of coverage. The graph at the top is similar to the one from the S&P Stock Report. Many investors like to follow trends in a firm's cash flow the Value Line graph shows cash flow per share for the last 15 years. Value Line ranks the stock 5 and 1 meaning lowest for price performance in the next twelve months and highest for safety.

Note in the analysis comments the point that the firm has had a difficult 18 months. Note also that the analyst Stephen Sanborn has CFA after his name. CFA stands for Chartered Financial Analyst a professional designation that is rapidly becoming a mandatory credential for newcomers into the investment research or money management business. The CFA program is discussed in greater detail in the last chapter in the book.

2. Institutional Brokers Estimate System:

The Institutional Broker Estimate System is commonly referred to as I/B/E/S. This service compiles the earnings estimates of security analysts providing both individual estimates and a median result. The range of estimates appears too with the most pessimistic and most optimistic estimates highlighted. The I/B/E/S database is updated weekly and contains both a brief report and an expanded report with values from the prior three weeks. Subscribers can access it online at www.ibes.com.

3. Zack's:

Zack's Investment Research produces the Corporate Earnings Estimator a competitor of the S&P Earnings Forecaster. This publication is popularly referred to simply as Zack's. Like the Earnings Forecaster it compiles earnings estimates from about 60 different brokerage firms on a total of about 3000 stocks. A great deal of the publication deal with changes in earning estimates. The data on each covered security concludes with Zack's consensus on expected future earnings. Zack's is a bi weekly publication.

4. Brokerage Information;

Another important information source is the research department at brokerage firms. All full service brokerage firms (and some discount firms) have an in house research capability. Investors can request a report on a particular company or give their brokers a list of securities of interest and ask to receive reports on these firms as they are produced.

The Popular Press:

1. ***The Wall Street Journal:***

The wall street journal probably needs no description. Even non-investors have usually heard of it and seen it at the newsstand. The journal appears in three sections. The first section is a general overview of the top domestic and international news. Dow Jones calls the second section "Marketplace" and describes its content as "How companies complete and sell how managers and consumer cope". This section contains in index of all companies mentioned anywhere in that day's edition of the paper. The third section "Money & Investing" contains the bulk of the financial data closing price, indexes, exchange rates, earnings reports and more.

2. ***Barron's:***

Barron's is like a weekly version of The Wall Street journal with less coverage of political events and general news and more coverage of financial statistics. It contains a great deal of market statistical data which is one of the reason s it is so popular Dow Jones publishers both the WSJ and Barron's both publications are available at most newsstands.

The part of Barron's that some investor's use the most is the "Market Laboratory" section a complete and complex collection of market statistic snot easily found elsewhere. The technical analyst finds a lot of interesting material here.

3. ***Investors Daily:***

Investors Daily is a competition of the WSJ it is rich with financial statistics and detail on individual securities. This newsprint publication is quite common in New York City, Chicago, and other financial centers but is less common in other areas.

4. ***Forbes:***

Forbes is a popular twice monthly magazine directed almost exclusively at the investor. A thick magazine the articles include corporate case studies, profiles of prominent executives investment tutorials and a variety of excellent columns designed to educate the invoice and professional alike.

5. ***Smart Money:***

Another Dow Jones publication is Smart Money an excellent relatively new magazine. No matter what the level of market solicitation investors is likely to find something of interest in virtually every issue. The magazine is inexpensive and will help anyone be better informed.

6. ***Other Magazine:***

Numerous other sources can also be extremely useful. Many people are loyal subscribers to Money Magazine, The Economist, Fortune, Business Week or Financial World. All are respected publications covering a wide range of investment related topics.

Some who is a genuine student of the financial markets will find the Financial Analysis Journal useful and informative. This quasi-academic journal features a good mix of articles from professors and practitioners in each issue. It is published six times per year. Many

academic journals are inaccessible to the average investor; the FAJ is an exception and well worth its subscription price. It is a publication of the Association for Investment Management and Research and is well know to those involved with the Charted Financial Analyst program.

International Investor is an expensive publication; current regular rates are $ 405 per year. This magazine is for seasoned money managers; its articles are not tutorial in nature. Rather, they deal with strategic investment issue, with the legal and regularity framework, and with complex institutional issues. Still, anyone interested in the capital market is likely to find something useful and interesting in virtually every issue.

7. Television:

Louis Rukeyser and Frank Capiello, popular names in the investment community host a popular weekly television show called "Wall Street Week". A public television production, it is 30 minutes of market analysis highlighted by an interview of prominent Wall Street Figure each week, complete with probing questions by the hosts.

During the business day many county club snack bars, airport, kiosks and office waiting rooms tune to the Financial News Network. The exchange tickertape runs continuously across the bottom of the screen while commentators give updates on what is going on in the world markets.

COMPUTER SERVICES:

Computer services fall into groups. One group is primarily used for securities screening and is a static database with periodic updates. This type usually augments the result of the other security selection activities.

Screening Services:

1. Value Line Investment Survey Windows:

Both the basic and the expended versions of Value Line are available online with weekly updates. Users can screen the entire Value Line database by dozen variables and rapidly reduce the security universe to a workable number. Value Line provides a number of subjects of the database, including such handy groupings as timely stocks in timely industries and stock moving up in rank. The program also permits the preparation of statistical summaries and detailed tabular reports. This is a very handy tool by many investors and investment advisors.

2. Compustat:

Academic researchers know the S&P Compustat tapes. There are both mainframe computer and microcomputer versions of this information source. Both types enable the screening of thousands of stocks for specific financial statement information. The screen can include anything from familiar statistics. Like the current ration or retained earnings, to less frequently used values such as unfunded pension liabilities. Accounting researcher use this service in conjunction with lest of the market's response to accounting changes. At least 150 categories of information are available on more than 6,500 firms in the compustat database.

3. CRSP Tapes:

The University of Chicago's Center for Research in Security Prices produces a set of computer tapes commonly known as the CRSP tapes, pronounced "crisp". This data set contains data on all New York Stock Exchange stocks from 1926 to the present. Much of the academic research produced at leading research universities throughout the world relies on CRSP data.

4. ***Expended Academic Index:***

An increasing number of public libraries are establishing connections to large database. One particularly useful database for the investor is the Expended Academic Index. This index includes details on the articles in more than 2,500 journals. The user can screen through the entire database by title, author, subject, or key word For example, a recent search of the index for the subject "earning" produced 255 entries, ranging from the New York Times, PC Week, and a number of academic journals. Author search on "price earning ration analysis" produced 65 articles with these words in the title.

5. ***Disclosure:***

Disclosure, Inc. produces a CD-ROM disk containing a wealth of company information. For each covered firm, investor can obtain a company profile, its line of business, the exchange on which its stock trades, its five year growth in sales and net income, and many financial statement details. Investor can also search the database using their own criteria. For instance, in a search for electric utilities in the state of the New York, the system will find this information in a matter of seconds. Disclosure is particularly helpful when looking for other terms comparable to a particular firm of interest.

Online Computer Services:

1. ***CompuServe, Yahoo and American Online:***

These services provide ready access to historical price database and to analyst's estimates. Via CompuServe or Yahoo! For instance a subscriber can access historical price information on virtually any listed security and on most NASDAQ issues. The L/B/E/S database is also accessible to determine consensus growth rates or review company profile through S&P Online. These services provide price quotations that are usually delayed 15 or 20 minutes rather than real time prices. Delayed quotations are much cheaper to provide.

SEMINARS:

Brokerage Firms:

In most communities, the local brokerage firms hold periodic educational seminars for their current and prospective customers. These seminars often feature one of their research stars from New York or one of the firm's mutual fund managers. Even though such seminars always involve a bit of a sales pitch, they invariably are enjoyable and informative.

Bank Trust Department:

Band trust departments do the same thing as the brokerage firms. Evening seminars are an attractive way to motivate existing clients and to persuade other in the community to take

advantage of their bank's trust department. The trust department has investment people in addition to legal people, and these seminars often include a blend of both investment issues and estate planning topics.

Employee Relation Programs:

Because financial security is associated with good employee moral, some firms make it a practice of providing investment information as part of the overall corporate benefits package. These information sessions may be during the day or evening, but are free benefit to the employee.

Exchange Seminars:

The securities exchanges also get into the act by offering, educational sessions throughout the year. Sometime the exchanges charge a free for these events; sometimes they are free. These sessions can range from basic information on how the stock market works to technical discussions on risk management at financial institutions.

Summary:

A research philosophy is helpful in marketing the best use of research time. Many analysis use a combination of fundamental, technical and wise man techniques. Regardless of the approach taken, analyst/investors need to decide upon what type of information they want to gather and to be clear why this information should be useful.

Stock screening is necessary in order to reduce the huge number of possible investments to smaller number that can be investigated carefully. Standard & Poor's and Moody's are the two big names in investment sources found in libraries. These two services largely duplicate each other.

Companies prepare annual reports to their shareholders and report to the SEC, all of which can be useful in forming investment decisions. Some companies make their annual reports available to WSJ readers via a toll-free call.

Many investment letters that offer investment advice are available. The Value Line Investment Survey is among the best known of these. Many people are especially interested in Value Line's timeliness and safety ranking of a stock.

Earnings forecasts are the meat of the I/E/B/S and Zack's services. A great many other sources of information are available through magazines, newspapers, or television shows.
Computer services fall into two main groups: static services for security screening and dynamic, online services providing current information. Yahoo!, Disclosure, the Expanded Academic Index, and the Value Line Investment Survey for Windows are particularly popular.

INDIRECT INVESTING

Investing Indirectly:

Indirect investing in this discussion usually refers to the buying and selling of the shares of investment companies' that, in turn, hold portfolios of securities. Most of our attention is focused on investment-companies, arid mutual funds in particular, because of their importance to investors. However, we will conclude the chapter with a discussion of Exchange-Traded Funds (ETFs), which represent a bridge between direct and indirect in vesting. Investors buy ETFs like any other stock, but many ETFs can be compared to index mutual funds.

The decision of whether to invest directly or indirectly is an important one that all investors should think about carefully. Because-each alternative has possible advantages arid disadvantages, it is not necessarily easy to choose one over the other. Investors can be, active investors, investing directly, or passive investors, investing indirectly. Of course, they can do both at the same time, and many individuals do exactly that!

An investment company such as a mutual fund is a clear alternative for an investor seeking to own-stocks and bonds. Rather .than purchase securities and manage a portfolio, investors' can, in effect, indirectly invest by turning their money over to an investment company which will do all the work and make all the decisions (for a fee,-of course). Investors who purchase shares of a particular portfolio managed by an investment company

The primary difference is that the investment company stands between the investors and the portfolio of securities, Although technical qualifications exist, the point about indirect investing is that investors gain and lose through the investment company's activities in the same manner that they would gain and lose from holding a portfolio directly. The differences are the, costs (any sales charges plus the management fee) and the benefits which consist of additional services gained from the investment company, such as recordkeeping and check-writing privileges.

The line between direct and indirect investing is becoming blurred. For example, investors can invest indirectly by investing directly— 'that is, they can buy various mutual funds through their brokerage accounts. This is explained at the end of the chapter when we discuss fund "supermarkets." And, as noted above, ETFs have characteristics of both direct and indirect investing.

What Is An Investment Company?

An investment company is a financial service organization that sells shares in it to the public and uses the funds it raises to invest in a portfolio of securities such as money market instruments or stocks and bonds. By pooling the funds of thousands of investors, a widely diversified portfolio of financial assets can be purchased and the investment company can offer its owners (shareholders) a variety of services.

A regulated investment company can elect to pay no federal taxes on any distribution of dividends, interest, and realized capital gains to its shareholders. The investment company acts as a conduit, "flowing through" these distributions to stockholders who pay their own marginal tax, rates on them. In effect, fund shareholders are treated as if they held the

securities in the fund's portfolio. Shareholders pay the same taxes they would pay if they owned the shares directly.

Fund taxation is unique with income taxed only once when it is received by its shareholders. A funds short-term gains and other earnings are taxed to shareholders as ordinary income, whereas its long-term capital gains are taxed to shareholders as" long-term, capital gains. Tax-exempt income received by a fund is generally tax exempt to the shareholder.

Investment companies are required by the Investment Company Act of 1940 to register with the Securities and Exchange Commission (SEC). This detailed regulatory statute contains numerous provisions designed to protect shareholders. Both federal and state laws require appropriate disclosures to investors.

It is important to note that investment companies are not insured or guaranteed by any government agency or by any financial institution from which an investor may obtain shares. These are risky investments, losses to, investors can and do occur (just think 2000 to 2002), and investment companies' promotional materials state this clearly.

Types of Investment Companies:

All investment companies begin by selling shares in themselves to the public. The proceeds are then used to buy a portfolio of securities. Most investment companies are managed companies, offering professional management of the portfolio as one of the benefits. One less well-known type of Investment Company is unmanaged. We begin here with the unmanaged type and then discuss the two types of managed investment companies. After we consider each of the three types, we focus on mutual funds, the most popular type of investment company by far for the typical' individual investor.

Unit Investment Trusts:

An alternative form of. Investment Company that deviates from the normal managed type is the unit -investment trust, (OIT), which typically is an unmanaged, fixed-income security portfolio put together by a sponsor and handled by an independent trustee. Redeemable trust certificates representing claims against the assets, of the trust are sold to investors at net asset value plus a small commission. All interest (or dividends) and principal repayments are distributed to the holders of the certificates. Most unit investment trusts hold either equities or tax-exempt securities. The assets are almost always kept unchanged, and the trust ceases to exist when the bonds mature, although it is possible to redeem units of the trust.

In general, unit investment trusts are designed to be bought and held, with capital preservation as a major objective. They enable 'investors to gain diversification, provide professional, management that takes care of all the details, permit the purchase of securities by (he trust at a cheaper; price than, if purchased individually, and ensure minimum operating costs.. If conditions change, however, investors lose the ability to make rapid, inexpensive, or costless changes in their positions.

Closed-End Investment Companies:

One of the two types of managed investment companies, the closed-end investment company, usually sells no additional shares of its own stock after the initial public offering. Therefore, their capitalizations are fixed, unless a new public offering is made.
The shares of a closed-end fund trade in the secondary markets (e.g., on the-exchanges) exactly like any other stock.[10] To buy and sell, investors use their brokers, paying

(receiving) the current price at which the shares are selling plus (less) broker age commissions.

Open-End Investment Companies (Mutual Funds):

Open-end investment companies, the most familiar type of managed company are popularly referred to as mutual funds and continue to sell shares to investors after the initial sale of shares that starts the fund. The capitalization of an .open-end investment company is continually changing—that is, it is open-ended—as new investors buy additional shares and some existing shareholders cash in .by selling their shares back to the company.

Mutual funds typically are purchased either:

1. Directly from a fund company, using mail or telephone, or at the company's office locations.
2. Indirectly from a sales agent, including securities firms, banks, life insurance companies, and financial planners.

Mutual funds may be affiliated with an underwriter, -which usually has an exclusive right to distribute shares to investors: Most underwriters distribute shares through broker/dealer firms.

Mutual funds are either corporations or business trusts typically formed by an investment advisory firm that selects the/board of trustees (directors) for the company. The trustees, in turn, hire a separate management company, normally the investment advisory firm, to manage the fund. The management company is contracted by the investment company to perform necessary research and to manage the portfolio, as well as to handle the administrative chores, for which it receives a fee.

Major Types of Mutual Funds:

The general range of mutual funds arrayed along a return-risk spectrum. As we can see', money market funds are on the lower end; and bond funds and balanced funds (which hold both bonds and stocks) are in the middle. Stock funds are on the upper-end of the risk-return spectrum.

There are two major types of mutual funds:

1. Money market mutual funds
2. Stock (also called equity) funds and bond & income funds

These types of funds parallel of money markets and capital markets. Money market funds concentrate on short-term investing by holding portfolios of money market assets, whereas stock funds and bond & income funds concentrate on longer term investing by holding mostly capital market assets. We will discuss each of these two types of mutual funds in turn.

Money Market Funds:

A major innovation in the investment company industry has been the creation, and subsequent phenomenal growth, of money market funds (MMFs), which are open-end investment companies whose portfolios consist of m6ney market instruments. Created in 1974, when interest rates were at record-high levels, MMFs grew rapidly as investors sought to earn

these high short-term rates. However,-with- the deregulation of the thrift institutions, competition has increased dramatically for investors' short-term savings. Money market deposit accounts (MMDAs) pay competitive money market rates and are insured, and therefore have attracted large amounts of funds. Nevertheless in August 2002, money market mutual fund assets approximated $2.3 trillion.

Money market funds can be divided into taxable funds and tax-exempt funds. Approximately 85 percent of these assets are in taxable funds. Investors in higher tax brackets should carefully compare the taxable equivalent yield on tax-exempt money market funds with that available on taxable funds because the tax-exempt funds often provide an edge.

Taxable MMFs hold assets such as Treasury bills, negotiable certificates of deposit (CDs), and prime commercial paper. Some funds hold only bills, whereas others hold various mixtures. Commercial paper typically accounts for 40 to 50 percent of the total assets held by these funds, with Treasury bills, governmental agency securities, domestic and foreign bank obligations, and repurchase agreements rounding out" the portfolios. The average maturity of money market portfolios ranges from approximately one to twp months. SEC regulations limit the maximum average maturity of money funds to 90 days.

Stock Funds and Bond A Income Funds:

The board of directors (trustees) of an investment company must specify the objective that the company will pursue in its investment policy! The companies try to follow a consistent investment policy according to their specified objective. Investors purchase mutual funds on the basis of their objectives.

The Investment Company Institute, a well-known organization that represents the investment company industry, uses multiple major categories of investment objectives, most of which are for equity and bond, & income funds (the remainder are-for money market funds as previously explained).

Mutual Funds:

Some mutual funds use a sales force to reach investors, with shares being available from brokers, insurances agents, and financial planners. In an alternative form of distribution called direct marketing, the company uses advertising and direct mailing to appeal to investors. About 60 percent of all stock, bond; and income fund sales are made by funds using a sales force.

Mutual funds can be subdivided into:

1. Load funds (those that charge a sales fee)
2. No-load funds (those that do not charge a sales fee)

INVESTMENT COMPANY PERFORMANCE:

Measures of Fund Performance:

Throughout this text we will use total return to measure the return from any financial asset, including a mutual fund. Total return for a mutual fund includes reinvested dividends and capital gains, and therefore includes all of the ways investors make money from financial

assets. It instated as a percentage or a decimal, and can cover any time periods-one month, one year, or multiple years.

A cumulative total return measures the actual cumulative performance over a stated period of time, such as the past 3, 5 and 10 years. This allows die investor to assess total performance over some stated period of time.

Investing Internationally Through Investment Companies:

The mutual fund Industry has become a global industry. Open-end funds around the world have grown rapidly, including emerging market economies. Worldwide assets as of mid-2002 were approximately $11.6 trillion. About 42 percent of worldwide mutual future assets were invested in equity funds and another 26 percent in money market funds.

Aggregate mutual fund assets in Europe amount to about one-third of the world total. .In Latin America, roughly one of every 200 people owns a mutual fund (compare to one in three in the United States). In Japan, mutual fund assets approximate one-half trillion dollars. In early 1999, there were more than 41,000 funds worldwide.

U.S. investors can invest internationally by buying and selling both mutual funds and closed-end funds whose shares are traded on exchanges. Funds that specialize in international securities have become both numerous and well known in recent years.

1. So-called international funds tend to-concentrate primarily on international stocks. In one recent year, Fidelity Overseas Fund was roughly one-third invested in Europe and one-third in the Pacific Basin, whereas Kemper International had roughly one-sixth of its assets in each of three areas, the United Kingdom, Germany, and Japan.
2. Global funds tend to keep a minimum of 25 percent of their-assets in the United States. For example, in one recent year, Templeton World Fund had over 60 percent of its assets in the United States and small positions in Australia and Canada.

Most mutual funds that offer "international" investing invest primarily in non U.S. stocks, thereby exposing investors to foreign markets, which may behave differently from U.S. markets. However; investors may also be exposed to currency risks. An alternative approach to international investing is to seek international exposure by investing in U.S. companies with strong earnings abroad, which is a natural extension of the globalization concept.

INDIRECT INVESTING Contd…

Exchange-Traded Funds (ETFs):

A new investing trend of increasing importance is the exchange-traded funds (ETFs). These new financial assets have some characteristics of index mutual funds, closed-end funds, and even individual stocks.

An ETF is a basket of stocks that tracks a particular sector, investment style, geographical area, or the market as a whole. As of August 2002, there were approximately 125 ETFs, with perhaps $100 billion in assets. Although this, is tiny compared to the assets in mutual funds, the growth rate in assets for ETFs has been impressive, as more and more investors discover them.

Like an index mutual fund, ETFs to date are passive portfolios (although actively managed ETFs are under consideration) that simply hold a basket of stocks. Unlike a mutual fund, however, and like a stock or a closed-end fund, an ETF trades on an exchange throughout the day, and can be bought on margin and sold short. And like a closed-end fund, ETFs can trade at discounts and premiums, but to date, the differences between NAV and price have been tiny, and this will almost certainly continue to be the case because of the unique mechanisms that were developed to create and liquidate ETF shares.

Let's consider some ETFs. Probably the best-known ETF is the "Spider" (Standard & Poor's Depositary Receipts, SPDRs), which was introduced in 1993 to reflect the S&P 500 Index. SPDRs are traded on the Amex, and priced continuously during the day Other ETFs include "Diamonds" (the DJIA), "Cubes" (Nasdaq-100 Index Tracking Stock), and "Shares" (S&P 500 as well as other S&P indexes for small cap, mid-cap, and growth and value indexes, various Russell Indexes, various Dow Jones Sector funds, and various country funds), there are 77 different Share ETFs. Vanguard, the investment company, created VIPERs to track the entire stock market.

The Required Rate of Return:

The required rate of return was the discount rate for valuing common stocks. The required rate of return for a common stock, or any security, is defined as the minimum expected rate of return needed to induce an investor to purchase it, is, given its risk, a security must offer some minimum expected return before par investor can be persuaded to buy it.

The CAPM provides investors with a method of actually calculating a required (expected) rate of return for a stock, an industry, or the market as a Our interest, here is to think of the required rate of return on an overall basis as it after the strategies that investors employ and the management of their portfolios.

What do Investors require (expect) when they invest? First of all, investor's can earn a riskless rate of return by investing in riskless assets such as Treasury bills. This nominal risk-free rate of return is designated RF throughout this text. It consists of a real risk-free rate of interest and an expected inflation premium. In summary, as an approximation:

Risk-free rate of .return =Real risk = free value f Expected Inflation

In addition to the risk-free rate of return available from riskless assets, rational risk-averse investors purchasing a risky asset expect to be compensated for this additional risk.

Therefore, risky assets must offer risk premiums above and beyond the riskless rate of return and the greater, the risk of the asset, the greater the promised risk premium must be.

The risk premium should reflect all the uncertainty involved in the asset. Thinking risk in terms of its traditional sources, such components as the business risk and the financial risk of a corporation would certainly contribute to the risk premium demanded by investor for purchasing the common stock of the corporation. After all, the risk to the investor is the expected income (return) will not be realized because of unforeseen events.

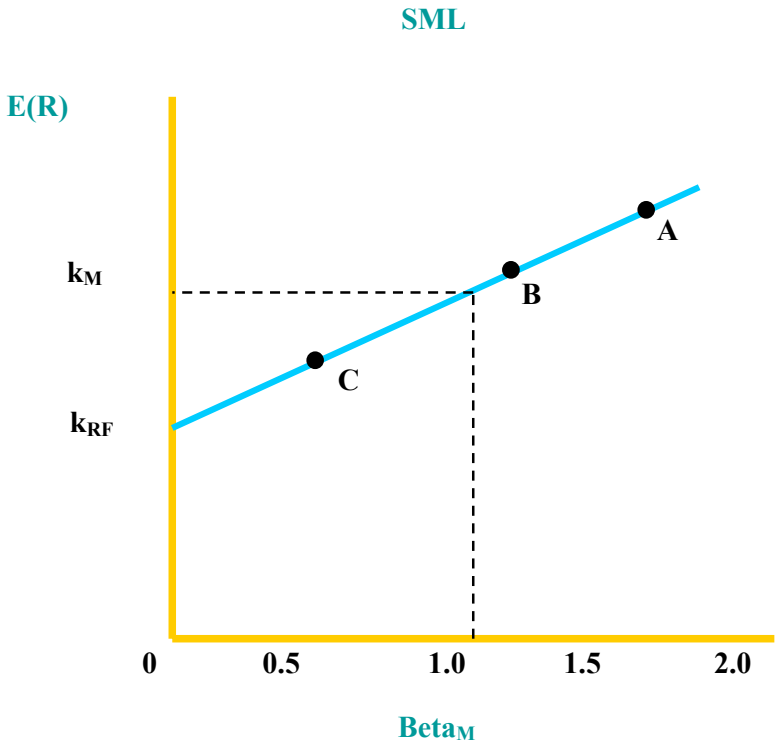
The particular business that a company is in will significantly affect the risk to the investor. One has only to look at the textile and steel industries in the last few years to appreciate business risk which leads to an understanding of why industry analysis is important. And the financial decisions that a firm makes (or fails to make) also affect the riskiness of the stock.

Understanding the Required Rate of Return:

The required rate of return any investment opportunity can be expressed as Equation. This is, in effect, CAPM model.

Required rate of return = Risk- free rate + Risk premium

It is important to note that there are many financial assets and therefore many different required rates of return. The average required rate of return on bonds is different from average required rate of return on preferred stocks, and both are different from the typical required rates of return for common stocks, warrants, or puts and calls. Furthermore within a particular asset category such as common stocks, there are many required rates of return. Common stocks cover a relatively wide range of risk from conservative utility stocks to small, risky high-technology stocks.



The trade-off between the required rate of return and risk is linear arid upward sloping that is, the required rate of return increases as the risk, measured by beta, increases; the stock market taken as a whole has a beta of 1.0, indicated by point M. The required rate of return for, all stocks is therefore k_M. A stock with a beta lower than 1.0 has a required rate of return below k_M, because its risk (beta) is less than that of the market. On the other hand, a stock with a beta greater than 1.0 has a required rate of return greater than that of the market.

It is also important to be aware that the level of required rates of return changes over time. For example, required rates t of return change as inflationary expectations change, because the inflation premium is a component of the risk-free rate of return, which in turn is a component of the requited rate of return. The level also changes as the risk premiums change. Investor pessimism will increase the risk premium and the required rate investor optimism lowers both.

COMMON STOCK: ANALYSIS AND STRATEGY

The Passive Strategy:

A natural outcome of a belief in efficient markets is to employ some type of passive strategy in owning and managing common stocks. If the market is highly efficient, impounding information into prices quickly and on balance accurately, no active strategy should be able to outperform the market on a risk-adjusted basis. The efficient market hypothesis (EMH) has implications for fundamental analysis and technical analysis, both of which are active strategies for selecting common stocks.

Passive strategies do not seek to outperform the market but simply to do as well as the market. The emphasis is on minimizing transaction costs and time spent in managing the portfolio, because any expected benefits from active trading or analysis are likely to be less than the costs. Passive investors act as if the market is efficient and accept the consensus estimates of return and risk, recognizing .current market price as the best estimate of a security's value.

An investor can simply follow a buy-and-hold strategy for whatever portfolio of stocks is owned. Alternatively, a very effective way to employ a passive strategy with common stocks-is to invest in an indexed portfolio. We will consider each of these strategies in turn.

Buy-And-Hold Strategy:

A buy-and-hold strategy means exactly that an investor buys stocks and basically holds them until some future time in order to meet some objective. The emphasis is on avoiding transaction costs, additional search costs, and so forth. The investor believes that such a strategy will, over some period; of time, produce results as good as alternatives that require active management whereby some securities are deemed not satisfactory; sold, and replaced with other securities. These alternatives incur transaction costs and involve inevitable mistakes.

Notice that a buy-and-hold strategy is applicable to the investor's portfolio whatever its composition. It may be large or small, and it may emphasize various types of stocks. Also note that an important initial selection must be made to implement the strategy. The investor must decide to buy stocks A, B, and C and hot X, Y, and Z.

It is important to recognize that the investor will, in fact, have to perform certain functions while the buy-and-hold strategy is in existence. For example, any income generated by the portfolio may be reinvested in other securities. Alternatively, a few stocks may do so well that they dominate the total market value of the portfolio and reduce its diversification. If the portfolio changes in such a way that it is no longer compatible with the investors risk tolerance, adjustments may be required. The point is simply that even under such a strategy investors must still take certain actions.

Index Funds:

An increasing amount of mutual fund and pensions fund assets can be described as passive equity investments. These asset pools are designed to duplicate as precisely as possible the performance of some market index. An index fund is an unmanaged fund designed to

replicate as closely as possible (or practical) the performance of a specified index of market activity.

A stock-index fund may consist of all the stocks in a well-known market average such as the S&P 500- Index. No attempt is made to forecast market movements and act accordingly, or to select under of overvalued securities. Expenses are kept to a minimum, including research costs (security analysis), portfolio manager's fees and brokerage commissions. Index funds can be run efficiently by a small staff.

1. The index Trust 500 portfolio consists of stocks selected to duplicate the S&P 500 and emphasizes large-capitalization stocks.
2. The. Extended Market Port/olio consists of a statistically selected sample of the 'Wilshire 4500 Index and of medium-and small-capitalization stocks.
3. The Total Stock Market Portfolio seeks to match the performance of all (approximately 7000) publicly traded U.S. stocks.
4. The Small Capitalization Stock Port/olio seeks to match the performance of the Russell 2000 Small Stock Index, consisting of 2000 small-capitalization stocks.
5. The Value Portfolio seeks to match the investment performance of the S&P/BARRA Value Index, which consists of stocks selected from the S&P 500 Index with lower than average ratios of market price to book value. .
6. The Growth Portfolio seeks to match the investment performance of the S&P 500/BARRA Growth Index, which consists of stocks selected from the S&P 500 Index with higher than average ratios of market price to book value.
7. The Total International Portfolio covers 31 countries across Europe, the Pacific, and emerging markets, and holds over 1500 stocks. The European Portfolio invests in Europe's 14 largest markets, whereas the Pacific Portfolio invests in the six most developed countries in the Pacific region. The Emerging Markets Portfolio invests in 14 of the most accessible markets in the less-developed countries.

The Active Strategy:

Most of the techniques discussed in this text involve an active approach to investing. In the area of common stocks, the use of valuation models to value and select stocks indicates that investors are analyzing and valuing stocks in an attempt to improve their performance relative to some benchmark such as a market index. They assume or expect the benefits to be greater than the costs.

Pursuit of an active strategy assumes that investors possess some advantage relative to other market participants. Such advantages could include superior analytical or judgment skills, superior information, or the ability or willingness to do what other investors, particularly institutions, are unable to do. For example, many large institutional investors cannot lake positions in very small companies, leaving this field for individual Furthermore, individuals' are not required to own diversified portfolios and are not prohibited from short sales or margin trading as are some institutions.

Most investors still favor an active approach to common stock selection and management despite the accumulating evidence from efficient market studies and the published performance results of institutional investors. The reason for this is obvious that the potential rewards are very large, and many investors feel confident that they can achieve such awards even if other investors cannot.
There are numerous active strategies involving common stocks. We consider the most prominent ones below. Because of its importance, we then consider the implications of market efficiency for these strategies.

Sector Rotation:

An active strategy that is similar to stock selection is group, or sector rotation. This strategy involves shifting sector weights in the portfolio in order to take advantage of those sectors that are expected to do relatively better and avoid or deemphasize those sectors that are expected to do relatively worse. Investors employing this strategy are betting that particular sectors will repeat their price performance relative to the current phase of the business and credit cycle.

An investor could think of larger groups as the relevant sectors, shifting between cyclical, growth stocks, and value stocks. It is quite standard in sector analysis to divide common stocks into four broad sectors: interest-sensitive stocks, consumer durable shocks, capital goods stocks, and defensive stocks. Each of these sectors is expected to perform differently during the various phases of the business and credit cycles. For example, interest-sensitive stocks would be expected to be adversely impacted during periods of high interest rates, arid such periods tend to occur at the latter stages of the business cycle. As interest rates decline, the earnings of the companies in this sector banks, finance companies, savings and loans, utilities, and residential construction firms should improve.

Defensive stocks deserve some explanation. Included here are companies in such businesses as food production, soft drinks, beer, pharmaceuticals, and so forth that often are not hurt as badly during[1] the down side of the business cycle as are other companies, because people will still purchase bread, milk, soft drinks, and so forth. As the economy worsens and more problems are foreseen, investors may move into these stocks for investment protection. These stocks often do well during the late phases of a business cycle.

Investors may view industries as sectors and act accordingly. For example, $ if interest rates are expected to drop significantly, increased emphasis could be placed on the interest-sensitive industries such as housing, banking, and the savings and loans. The defense industry is a good example of an industry in recent years that has experienced wide swings in performance over multiyear periods.

It is clear that effective strategies involving sector rotation depend heavily on an accurate assessment or current economic conditions. A knowledge and understanding of the phases of the business cycle are important, as is an understanding of political environments, international linkages among economies and credit conditions both domestic and international. Obviously, an insight into the expected performance of various industries or sectors is also necessary.

MARKET EFFICIENCY

The fair price function of the capital markets provides assurance that investors can sell stock at the going price and not be taken to the cleaners. A discussion of fair pricing inevitably leads to the efficient market hypothesis (EMH), the theory supporting the nation that market prices are in fact fair. The EMH is probably the single most important paradigm in finance.

Like technical analysis, market efficiency is a controversial part of finance. In an efficient market security prices are based on the available information so as to offer and expected return consistent with their level of risk. While most professors are convinced that the markets are quite efficient and that free lunches are as scarce as Ty Cobb baseball cards, some professional money managers believe otherwise. Capital market prices are presumed to be fair because they are the equilibrium result of the analyses of many people, each of whom is seeking to increase personal wealth. When a listed stock is put up for sale, hundreds of people can bid for it. The markets ensure that the seller trades with the highest bidder. Conversely, a buyer is confronted with numerous potential sellers, and the system ensures that the buyer's order is matched up with the best price, which from the buyer's perspective is the lowest price. The greater the number of participants and the more formal the marketplace, the more an investor is assured of a good (fair) price.

THE EFFICIENT MARKET HYPOTHESIS (EMH):

To speak intelligently about the efficient market hypothesis a person must under-stand what the hypothesis says and what it does not say. Efficiency can be categorized by both type and degree.

Types of Efficiency:

The two types of efficiency are operational efficiency and informational efficiency. Operational efficiency is a measure of how well things function in terms of speed of execution and accuracy. At a stock exchange, operational efficiency is measured by such factors as the number of orders lost or filled incorrectly and the elapsed time between the receipt of an order and its execution. All market participants are concerned with these matters, but the EMH does not refer to this type of efficiency.

Informational efficiency is a measure of how quickly and accurately the market[1] reacts to new information. New data constantly enter the marketplace via economic reports, company announcements, political statements, or public opinion surveys, to name a few sources. What does all this information mean? Is raising unemployment in the United Kingdom good or bad for holders of U.S. Treasury bonds? How about a company's announcement that it intends to split its stock five for one? Suppose the price of gold jumps $10 an ounce in one day, what effect, if any, is this event likely to have on stock prices?

We know security prices adjust rapidly and accurately to the news without the need to digest it very long. Sometimes the speed of adjustment is remarkably fast. For instance, the author was once sitting in a brokerage firm punching up his current stock on the Quotron machine. One of his holding was common stock in MGM Grand Hotel. The stock was trading at $10¼. At that very moment, across the room, the bell rang and the red light flashed on the Dow Jones News Service monitor, indicating hot news. The headline read, "Fire at the MGM Grand Hotel". In the seconds it took the author to walk from the service

monitor back to the Quotron machine, the stock fell to $7½, which is approximately where it remained the rest of the day.

One need not be a Mensa member to realize that a hotel fire is bad news. In an informationally efficient market, prices are going to react fast, just as they did in the MGM situation. An investor cannot expected to read about the fire in The Wall Street journal the following day and think, "Well, I'll bet that hammers the stock; I'd better sell," and then expect to find that the market is still trying to sort out the news. Prices would have dropped long ago.

Because the market is efficient, the meaning of the news is discovered quickly, and prices adjust. Students in an investments course are sometimes disappointed to learn that simply taking a stock market course does not ordain them with the power to read the financial pages and fluently pick stocks that will double in price by next week. Things do not work that way.

Still, the market is not completely efficient. It still rewards people who process the news better than the next person. For one thing, not everyone has access to the same news, nor does everyone receive the news in a timely fashion. Because of this discrepancy, market participants commonly talk about three forms of the EMH, each of which is based on the availability of a different level of information.

The efficient market hypothesis is one of the most important paradigms in finance.
The efficient market hypothesis deals with informational efficiency, which is a measure of how quickly and accurately the market digests new information. It is well established that the market is informationally efficient.

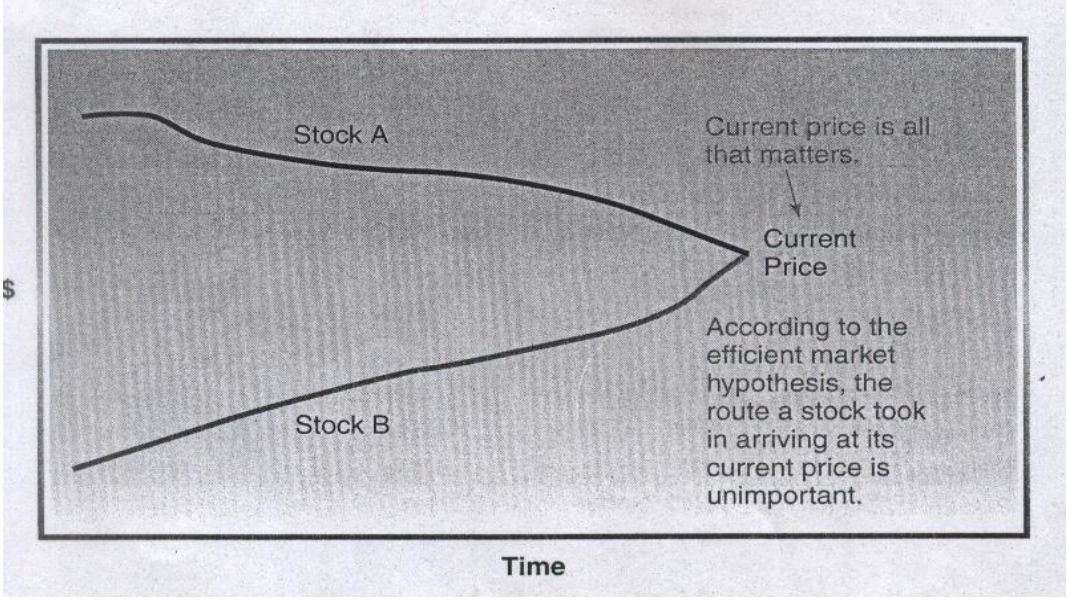
Degrees of Informational Efficiency:

1. **Weak form Efficiency:**

The least restrictive form of the EMH is weak form efficiency, which states that future stock prices cannot be predicted by analyzing price from the past. In other words, charts are of no use in predicting future prices.

According to the weak form of the EMH, how a stock arrived at its current price is irrelevant. It could have followed the route of Stock A, or it could have behaved like Stock B. The only thing that matters is the current price. Any information contained in the past price series is already included in the current price.

The realization is a difficult pill for most people to swallow. A survey of a variety of people would reveal that virtually everyone would identify stock B as clearly a better buy than stock A. After all, B is "rising" while A is "falling". Who would want to buy a declining stock?



The point that is missed in this logic was made earlier: past prices do not matter; future ones do. Everyone has access to past price information[2]. According to the EMH, so many people are looking at these same numbers that any "free lunches" have already been consumed. The current price is a fair one that takes into account any information contained in the past price data.

Human nature is prone to extrapolate the past into the future. Business Week conducted a poll[3] in late 1999 asking investors their views on the stock market. Fifty-eight percent indicated they believed the stock market was "very" or "somewhat" overpriced, but 52 percent of the respondents believed that stocks would be higher a year later. Respondents aged 18 to 24 were most bullish, with 63 percent predicting the market would be higher in 2000. Oddly, though, 67 percent of this same group predicted a market crash in the coming year.

Charting is a topic discussed in hundreds of books. In the same way we look for identifiable forms in the clouds or in star constellations, our brains are creative enough to find patterns in a sequence of stock prices. Technical analysts learn "important" patterns through folklore or their own imagination.

Look at the four graphs in Figure 9-2. Are these random patterns, or is one or more of them revealing something? Some technical analysts would look at Chart A and see a stock that has been unsuccessful in penetrating a "resistance level" at 0. Its failure to rise above this point after several attempts is followed by a major downturn in the stock price.

Chart B shows a pattern that looks appealing. This stock is on a sustained rise. Chart C shows a bearish situation. Here a stock has penetrated its support level at 0, resulting in a significant decline to the -5 area. A technical analyst would call this a breakout on the downside. Chard D shows congestion in the -2 to +1 range, followed by a sharp break to a new equilibrium level around -4.
What do these patterns mean? Would an investor be more inclined to buy one of these stocks than the others? Is one clearly inferior to the others? Actually, each of these figures was created using the random number generating function of Lotus 1-2-3. These are four successive Lotus graph; each graph has a different seed number to start its series. In all four graph, each observation is either one unit greater than the previous observation or one unit

smaller, and each of the two possible out-comes had a 50 percent probability of occurring. Are these graphs useful in predicting what Lotus will select next? Probably not.

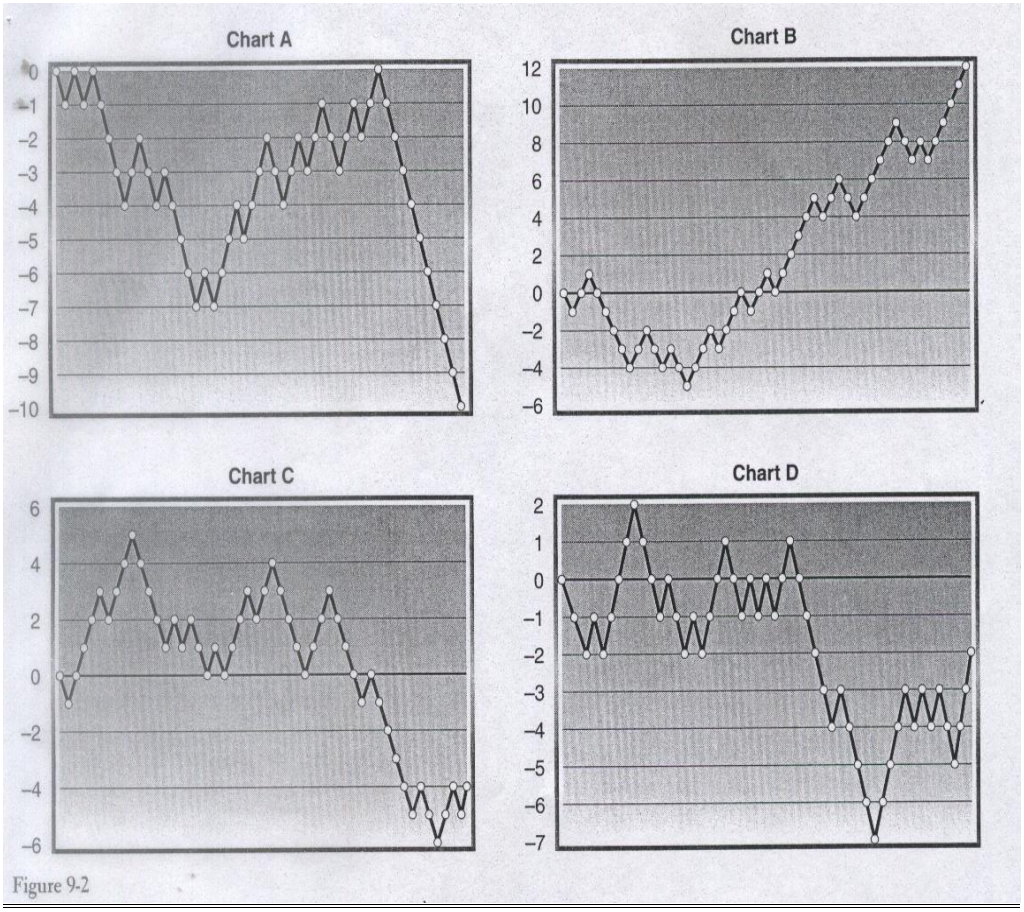


Figure 9-2

Past prices do not matter; future ones do. Weak form efficiency states that the current stock price fully reflects any information contained in the past series of stock prices.

Tests of Weak Form Efficiency:

Tests if the weak form of market efficiency takes one of two forms: autocorrelation tests and filter rule tests.

An autocorrelation test investigates whether security returns are related through time. That is, do patterns develop that provide information about the future? Suppose we took 50 pennies lined them up, and turned them such that 20 pennies showed heads (or up stock prices) and 30 showed tails (down stock prices). We could achieve this result in a variety of ways. We could have all the heads first, then all the tails. We could also alternate the heads and tails until the heads run out. Neither of these patterns would be expected to occur by chance.
Through the use of a handy nonparametric statistical technique called a runs test, analysts can test the likelihood that such a series of price movements occurred by chance. A run in an uninterrupted sequence of the same observation. In the following sequence of heads and tails, for instance, there are nine runs:

HHH	TT	H	T	HHH	TTT	H	TT	HH
1	2	3	4	5	6	7	8	9

Table 9-2 shows the procedures for the test.

Table 9-2
The Runs Test[a]

$$Z = \frac{R - x}{\sigma}$$

where R = *number of runs*

$$x = \frac{2n_1n_2}{n_1 + n_2} + 1$$

$$\sigma^2 = \frac{2n_1n_2(2n_1n_2 - n_1 - n_2)}{(n_1 + n_2)^2(n_1 + n_2 - 1)}$$

n_1, n_2 = the number of observations in each category
Z = standard normal variable[b]
x = mean number of runs given n_1 and n_2

[a]The Wald-Wolfowitz runs test is a useful test anytime, but it is best suited to cases in which n_1 and n_2 are both greater than 20.

[b]The standard normal variable comes from a normal distribution with a mean of zero and a standard deviation of one. Approximately 95 percent of the distribution lies within two standard deviations of the mean. Z statistics with large absolute values do not often occur by chance.

The result of the runs test indicates the likelihood of the various combinations of heads and tails occurring by chance. Suppose that the 50 flips produce 20 heads and 30 tails aligned in 23 runs. How likely in this pattern to have occurred by chance? The runs test in Table 9-3 shows the statistics for this particular experiment.

The runs test calculates the number of ways the observed number of runs could occur given the relative number of heads and tails in the sample, and the probability of this number occurring.

Probability principles indicate that about 95 percent of the area under the normal curve lies within 1.96 standard deviations of the mean. The test indicates a 27.56 percent chance of getting 23 runs when $n_1 = 20$ and $n_2 = 30$. With a Z statistic less than $\left| 1.96 \right|$, we cannot, at a 95 percent confidence level, reject the null hypothesis that the observed stock price sequence was determined by a random process.

Numerous autocorrelation tests are reported in the finance literature. The classic study is an exhaustive one by Eugene Fama. Fama is credited as the originator of the entire notion of market efficiency. An occasional study finds marginal statistical significance in return patterns, but invariably the pattern is economically insignificance, meaning that when one includes trading fees (commissions), the past data has no value.

Table 9-3
Results of Runs Test

Number of runs = $R = 23$
Number of ups = $n_1 = 20$
Number of downs = $n_2 = 30$

$$\text{mean number of runs} = x = \frac{2(20)(30)}{50} + 1 = 25$$

$$\sigma = \sqrt{\frac{[2(20)(30)] \times [2(20)(30) - 20 - 30]}{(20+30)^2(20+30-1)}} = 3.36$$

$$Z = \frac{23 - 25}{3.36} = -0.595$$

$$\text{Prob}\,(Z < -0.595) = 27.56\%$$

A filter rule is a trading rule that involves buying shares after they rise in value by x percent. When they fall x percent from the subsequent high, sell them, go short, and cover the short

when they rise x percent from a subsequent low. Because anyone can calculate these realized percentages, filter rules should not work if the markets are weak form efficient.

Fama also investigated the performance of filter rules, as have numerous other researchers. The results are similar to those of the autocorrelation tests. Occasionally one reads reports of successful filters, but they still prove uneconomic when the effect of transaction costs is included.

The evidence against predictive chart patterns and valuable filter rules is so powerful that anything new about this topic seldom appears in the finance literature. People who review articles for the various academic journals have seen overwhelming evidence that the market is weak form efficient, and editors rarely want to devote space to another article confirming decades of prior work in this area.

2. **Semi-strong Form:**

The weak form of the EMH states that security prices fully reflect any information contained in the past series of stock prices. Semi-strong form efficiency takes the information set s step further and includes all publicly available information. The semi-strong form of the EMH states that security prices fully reflect all relevant publicly available information.

A plethora of information holds potential interest to investors. In addition to past stock prices, economic reports, brokerage firm recommendations, investment advisory letters, and so on all contain a myriad of details about what affects business performance and stock value. While no one sees every one of these items, the market does, and prices move as people make decisions to buy and sell based on what they learn from the information set available to them.

The news item about the MGM Grand Hotel fire was not past price data, but it was publicly available and the stock did decline because of it. According to the semi-strong form of the EMH, this behavior is exactly what is expected.

Semi-strong form efficiency states that security prices reflect all publicly available information.

Tests of Semi-strong Form Efficiency:

Extensive academic research supports the semi-strong version of the efficient market hypothesis. The literature devotes much more attention to tests of semi-strong form efficiency than to weak form tests. Studies have investigated the extent to which people can profit by acting on various corporate announcements such as stock splits, cash dividends, and stock dividends. While and occasional research paper shows that small profits could have been made in a particular case, the general result is consistent: The market reacts to public information efficiency, and investors will seldom outperform the market averages by analyzing public news, especially if they must pay commissions to buy and sell.

We recognize that the market is pretty efficient. We have seen time after time that when we get the word that a Wall Street firm is now recommending a stock that stock is already up a point-and-a-half. The market is that efficient. As soon as anyone gets wind of a firm's recommendation-boom-people are buying it, and that stock's price goes up. By then, the value [of the information] is diminished.

-Michael J. C. Roth
Executive Vice President
USAA Investment Management

In fact, academic evidence indicates that active portfolio managers (those who frequently change their portfolios to include "better" stocks) tend to subtract value rather than add it.

Most people try to beat the Standard & Poor's Stock Index by picking better stocks or moving to better sectors of the market. But studies show it is a game that underperforms.

-Leonard H. Wissner
Chief Investment Officer
Ward & Winsser Capital Management

Researchers at The Wall Street Journal, in conjunction with Zack's Investment Research, report that for the 5-year period ending 30 September 1999 the stock recommendations of only 3 of the 15 major brokerage firms managed to outperform the 205.6 percent earned by the S&P 500 index.[7] In the first nine months of 1998, 88 percent of the actively managed U.S. mutual funds trailed the performance of the S&P 500. Most people would expect that if anyone could analyze the market better than average, the well-trained, experienced analysts at the major investment houses could. These "experts" did not do well during this period. Their substandard performance is discouraging but surprisingly common.

One particularly famous study by Ball and Brown deals with the market's reaction to corporate earnings announcements.[8] This research reported that stock prices react favorably to better-than-expected earnings, and vice versa. However, they also reported that security prices seemed to anticipate the news as much as a year prior to the announcement, and that by the time the actual earnings were made public and investor has little opportunity to capitalize on the news.

Another noteworthy event study looked at the market reaction to the death of a corporate chief executive officer. Interestingly, market prices declined when the CEO was a professional manager. But when the CEO was the company founder, the death was associated with an increase in the stock price. This finding may mean the market was encouraged about the prospect of a new "professional" company leader.

Many investors view stock splits favorably, as mentioned earlier in the book. Companies announce splits in advance of the actual split date. Can investors earn abnormal profits by buying shares that are about to split? Fama is also associated with the classic study on this topic. The study found several things. First, companies usually increase their dividends when they split their shares. If the firm fails to do so, the market reacts adversely to this preceding the split, but once the split is announced they cease to accrue any further. To profit from the split, investors would have had to have bought the shares months in advance of the split date. Once the split is announced, the free lunch is gone.

Many tests of semi-strong form efficiency use the event study methodology. In an event study, a phenomenon occurring at a known point in time, such as a stock split or the announcement of corporate earnings, is designated as time zero. Two days prior to the event is day "T minus two," while two days after would be "T plus two." In the typical conduct of an event study, a researcher would gather a sample of firms showing one or more instances of the event of interest. Security returns before and after the event would be collected. Depending on the researcher's hypothesis, the data might be collected for monthly, weekly,

daily, or even intraday returns – how far before the event and how long after would also depend on the particular study. Typically, the length of the before and after periods is the same.

Regardless of the month or year in which the event occurred, each stream of returns is then "lined up" so that each company's event corresponds to day zero. For instance, the first observation might be a split that occurred on March 4, 1988. The second company might have had a split on August 15, 1992. Both of these dates would be time zero in the event study. In both instances the following day would be day T plus one.

3. Strong Form Efficiency:

The most extreme version of the EMH is strong form efficiency. This version states that security prices fully reflect all public and private information. In other words, even corporate insiders cannot make abnormal profits by exploiting their private; inside information about their company. Inside information is formally called material, nonpublic information.

Section 16 of the Securities Exchange Act of 1934 defines an insider as "an officer or director of a public company, or an individual or entity owning 10 percent or more of any class of a company's shares." The law requires insiders to report their holdings of corporate securities within 10 days of becoming an insider. They must also report subsequent transactions in these securities for themselves or a member of their family by the tenth day of the month following the trade.

The evidence does not support this form of the EMH. Insiders can make a profit on their knowledge, and every year people go to jail, get fined, or get suspended from trading for doing so. Inside information gives an unfair advantage that can be used to extract millions of dollars out of the marketplace. Where did these millions in profit come from? They came from the pockets of individual investor who did not have access to the confidential corporate news. Society does not feel this advantage is fair; consequently, insider trading is illegal.

The Enforcement Division of the Securities and Exchange Commission is responsible for detecting and prosecuting insider trading violations. People sometimes believe they can stay at arm's length from the law by passing the inside information to a relative, who passes it to a friend, who passes it to someone else who then acts upon it to the benefit of all parties concerned. This strategy seldom works unless the trades are small. (Investigating small potential violations is not economically feasible). All brokerage accounts are computerized, and it is a relatively simple matter to screen for unusual account activity surrounding mergers, important corporate announcements, and similar events.

The Insider Trading Sanctions Act of 1984 permits the courts to impose civil penalties of up to three times the profit gained or loss avoided because of the use of material, nonpublic information, plus it provides for a criminal fine of up to $100,000. It also precludes corporate officers, directors, and anyone owning 10 percent or more of a firm's equity securities from making a profit on a purchase and sale of the company's equity within a six-month period. These people also may not sell the company's equity short.

The Insider Trading and Securities Fraud Enforcement Act of 1988 is related legislation.[14] It increased criminal fines to $1 million, raised the maximum jail term to ten years, and required firms involved in the securities business to implement programs to prevent insider trading by their employees. The real teeth of the law comes from holding a firm liable if its

employees engage in insider trading, and providing a 10 percent bounty to encourage informants to come forward.

The strong form of EMH states that security prices fully reflect all relevant public and private information.

Tests of Strong Form Efficiency:

Strong form tests are more difficult to conduct because it would be hard to do so without breaking the law. We can, however, find evidence to support the potential value of inside information.

Business Week publishes a column called "Inside Wall Street," in some respects similar to The Wall Street Journal's "Heard on the Street" column. Stock prices often react to news in these types of articles, but they should not react until the publication hits the streets. The magazine is not released to the public until 5:15 PM on Thursdays, so news of stocks mentioned in the "Inside Wall Street" column in not public information during the Thursday trading day.

Unusual trading activity in a number of stocks mentioned in the column over a period of five months led McGraw-Hill; the publisher of Business Week, to inform officials at the Securities and Exchange Commission as well as at the exchange.[15] Table 9-4 shows the suspicious price movement.

For seven issues of the magazine over this period, stocks mentioned in the article rose an average of 11.54 percent compared to an average rise of 0.12 percent in the Standard & Poor's 500 stock index. The large Thursday rise and increased trading volume was compelling evidence that someone was trading ahead of the public distribution of the magazine. This act was illegal trading on inside information.

The Semi-Efficient Market Hypothesis:

The essence of the semi-efficient market hypothesis (SEMH), a cousin to the EMH, is the notion that some stocks are priced more efficiently than others. This idea is appealing to many market analysts. Consider two very different companies such as IBM and a hypothetical start-up firm called Triple-Scan Video. Everyone has heard of international Business Machines, which trades on the New York Stock Exchange and many regional exchanges. Thousands of portfolios contain its shares, and virtually all security analysts watch it. The likelihood of realizing an unusual gain in the shares of IBM is extremely small. The stock is priced fairly, and investors who buy some will likely earn a long-term return consistent with the stock's level of risk.

What about Triple-Scan Video? According to the SEMH, fewer people are watching this company, which implies a greater likelihood these shares will be undervalued. In other words, the stock might not be priced as efficiently as the shares of IBM or other well-known companies.

This idea is sometimes used in support of the thesis that the market has several tiers. The first tier contains IBM, GM, Exxon, and other large firms. The second tier might contain lesser-known but well-established companies such as those that trade on the American Stock Exchange or the NASDAQ National Market System. The third tier might be companies such as Triple-Scan Video. Another tier might be pink sheet stocks. The further down the tier list an investor goes, the less efficient the pricing, or so the reasoning goes.

It is probably safe to say that most students of the market are generally sympathetic to the logic of the semi-efficient market hypothesis. It is not possible to follow every security. Analysts need to follow the big names, and simply do not have time to research the ever-expanding list of emerging companies.

The essence of the semi-efficient market hypothesis is the notion that some stocks are priced more efficiently that others.

Security Prices and Random Walks:

The efficient market hypothesis states that the current stock price fully reflects relevant news information. While some of the news is expected, much of it is unexpected. The unexpected portion of the news, by definition, arrives randomly – the essence of the notion that security prices follow a random walk because of the random nature of the news. Some days the news is good, some days it is bad. Specifics of the news cannot be predicted with great accuracy.

Substantial uncertainty even surrounds news that seems reasonably predictable. An article in Forbes reported the result of a study showing that over the period 1973-1990, the average error made by security analysts in forecasting the next quarter's corporate earnings for the firms they covered was 40 percent. On an annual basis, the average error was never less than 25 percent. From 1985 to 1990, the average error was 52 percent, indicating that the analysts' forecasting ability had not improved over the period.

It is perfectly possible for analysts to disagree in an efficient market. As an example, on November 30, 1998, the firm Van Kasper and Company reaffirmed its "Strong Buy" recommendation on Transocean Offshore (RIG, NYSE). That same day Janney Montgomery Scott changed its recommendation from "Moderate Buy" to "Strong Sell."
When the news relevant to a particular stock is good, people adjust their estimates of future returns upwards or they reduce the discount rate they attach to these returns. Either way the stock price goes up. Conversely, when the news is bad, the stock price goes down.

Many people misunderstand what the random walk idea really means. It does not say that stock prices move randomly. Rather, it says that the unexpected portion of the news arrives randomly, and that stock prices adjust to the news, whatever it is.

In a famous analogy, a drunk staggers from lamppost to lamppost with a point of departure and a target destination. The path of the drunk shows a trend from one post to the next. Along the way, however, the path is erratic. The drunk wanders right and left, perhaps occasionally out into the street or into a building wall. The precise route cannot be predicted. The same is true of a security price and its consequent return. Over the long run, security returns are consistent with what we expect, given their level of risk. In the short run, however, many ups and downs seem to cloud the long-run outlook. The stock price behaviors shown in the four charts of Figure 9-2 are random walks. Each succeeding observation is just as likely to be up as down.

ANOMALIES:

This section reviews several important market anomalies that financial researchers actively explore. In finance, the term anomaly refers to unexplained results that deviate from those expected under finance theory, especially those related to the efficient market hypothesis. Familiar anomalies include the low PE effect, the small firm effect, the neglected firm effect, the January effect, and the overreaction effect.

The Low PE Effect:

Numerous academic studies have uncovered evidence that stocks with low PEs provides higher returns than stocks with higher PEs. This tendency is called the low PE effect. The studies show this result even after accounting for risk differentials, which seems to be in direct conflict with the capital asset pricing model and the theory behind it.

Some evidence indicates that low PE stocks outperform higher PE stocks of similar risk.

Low-Priced Stock:

Many people believe that certain stock price levels are either too high or too low. Equivalently, they believe the price of every stock has an optimum trading range. By finance theory, the stock price should be merely a marker and, by itself, be of no value in comparing firms. The size (and value) of a piece of pie depends on the number of pieces into which the pie is cut.

Still, folklore surrounds stock prices. As early as 1936, the academic literature showed that low-priced common stock tended to earn higher returns as stock with a high price. [18] In the classic investment book by Graham and Dodd, the authors state, "It is a commonplace of the market that an issue will rise more steadily from 10 to 40 than from 100 to 400."

Consider the following question: Is it easier for a stock to rise from $5 to $6 than it is for it to rise from $50 to $60? Most people who play the market believe it is. If it is the case (which theory and empirical evidence dispute), then every firm whose stock sold for $50 should split ten for one so that its share price would advance faster.
The Small Firm and Neglected Firm Effects:

Like the low PE effect, the small firm effect and the neglected firm effect are two important market anomalies that influence the stock selection of some investors (and some portfolio managers).

The Small Firm Effect:

The small firm effect recognizes that investing in small firms (those with low capitalization) seems to, on average; provide superior risk-adjusted returns. Solid financial research supports this hypothesis. Important papers on this topic include those by Reinganum[20] and by Banz.

The obvious implication of the small firm effect is that portfolio managers should give small firms particular attention in the security selection process. We do not know why the small firm effect exists, but it seems to persist. In the past, some anomalies tended to disappear soon after they were reported. The small firm effect is still with us.

The Neglected Firm Effect:

The neglected firm effect is a cousin to the small firm effect and the semi-efficient market hypothesis. Institutional investors are sometimes limited to larger capitalization firms. As a consequence, security analysts do not pay as much attention to those firms that are unlikely portfolio candidates. One paper by Arbel, Carvell, and Strebel investigated 510 firms over a ten-year period and found, as expected, that the smaller firms outperformed those widely held by institutions.[22] The authors postulated that institutions might perceive more risk with

the smaller firms, and hence they ignore them. In a related paper, Arbel and Strebel showed other evidence that the attention of security analysts does affect the way shares are priced, and that if analysts neglect a firm it has a systematic impact on the share value.

The implication is the same as with the small firm effect: Neglected firms seem to offer superior returns with surprising regularity. When the Arbel, Carvell, and Strebel paper was published in 1983, the authors closed by stating that the effect was "unlikely to persist over time." Neglected firms continue to be an important research area that we have not yet figured out.

Market Overreaction:

Another area of current research interest lies in the observed tendency for the market to overreact to extreme news, with the general result that systematic price reversals can sometimes be predicted. For instance, if stocks fall dramatically, they have a tendency to perform better than their betas indicate they should in the following period. De Bondt and Thaler have written several important papers dealing with this subject.

Experimental psychologists know that people often rely too heavily on recent data at the expense of the more extensive set of prior data. At a race track, for instance the betting pattern on the following race, even if the handicapper was largely inaccurate on previous races. In their studies, De Bondt and Thaler found "systematic price reversals for stocks that experience extreme long-term gains or losses: Past losers significantly outperform past winners."
Brown and Harlow found that the overreaction is stronger to bad news than to good news during the period of their study. After an especially large drop, security returns over the following period were unusually large and persistent.

The January Effect:

Another well-known anomaly is called the January effect. Numerous studies show persuasive evidence that stock returns are inexplicably high in January, and that small firms do better than large firms in January.

In Richard Roll's Journal of Portfolio Management study, the begins by reporting, "For 18 consecutive years, from 1963 through 1980, average returns of small firms have been larger than average returns of large firms on the first trading day of the calendar year." Comparing AMEX stocks, which are generally smaller firms, with those on the NYSE, Roll found that the average return differential was 1.16 percent in favor of the small firms, and that the t-statistic for significance of the difference was a whopping 8.18.

Several explanations of this phenomenon have been proposed. Branch proposes that the superior January performance comes from tax loss trading late in December.27 A better explanation is probably provided by Rogalski and Tinic, who provide evidence that the risk of small stocks is not constant over the year, and tends to be especially high early in the year. The reason for this higher risk phenomenon is itself unexplained. Kiem explains this result by reporting another anomaly. For some reason, stocks tend to trade near the bid price at the end of the year and toward the ask price at the beginning of the year. In any event, January tends to be a good month for the stock market.

Some analysts will argue that this effect should really be called the "November through January" effect because these three months stand out for their good performance. Time magazine[30] recently reported on a study by the Hirsch Organization that shows since 1950

the S&P 500 index was up an average 1.7 percent in November, 1.8 percent in December, and another 1.7 percent in January. The next best month was April at 1.4 percent. (September is the only month that is negative, down 0.2 percent on average.)

Other studies find evidence of a January effect in securities other than common stock. Chen documents the presence of the effect with high, medium and speculative grades of preferred stock.[31] Wilson and Jones do so for corporate bonds and commercial paper.[32] Gay and Kim look at seasonality in the futures markets.[34] The January effect is a pervasive result that puzzles many people.

Further, some people consider the first five trading days of January to be a harbinger of how stocks will perform for the rest of the year. Since 1950 in only three years (1966, 1973 and 1990) has the S&P 500 been higher at the end of the first week of the year, but lower by the end of the year. Some people refer to this as the January indicator to distinguish it from the January effect. It is probably not an especially useful indicator. The market is usually up for the year, and the historical data indicate a bad first week for the S&P 500 does not predict a down year for the market.

Stock returns are inexplicably high in January, and small firms' stocks do better than large firms' in this month.

The Weekend Effect:

The weekend effect is the observed phenomenon that security price changes tend to be negative on Mondays and positive on the other days of the week, with Friday being the best of all.[35] This persistent result does not yet have a satisfactory explanation. Some behaviorists claim that people are upbeat on Fridays, and this attitude translates into stock market optimism. Monday is a down day in other ways, so it might as well be a down day for the market, too, or so the thinking goes. Whatever the cause, the weekend effect remains as anomaly. Once again, however, the effect is too small to be economically significant.

The Persistence of Technical Analysis:

Market efficiency tests, especially those dealing with the weak form; have routinely found that any evidence of market inefficiency cannot be profitably exploited after including the effects of transaction costs. Still, an immense amount of literature is printed each year based in varying degrees on technical techniques that, if the EMH is true, should be useless.

Even finance professors seem less than totally committed to the EMH paradigm. In a national survey pf investment professionals, 40 percent of the respondents with a Ph. D. in finance felt that advance-decline lines (a popular technical analysis tool) were "useful" or "very useful." One-fourth of the respondents agreed that "charts enhance investment performance."

Needless to say, we do not fully understand the theory or practice of technical analysis. Its techniques are generally imprecise and do not lend themselves to rigorous statistical testing. Certain phenomena from the clinical psychology literature seem to be at least partially operative in the stock market. At a casino craps table, for instance, shooters throw the dice harder when trying for a high number. Low numbers, of course, require an easier toss. Even though no connection can be made between the random number that occurs and the strength of the toss, the shooters experience a psychological illusion of control. Similarly, humans suffer from hindsight bias. With trading techniques, people tend to remember their successes and displace their failures. One investor, for example, owned 200 shares of a

common stock, his only investment. On days when the stock was up a point, he would brag, "I made $200 today." On days when the stock was down, he said nothing. Later, when the stock rose a point again, in his view he "made another $200." He made that same $200 many times.

Final Thoughts:

The U.S capital markets are informationally and operationally quite efficient from the individual investor's perspective. They are the envy of much of the world, and many developing second and third world cultures emulate them. Portfolio managers, however, are hired and fired largely on the basis of realized return, and a few basis points can make a significant difference in the progression of their careers. Inefficiencies that may be economically insignificant to a retail customer after considering trading fees may be much more attractive to an institutional investor.

Eugene Fama and Kenneth French recently reported updated research on the nature of asset pricing that may eventually be helpful in explaining market anomalies. Expanding on their earlier work, they find "anomalies largely disappear in a three-factor model," where security prices are determined by the excess return on the market portfolio, the difference between the returns on portfolio of small stocks and a portfolio of large stocks, and finally the difference between the returns on a portfolio of high book-to-market stocks and low book-to-market stocks. Importantly, though, they state, "The three-factor risk-return relation is, however, just a model. It surely does not explain expected returns on all securities and portfolio."

In sum, much is not yet known about asset pricing. The markets are not perfect. Still, the vast number of securities traded on the exchanges, the rapid introduction of new financial products, and the globalization of world economies provide a fair, but complicated financial battleground.

Summary:

The efficient market hypothesis (EMH) relates to informational efficiency and the fair pricing function as opposed to operational efficiency. The essence of the EMH is that so many people watch the marketplace that few if any individuals can consistently make windfall profits by picking stocks better than the next person.

There are three forms of the EMH. The weak form says that past prices, or charts, are of no value in predicting future stock price performance. The semi-strong form says that security prices already fully reflect all relevant publicly available information. The strong form of the EMH includes private, inside information as well. Considerable empirical research supports the semi-strong form; however, we know that insiders can make illegal profits.
The random walk theory does not state that security prices move randomly. Rather it maintains that the news arrives randomly, and that in accordance with the EMH security prices rapidly adjust to this random arrival of news.

Anomalies are occurrences in the market that are inexplicable by finance theory. Stocks with low PEs tend to show unusually higher returns; January is a good month for the stock market; and small firms tend to do especially well in January. Technical analysis is diametrically opposed to the efficient market hypothesis, yet it has many advocates, including well-educated finance professors and practitioners.

MARKET EFFICIENCY Contd…

Behavioral Finance:

Behavioral finance is the study of the influence of psychology on the behavior of financial practitioners and the subsequent effect on markets. Sewell says "I think of behavioral finance as simply "open-minded finance". Thaler says 'This area of enquiry is sometimes referred to as "behavioral finance," but we call it "behavioral economics." Behavioral economics combines the twin disciplines of psychology and economics to explain why and how people make seemingly irrational or illogical decisions when they spend, invest, save, and borrow money."

This paper examines the case for major changes in the behavioral assumptions underlying economic models, based on apparent anomalies in financial economics. Arguments for such changes based on claims of "excess volatility" in stock prices appear flawed for two main reasons: there are serious questions whether the phenomenon exists in the first place and, even if it did exist, whether radical change in behavioral assumptions is the best avenue for current research. The paper also examines other apparent anomalies and suggests conditions under which such behavioral changes are more or less likely to be adopted. Because psychology systematically explores human judgment, behavior, and well-being, it can teach us important facts about how humans differ from traditional economic assumptions. In this essay I discuss a selection of psychological findings relevant to economics. Standard economics assumes that each person has stable, well-defined preferences, and that she rationally maximizes those preferences. Section 2 considers what psychological research teaches us about the true form of preferences, allowing us to make economics more realistic within the rational choice framework. Section 3 reviews research on biases in judgment under uncertainty; because those biases lead people to make systematic errors in their attempts to maximize their preferences, this research poses a more radical challenge to the economics model. The array of psychological findings reviewed in Section 4 points to an even more radical critique of the economics model: Even if we are willing to modify our familiar assumptions about preferences, or allow that people make systematic errors in their attempts to maximize those preferences, it is sometimes misleading to conceptualize people as attempting to maximize well-defined, coherent, or stable preferences.

Market efficiency survives the challenge from the literature on long-term return anomalies. Consistent with the market efficiency hypothesis that the anomalies are chance results, apparent overreaction to information is about as common as under reaction and post-event continuation of pre-event abnormal returns is about as frequent as post-event reversal. Most important, consistent with the market efficiency prediction that apparent anomalies can be due to methodology, most long-term return anomalies tend to disappear with reasonable changes in technique.

The field of modern financial economics assumes that people behave with extreme rationality, but they do not. Furthermore, people's deviations from rationality are often systematic. Behavioral finance relaxes the traditional assumptions of financial economics by incorporating these observable, systematic, and very human departures from rationality into standard models of financial markets. We highlight two common mistakes investors make: excessive trading and the tendency to disproportionately hold on to losing investments while selling winners. We argue that these systematic biases have their origins in human psychology. The tendency for human beings to be overconfident causes the first bias in investors, and the human desire to avoid regret prompts the second.

Behavioral finance is a rapidly growing area that deals with the influence of psychology on the behavior of financial practitioners. Behavioral finance is the application of psychology to financial behavior—the behavior of practitioners. Behavioral finance is the study of how psychology affects financial decision making and financial markets. Behavioral finance argues that some financial phenomena can plausibly be understood using models in which some agents are not fully rational. The field has two building blocks: limits to arbitrage, which argues that it can be difficult for rational traders to undo the dislocations caused by less rational traders; and psychology, which catalogues the kinds of deviations from full rationality we might expect to see. We discuss these two topics, and then present a number of behavioral finance applications: to the aggregate stock market, to the cross-section of average returns, to individual trading behavior, and to corporate finance. We close by assessing progress in the field and speculating about its future course.

Behavioral finance and behavioral economics are closely related fields which apply scientific research on human and social cognitive and emotional biases to better understand economic decisions and how they affect market prices, returns and the allocation of resources.

Risk aversion:

Risk aversion is a concept in economics, finance, and psychology related to the behavior of consumers and investors under uncertainty. Risk aversion is the reluctance of a person to accept a bargain with an uncertain payoff rather than another bargain with more certain, but possibly lower, expected payoff.

Example:

A person is given the choice between two scenarios, one certain and one not. In the uncertain scenario, the person is to make a gamble with an equal probability between receiving $100 or nothing. The alternative scenario is to receive a specific dollar amount with certainty.

Investors have different risk attitudes. A person is;

- Risk-averse if he or she would accept a certain payoff of less than $50 (for example, $40) rather than the gamble.
- Risk neutral if he or she is in different between the bet and a certain $50 payment.
- Risk-seeking (or risk-loving) if the certain payment must be more than $50 (for example, $60) to induce him or her to take the certain option over the gamble.

The average payoff of the gamble, known as its expected value, is $50. The dollar amount accepted instead of the bet is called the certainty equivalent, and the difference between it and the expected value is called the risk premium.

MARKET INDEXES

Introduction:

Indexes are useful in assessing investment results. They provide a benchmark against which performance can be compared. They also useful in financial research, through which an investigator seeks to discover the relationship between certain economic variables and market results. In fact, most of us keep abreast of developments in "the market" by watching the indexes. Because television or radio announcers cannot possibly cover price changes for every security, they quote the value of some well-known market measure, such as the Dow Jones Industrial Average. On-the-hour radio news frequently concludes with a statement such as "On Wall Street, the Dow Jones Industrial Average is up 123 points on volume of 630 million shares." To investors everywhere, this news is an indicator of the day's market activity and a good clue as to what is happening with their own favorite securities. This chapter provides an overview of some of the most popular indexes.

Index Construction:

Indexes can be useful in following investment performance, but only if an investor knows what the index is measuring and how similar the index is to a particular investment portfolio. Knowing that the general level of bond prices in Singapore declined today may not tell investors much about how U.S computer stock fared.

Price Weighting:

A price-weighted index is composed of a single share of each of the index component, regardless of the price of the share or the size of the underlying company: the Dow Jones Industrial Average (DJIA) is an example of such an index. The first step the 30 industrial companies comprising the index.

A problem with a price-weighted index lies in the distortions that occur when a company in the index chooses to split its stock. On day one the value of a portfolio composed of one share in each of the three stocks is $60. On day two, company a splits its shares three for one, which causes company A's share price to fall to $10. One share in each of the three companies now costs a total of $40.

Someone unaware of company A's stock split would observe the decline in the index from $60 to $40 and conclude that the market lost a third of its value overnight. This conclusion however would obviously be inaccurate because the decline in value stemmed purely from an accounting change.

To deal with this problem, analyses use a divisor to adjust the value of the portfolio before reporting the final value of the index. The divisor ensures the index does not change artificially because of the split.

Some interpretation problems arise with a price-weighted index. For one thing, high-value stocks carry more weight than lower-valued issues, which may distort the bigger picture the index purports to provide. Also price weighting carries a bias against a growth stock. As its price raises a growth stock share carries more weigh in the index. After the shares reach too high a price, the company splits the shares thereby knocking the price down and reducing the company's influence in the index.

Also the index provides no consideration of any dividends paid by the company. A price-weighted index might begin and end the year at a value of 100.00. It would be incorrect to assume that an investor in the index earned no return; any dividends received are being ignored.

The index divisor accounts for artificial price changes due to stock splits.

Equal Weighting:

An equal weighting index reflects the performance associated with selection of a particular security by chance. For instance, an equal-weighting index of the ten securities would be based on one-tenth of the performance of each of the ten companies. Performance is measured by price change rather than by price alone. Equal weighting of the resulting returns represents the statistical average of random security selection. Equal weighting is theoretically preferable to price weighting.

An equal-weighting index can be calculated with or without dividends. Including dividend can only make returns larger, so their omission results in a downward biased measure of market activity.

In capitalization weighting, share price is multiplied by the number of outstanding shares.

Capitalization Weighting:

Capitalization weighting is also called value weighting. This method weights components by the size of the company rather than by the value of a share. Share price is multiplied by the number of shares outstanding. This value is summed for each component of the index, with the total compared to some arbitrary starting value.

POPULAR INDEXES:

Stock Indexes:

Probably no one knows precisely how many different stock indexes exist at any given time even considering just those indexes in the United States. Globally, the chore of maintaining an accurate accounting of each index is probably impossible. Now measures are continually being added and some are deleted as more effective ones come about.

The continued success of the options market frequently spawns a new index. A person can trade put and call option on dozens of different U.S stock indexes. These range from the classic Dow Jones Industrial Average to the more contemporary Street.com index.

1. **Dow Jones Averages:**

To the general public, the Dow Jones averages are probably the most familiar stock market indictors. The four primary averages are the industrial average the transportation average, the utilities average, and the Dow Jones composite.
Dow Jones & Company introduced the Dow Jones Industrial Average in 1896. Initially the index was based on the value of 12 companies. The first value of the average was 40.94 on May 26, 1896.

Since 1928, 30 large blue chip companies have comprised the index. General Electric is the lone survivor of the original group. The other 29 companies have either merged, changed names folded, or been replaced with another firm. With 30 stocks in the index, the initial value of the divisor was 30. Stock splits reduced it to 16.67 later that year.

Changing the index components can result in a substantial change in what the index measures. Replacing a troubled firm with a strong one clearly makes before and after components difficult. The capricious nature of this index, along with the other shortcoming mentioned earlier, are reason why the Dow Jones averages are the seldom used in financial research or for performance appraisal purposes.

Investors might wonder why the Dow is price-weighted rather than value-weighted. According to the editors of the Wall Street Journal, the answer lies party in the technology of Charles Dow's day; he needed something that was easy to figure with paper and pencil: in fact, he probably never imagined a market-weighted index because there was no ready means available to make the calculations required. And the Journal's editors today feel there's no reason to thinker with the formula because, oddly enough, the seemingly simple method actually works.

Despite its shortcomings, the Dow has always had fierce supporters. An especially vocal cheerleader was the writer Richard Russell, who helped publicize the Dow Theory technical analysis system. He recorded these comments in Barron's magazine in 1959;

"The closing prices of the Dow Jones rail and industrial averages give us a complete index of everything known by anybody that can possibly affect the economy and corporate profits (excluding acts of God)."

While you won't find many investment advisors willing to go this far out on a limb today, most still follow the index and take note of it when the news reports it.

The Dow Jones Transportation Average is like the DJIA expect that it includes 20 transportation companies. The Dow Jones Utility Average contains 15 public utility stocks. The Dow Jones Composite contains all65 stocks in the DJIA, DJTA and DJUA. The composite index is sometimes referred to as "65 stocks".

In addition to these well-known averages, Dow Jones publishes 105 different industry groups indexes ion the basic materials, conglomerate, consumer (cyclical), consumer (non-cyclical), energy, financial, industrial, technology, and utilities areas. To give an idea of the precision with which some people select their index of choice, one of the Dow Jones indexes is "computers with IBM", while another is "computers, without IBM" take your pick. The industry groups are all on a June 30, 1982, value of 100. There are a variety of other narrowly focused or specialized Dow Jones indexes useful to certain market followers.

2. Standard & Poor's Indexes:

Not surprisingly, the Standard & Poor's Corporation also prepares and publishes a large number of indexes. The calculation method for all S&P indexes is identical. The S&P 500 Composite is probably the most widely used. This value-weighted index contains 500 NYSE-traded securities. Standard & Poor's describes it as "an index of leading companies in leading industries." It is not, however, the 500 largest U.S stocks, although many people erroneously believe so.

It is important to recognize that just because there are 500 stocks in the S&P 500 index this does not mean that the index cannot be swayed by individual stock performance.

Because it is value-weighted, it does not have a problem with the stock splits. Still a divisor is necessary for three reasons. One reason stems from the impact of the replacement of a firm in the index.

Second reason is the issuance of additional shares by a firm in the index. A primary offering essentially brings capital into the index without stock market movement. If no adjustment were made for the sale of new shares; returns calculated from the index would be biased upward. A third reason is a corporate decision to purchase the firm's own shares, taking capital out of the index.

The S&P 500 index is based on an initial value of 10.00 associated with the 1941-1943 time period. In April 2000, the index stood at about 1,455, meaning that shares values were, on average, about 146 times what they were during World War II.

In late 1999, the median market value of a stock in the S&P 500 was about $7.3 billion. Investors in mid-cap or small-cap stock will find a suitable benchmark on the S&P menu. The S&P Mid Cap 400 as the name suggest, contains 400 mid capitalization. The S&P Small Cap 600 is 600 small cap stocks.

Other Standard & Poor's indexes include the S&P 100, S&P Financial Stocks, S&P 20 Transportation Stocks, and the S&P $0 Utility Stocks. The S&P 100 ticker symbol OEX, is especially popular in option users. OEX option provides a convenient way to hedge market risk or to speculate on market movements. In May 1992 Standard and Poor's, in conjunction with the well known market research firm BARRA, announced two new indexes designed to provide a benchmark for the growth and value investment styles. These are the S&P 500/BARRA Growth index and the S&P 500 Value index. These two indexes are constructed by essentially partitioning the stocks in the S&P 500 by their price to book ratio. The two groups do not necessarily' contain the same number of securities. On September 30, 1995, there were 317 stocks in the Value Index and 183 in the Growth Index. Because there are always 500 stocks in the S&P 500, there will always be a total of 500 stocks in the two indexes.

Others:

The New York Stock Exchange publishes its own indexes based on the industrial firms, transportation firms, and utilities, among others, traded at the exchange. The most widely quoted is the NYSE Composite an average of all NYSE listed stocks. The American Stock Exchange prepares a similar index on its securities as does the NASDAQ market. Value Line publishes an index based on the securities covered in the Value Line Investment Survey.

Some portfolio managers find the Russell 3000 index particularly useful. For years S&P 500 index was considered the "best" proxy for the over all stock market, but increasing evidence indicates this generalization may no longer be true. The S&P500 index is 95 percent comprised of large capitalization stocks, while large caps stocks make up only 73 percent of the market as a whole. Extensive financial report supports the hypothesis that small capitalization stocks often do better than their larger counterparts. Consequently many portfolio managers consciously include small cap stocks in their funds. The Russell 3000 index is a mixture of both large and small capitalization stocks.

According to a study done by Value Line, in 1991 the S&P500 posted a total return of 36.6%, while the total US. Equity market returned 33.4%. The Russell 3000 index returned 33.7%, much closer to the over all market average than the S&P 500 performance.

The Frank Russell Company, from Tacoma, Washington, prepares the Russell 3000. It also provides Russell 2000, which deals only with small cap stocks. In early 1995 the firm established four new indexes based on firm size and investment management style: the Russell Madcap Growth Index, the Russell Midcap Value Index, Russell Top 200 Growth Index, and Russell 200 Value Index.

The Russell 3000 index is a mix of both large- and small- capitalization stocks and, to many portfolio managers a better presentation of the broad market.

Fixed Income Indexes:

More than 400 indexes measure fixed income securities. Despite what the typical investor might think, bonds vary widely in their riskiness and investment characteristics. When comparing performance, investors need to distinguish between corporate bonds, tax-exempt bond, foreign bonds, short and long term bonds, investment grade and junk bonds, and so on. The wide range of available indexes increases the likelihood that investors can identify a benchmark with characteristics they want. The Dow Jones 20 Bond Index is part of the Dow Jones &Company stable of market indexes. Standard &Poor's has more than a dozen indexes of bond, market. Two especially important ones are the S&P Municipal Bond Index and the S&P U.S. government Bond Index. The investment banking firm Salomon Smith Barney prepares about 45 indexes. Most noteworthy is the Salomon Smith Barney Corporate Bond Index. Lehman Brothers and Merrill Lynch compute and maintain another 130 indexes. Moody's Investors Service publishes about 20 of its own.

Some indexes are especially specific. J.P. Morgan prepares an emerging markets bond index designed to provide an overview of commercial lending in the developing markets of the world. The company also maintains an index of foreign government bonds. Value Line has an index on 585 convertible bonds. Other indexes deal with mortgaged backed securities.

International Indexes:

The popularity of international investing has triggered an increasing number of useful global indexes. Some of these owe their creation to the popularity of trading in derivative instruments such as futures and options contracts.

1. **European Indexes:**

In the United Kingdom, the most important index is probably the FT-SE, 100, known as the "Footsie 100". This Financial Times stock exchange is based on the 100 U.K. stocks with the largest capitalization. In Germany, the principal index is the DAX30, specifically introduced for the trading of futures contracts. This total return index includes the reinvestment of dividends on the individual components. In France, the CAC40 and Italy the MIB30 were both created for the trading of equity index futures.

2. **Asia and the Pacific Rim:**

Japan is the principal market in Asia, although Hong Kong and Singapore are rapidly rising in importance. Japan has the Nikkei 225, a price weighted index that has been around since 1949. This is index contains 225 large, activity traded Japanese stocks on the Tokyo Stock

Exchange. Another Japanese index, TOPIX, includes about 1,200 large companies. A recent addition for futures market purposes is the Nikkei 300, a capitalization weighted index like the S&P500. Australia has the all Ordinaries index, which covers 240 stocks and is capitalization weighted. In Hong Kong, the Hang Seng predominate covering 33 stocks, it is also capitalization weighted.

Summary:

Indexes are useful in assessing the performances of an investment. It is important, however, to ensure that the chosen index is an accurate proxy for what investors want to measure. A stock index should not be used with a bond portfolio, nor should an index of large-capitalization stocks (like the S & P 500) be used to judge a small-cap stock portfolio.

An investor can choose from any of the hundreds of indexes. For equity securities, the Dow Jones Industrial Average and the S & P 500 stock market index are the best known. For the purposes of financial research, the Standard & Poor's 500 are much more useful than the Dow Jones Industrial Average. A price-weighted index assigns heavy weight to high priced stocks and makes use of a divisor to adjust for stock splits. A capitalization weighted index considers the size of the company and needs no adjustment for stock splits, but must be adjusted for changes in index components, primary stock offerings, and share repurchases.

Lesson # 26

INVESTMENT ALTERNATIVES

Fixed-Income Securities:

Capital Market is for long-term securities such as stocks and bonds.

Capital markets encompass fixed-income and equity securities with maturities greater than one year. Risk is generally much higher than in the money market because of the time to maturity and the very nature of the securities sold in the capital markets. Marketability is poorer in some cases. The capital market includes both debt and equity securities, with equity securities having no maturity date.

Fixed-Income Securities with specified payment dates and amounts, primarily bonds

We begin our review of the principal types of capital market securities typically owned directly by individual investors-with fixed-income securities. All of these securities have a specified payment schedule. In most cases, such as with a traditional bond, the amount and date of each payment are known in advance. Some of these securities deviate from the traditional bond format, but all fixed income securities have a specified payment or repayment schedule—they must mature at some future date.

BONDS:

Bonds are Long-term debt instruments representing lire issuer's contractual obligation

Bonds can be described simply as long-term debt instruments representing the issuer's contractual obligation, or IOU. The buyer of a newly issued coupon bond is lending money to the issuer who, in turn, agrees to pay interest oh this loan and repay the principal at a stated maturity date

Bonds are *fixed-income securities* because the interest payments (for coupon bonds), and the principal repayment for«a typical bond are specified at the time the bond is issued and fixed for the life of the bond. At the time of purchase, the bond buyer knows the future stream of *cash flows* to be, received from buying and holding the; bond to maturity. Barring default by the issuer, these payments will be received at specified intervals until maturity, at which time the principal will be repaid. However, if the buyer decides to sell the bond before maturity, the price received will depend on the level of interest rates at that time.

Bond Characteristics:

The par value (face value) of most bonds is 'will use this number as the amount to be repaid at maturity. The typical (terminates) on a specified date and is technically known as a *term bond.* Most bonds are coupon bonds, where *coupon* refers to the periodic interest that the issuer pays to the holder of the bonds. Interest on bonds is typically paid semiannually.

TYPES OF BONDS:

There are four major types of bonds in-the United States based on the issuer involved (B.S. government, federal agency, municipal, and corporate bonds),-and variations exist within each major type.

Federal Government Securities:

The U.S. government, in the course of financing its operations through the Treasury Department, issues numerous notes and bonds with maturities greater than one year. The U.S. government is considered to be the safest credit risk because of its power to print money; therefore, *for practical purposes,* investors *do not* consider *the* possibility *of risk of default for these securities.* An investor purchases these securities with the expectation of earning a steady stream of interest payments and with full assurance of receiving the par value of the bonds when they mature.

Treasury bond is a long-term bond sold by the U.S. government

Government Agency Securities:

Since the 1920s, the federal government has created various federal agencies designed to help certain sectors of the economy through either direct loans or guarantee of private loans. These various credit agencies compete for funds in the marketplace by selling government agency securities.

There are two types of federal credit agencies: federal agencies and federally-sponsored credit agencies. Legally, federal agencies are part of the federal government and their securities are fully guaranteed by the Treasury. The most important "agency." for investors is the Government National Mortgage Association.

In contrast to federal agencies that are officially a part of the government, federally sponsored credit agencies are privately owned institutions. Although these agencies have the right to draw on Treasury funds up to some approved amount, their securities are not guaranteed by the governments to principal or interest. Nevertheless, the rapidly growing agency market is dominated by these federally sponsored credit agencies, which include the Federal National Mortgage Association, the Federal Home .Loan Mortgage Corporation, the Federal Home Loan Bank, the Farm Credit System, and the Student Loan Marketing Association.

Municipal Securities:

Bonds sold by states, counties, cities, an4 other political entities (e.g., airport authorities, school districts) other than the federal government and its agencies are called municipal bonds. There are roughly 50,000 different issuers with roughly 1.5 million different issues outstanding and credit ratings ranging from very good to very suspect. Thus, risk varies widely, as does marketability. Overall, however, the default rate on municipal bonds has been quite favorable compared to corporate bonds.

Two basic types of municipals are general obligation bonds, which are backed by the "full faith and credit" of the issuer, and revenue-bonds, which are repaid from the revenues generated by the project they were Sold to finance (e.g. a toll road or .airport improvement). In the case of general obligation bonds, the issuer can tax residents to pay for the .bond interest and principal. In the case of revenue bonds, the project must, generate enough revenue to service the issue.

Corporate Bonds:

Corporate bonds are long-term debt securities of various types sold by corporations.

Most of the larger corporations, several thousand in total, issue corporate bonds to help finance their operations. Many of these firms have more than one issue outstanding.

Senior Securities are securities, typically debt Securities, ahead of common stock in terms of payment or in case of liquidation.

Corporate bonds are senior securities. That, is, they are senior to any preferred stock and to the common stock of a corporation in terms of priority of payment and in case of bankruptcy and liquidation. However, within the bond .category itself there are various degrees of security. The most common type of unsecured bond is the debenture, a bond backed only by the issuer's overall financial soundness.[16] Debentures can be subordinated, resulting in a claim on income that stands below (subordinate to) the claim of the other debentures.

Debenture an unsecured bond backed by the general credit-worthiness of the firm.

Direct Access Notes (DANs) are Notes issued at par that have no discounts, premiums, or accrued interest. In an attempt to make bonds more accessible to individuals, high credit-quality firms have begun selling direct access notes (DANs). These notes eliminate some of the traditional details associated with bonds by being issued at par ($1,000), which means no discounts; premiums, or accrued interest. Coupon rates are fixed, and maturities range from 9 months to 30 years. The company issuing the bonds typically "posts" the maturities and rates its offering for one week, allowing investors to shop around. Currently, some companies are acting as wholesalers of the bonds to .their own extensive network of brokerage firms from which investors would buy the bonds. The brokerage firm buys the notes from the wholesaler at a discount and pays, the broker's commission.

One potential disadvantage of DANs is that they are best suited for the buy-and-hold investor. A seller has no assurance of a good secondary market for the bonds, and therefore no assurance to the price mat would be received.

Convertible Bonds are convertible, at the holder's option, into shares of common stock of the same corporation.

Convertible bonds have a built-in conversion feature. The holders of these bonds have me option to convert whenever they choose. Typically, the bonds are turned in to the corporation in exchange for a specified number of common shares, with no cash payment being required. Convertible bonds are two securities simultaneously: a fixed-income security paying a specified interest payment and a claim on the common stock that will become increasingly valuable as the price of the underlying common stock rises. Thus, the prices of convertibles may fluctuate over a fairly wide range depending on whether they currently are trading like other fixed-income securities or are trading to reflect the price of the underlying common-stock.

Bond Ratings are letters of the alphabet assigned to bonds by rating agencies to express the relative probability of default.

Corporate bonds, unlike Treasury securities, carry the risk of default by the issuer. Three rating agencies, Standard & Poor's (S&P) Corporation, Moody's Investors Service Inc., and Fitch Inc. provide investors with bond ratings; that is, current opinions on the relative quality of most large corporate-and municipal bonds, as well as commercial paper. As independent organizations with no vested interest in the issuers, they can render objective

judgments on the relative merits of their securities. By carefully analyzing the issues in great detail, the rating firms, in effect, perform the *credit analysis* for the investor.

Standard & Poor's bond ratings consist of letters ranging from AAA, AA, A, BBB, and so on, to D.Plus or minus signs can be used to provide more detailed standings within a given category.

The first four categories, AAA through BBB, represent *investment-grade* securities. AAA securities are judged to have very strong, capacity to meet all obligations, whereas BBB securities are considered to have adequate capacity. Typically, institutional investors must confine themselves to bonds in these four categories. Other things being equal, bond ratings and bond coupon rates are inversely related.

Bonds rated BB, B, CCC, and CC is regarded as speculative, securities in terms of the issuer's ability to meet its contractual obligations. These securities, early significant uncertainties, although they are not without positive factors. Bonds rated C are, currently not paying interest, and bonds rated D are in default.

Junk bonds are high-risk, high-yield bonds that carry ratings of BB (S&P) or Ba (Moody's) or lower, with correspondingly higher yields. An alternative, and more .reassuring, name used-to describe this area of the bond market is the *high yield debt market. Default* rates oh junk bonds vary each year. The default rate, in 2001 was almost 9 percent, the highest level since 1991. It was over 6 percent in 2000 higher default rates would be expected during periods of economic difficulty, arid the United States experienced a recession beginning in 2001.

Of the large-number of corporate bonds outstanding, traditionally more than 80 percent have been rated A or better (based on the value of bonds outstanding). Traditionally, utilities and finance companies have the fewest low-rated bonds, and transportation companies the most (because of problems with bankrupt railroads)

Standard & Poor's debt-rating definitions:

AAA	Extremely strong capacity to pay interest and repay principal
AA	Strong capacity, to pay interest and repay principal
A	Strong capacity to pay interest and repay principal but more vulnerable to an adverse change in conditions than in the case of AA
BBB	Adequate capacity to pay interest and repay principal. Even more vulnerable to adverse change in conditions than A – rated bonds. Debt rated BB and below is regarded as having predominantly speculative characteristics.
BB	Less near-term risk of default than lower rated issues. These bonds are exposed to large ongoing uncertainties or adverse change in condition.
B	A larger vulnerability to default than BB but with the current capacity to pay interest and repay principal.
CCC	A currently identifiable vulnerability to default and dependent on favorable conditions to pay interest and repay principal.
CC	Applied to debt subordinated to senior debt rated CCC
C	Same as CC
D	A debt that is in default
+ or -	May be used to show relative standings within a category

Asset-Backed Securities:

The money and capital markets are constantly adapting to meet new requirements and conditions. This has given rise to new types of securities that were not previously available.

Securitization refers to the transformation of illiquid, risky individual loans into more liquid, less risky securities referred to as asset-backed securities (ABS). Another name for securitization is "structured finance.

The best example of this process, the mortgage-hocked securities issued by the federal agencies mentioned above, such as Ginnie Mae, are securities representing an investment in an underlying pool of mortgages. The federal agencies discussed carter purchase mortgages from banks and thrift institutions, repackage them in the form of securities, and sell them to investors as mortgage pools.

Investors in mortgage-backed securities are, in effect, purchasing a piece of a mortgage pool, taking into consideration such factors as maturity and the spread between the yield on the mortgage security and the yield on 10-year Treasuries (considered a benchmark in this market). Investors in mortgage-backed securities assume little default risk, because most mortgages are guaranteed by one of the government agencies. However, these securities present investors with uncertainty, because they can receive varying amounts of monthly payments depending on how quickly homeowners pay off their mortgages. Although the stated maturity can be as long as 40 years, the average life of these securities to date has been much shorter.

Ginnie Mae issues are well known to investors. This wholly owned government agency issues fully backed securities (i.e. they are full faith and credit obligations of the U.S. government) in support of the mortgage market. The GNMA pass-through securities have attracted considerable attention in recent years, because the principal and interest-payments on the underlying mortgages used to collateralize them are "passed through" to the bondholder monthly as the mortgages are repaid.

Rates on Fixed-Income Securities:

Interest rates on fixed-income securities fluctuate widely over the years as inflationary expectations change as well as demand and supply conditions for long-term funds. As we would expect on the basis of the return-risk trade-off, corporate bond rates exceed Treasury rates because of the possible risk of default, and lower rated corporate yield more than do higher rated bonds. The municipal bond rate as reported is below all other rates, but we must remember that this is an after-tax rate. To make it comparable, municipal bond yields should be adjusted to a taxable equivalent yield. When this is done, the rate will be much closer to the taxable rates. Investors can obtain daily information on the rates available on fixed-income securities in the "Credit Markets"-section of The Wall Street Journal.

EQUITY SECURITIES:

Unlike fixed-income securities, equity securities represent an ownership interest in a corporation. These securities provide a residual claim—after payment of all obligations to fixed-income claims on the income and assets of a corporation. There are two forms of equities, preferred stock and common stock. Investors are primarily interested in common stocks.

Preferred Stock:

Although technically an equity security, preferred stock is known as a hybrid security, because it resembles both equity and fixed-income instruments. As an equity security, preferred stock has an infinite life and pays dividends. Preferred stock resembles fixed income securities in that the dividend is fixed, in amount and known in advance, providing a stream of income very similar to that of a bond: The difference is that the stream continues forever unless the issue is called or otherwise retired (most preferred stock is callable). The price fluctuations in preferred often exceed those in bonds.

Preferred stockholders are paid after the bondholders but before the common stockholders in terms of priority of payment of income and in case the corporation is liquidated. However, preferred stock dividends are not legally binding but must be voted on each period by a corporation's board of directors. If the issuer fails to pay the dividend in any year, the unpaid dividend(s) will have to be paid in the future before common stock dividends can be paid if the issue is cumulative. (If non-cumulative, dividends in arrears do not have to be paid.)

A large amount of the total preferred stock outstanding is variable-rate preferred; that is, the dividend rate is tied to current market interest rates. Other trends in preferred stocks include auction-rate preferred, a type of floating-rate preferred where the dividend is established by auction: every 49 days. More than one-third of the preferred stock sold in recent years is convertible into common stock at the owner's option. A recent innovation is mandatory convertible preferred, which automatically convert to the common stock in a few years at a ratio specified at time of issuance. These mandatory convertibles pay above market yields, for which, investors give up roughly 20 percent of any upside potential

Most of the new hybrids are traded on the New York Stock Exchange (NYSE), offer fixed monthly or quarterly dividends considerably higher than investment-grade corporate bond yields, are rated as to credit-risk, and have maturities in the 30 to 49 year range. Hybrids are sensitive to interest rate changes and can be called, although a fixed dividend is paid for five years.

Common Stock:

Common stock represents the ownership interest of corporations, or the equity of the stockholders; and we can use the term equity securities interchangeably. If a firm's shares are held-by only a few individuals, the firm is said to be "closely Held." 'Most companies choose to "go public"; that is, they sell common stock to the general public. This action is taken primarily to 'enable the company to raise additional capital more easily. If a corporation meets certain requirements, it may,, if it chooses to, be listed on one or more exchanges. Otherwise, it will be listed in the over-the-counter market.

As a purchaser of 100 shares of common stock, an investor owns 100/n percent of the corporation (where n is the number of shares of common stock outstanding). As the residual claimants of the corporation, stockholders are entitled to income remaining after the fixed-income claimants (including preferred stockholders) have been-paid; also, in case of liquidation of the corporation, they are entitled to the- remaining assets after all other claims (including preferred stock) are satisfied.

As owners, the holders of common stock are entitled to elect the directors of the corporation and vote on major issues. Each owner is usually allowed to cast votes equal to the number

of shares owned for each director being elected. Such votes occur at the annual meeting of the corporation, which each shareholder, is allowed to attend. Most, stockholders vote by proxy, meaning that the stockholder authorizes someone else (typically management) to vote his or her shares. Sometimes proxy battles occur, whereby one; or more groups unhappy with corporate policies seek to bring about changes.

Stockholders also have limited liability, meaning that they cannot lose more than their investment in the corporation. In the event of financial difficulties, creditors have recourse only to the assets of the corporation, leaving the stockholders protected. This is perhaps the greatest advantage of the corporation and the reason why-it has been so successful.

Lesson # 27

BOND FUNDAMENTALS

BOND PRINCIPLES:

Special conventions are used to identify and to classify bonds.

1. Identification of Bonds:

We identify a bond by citing the issuer, the bond's coupon, and its maturity. The coupon rate is the fixed interest rate that is the basis for the quantity of dollars the bond pays. For instance, an investor might instruct a broker to buy 5 of the "Hertz sevens of 03." This order calls for a purchase of $5,000 face value of the Hertz bonds carrying a 7% stated interest rate and a maturity in the year 2003. The face value of a bond is also called its par value. The 7% coupon rate, coupled with the $5,000 par value, means an investor would receive $350 per year from this investment. In the financial press, this bond is listed as Hertz 7s03. The s does not stand for anything, but is pronounced when the bond is identified, Hertz might issue another bond paying 81/2% per year and maturing in 2010. These would be the "eight and one-halves of ten": Hertz $8^1/_2$s l0.

Bonds are identified by issuer, coupon, and maturity.

2. Classification of Bonds:

A legal document called the indenture contains the details of a bond issue. This pamphlet describes the terms of the loan, to include the issuer, security for the loan, and the term of repayment.

Issuer:

One method of classifying bonds is by the nature of the organization selling the bond. Corporations; federal, state, and local governments; government agencies; and foreign corporations and governments all issue bonds. (A bond sold by a state or local government is a municipal security.) These broader groups are divided into subcategories.

Security:

The security of a bond refers to the collateral that backs the bond.

Unsecured Debt:

All debt of the U.S. Treasury department is secured by the ability of the federal government to make principal and interest payments from general tax revenues. No specific assets are ever listed as collateral for federal debt.

State and local governments can also issue debt without specific assets pledged against it. These are full faith and credit issues or general obligation bonds. Like obligations of the federal government, these bonds are backed by the taxing power of the issuer.

Financially sound corporations frequently issue debentures, which are really just signature loans backed by the good name of the company. If a company subsequently issues a second unsecured bond, it would be a subordinated debenture. These bonds have a claim on the company's assets after those of the original debenture holders.

Secured Debt:

There are a great many ways in which companies provide security for a risky debt issue. A municipal bond might be a revenue bond used to finance a turnpike or a bridge across a river, with user fees being the principal source of debt repayment. An assessment bond is typically used to pay for a project that benefits a specific group of people. The installation of streetlights in a residential area is an example. People who directly and routinely benefited from this improvement would be assessed a higher property tax.

Corporate secured debt comes in many forms. A mortgage is a well-known security using land and buildings as collateral. Mortgages are especially popular with public utilities. Their power lines, poles, and the land on which they sit frequently back a debt issue. Other securities such as investment assets or the stock of a subsidiary back a collateral trust bond. An equipment trust certificate provides physical assets such as a fleet of trucks as collateral for the loan. Airlines frequently use these to finance the purchase of new airplanes; railroads use them to finance boxcars. In each case the collateral may be easily transported to a new purchaser if the bondholder wishes to liquidate the collateral in the aftermath of a bankruptcy.

Term:

Another common debt classification is by term, or the original life of the security. Short-term securities are those with an initial life of less than one year. U.S. Treasury bills are a good example. Intermediate-term securities like U.S. Treasury notes have lives ranging from two years to ten years. A long-term security (such as a U.S. Treasury bond) has a maturity greater than ten years. Table 4-2 provides some details on the characteristics of Treasury securities.

Loan arrangements may also be open-ended, as with a corporate line of credit at a commercial bank or a private citizen's home equity loan. These loans, however, are seldom readily marketable and usually cannot be resold to another lender.

Some bonds are part of a larger debt obligation known as a serial bond. Such a bond issue has a series of maturity dates for specific portions of the debt rather than one single date for the entire issue.

3. Terms of Repayment:

A potential bond investor is interested in knowing the structure of the cash flows promised in the bond indenture. Several repayment patterns are common.

Interest Only:

Most marketable debt is structured such that the periodic payments are entirely interest. The principal amount of the loan is repaid in its entirety at maturity.

Sinking Fund:

In some circumstances lenders may require that the borrower provide for the eventual retirement of the debt by setting aside a portion of the debt principal each year. Such a fund is called a sinking fund. For instance, a $10-million, 20-year debt issue might provide that after five years, the borrower must deposit $1 million into a special escrow account and another $1 million every third year to partially offset the eventual burden of debt repayment.

Alternatively, the indenture might provide that after a period of time the borrower must retire a certain number of the bonds each year. This format means that a portion of the debt must be paid off early according to a schedule outlined in the bond indenture.

Balloon Loan:

A balloon loan may involve a partial amortization of the debt with each payment, but with the bulk of the principal due at the end of the loan term. Frequently all of the principal is due at the end of a balloon loan. These bonds are rarely found in marketable form; they are most often used in commercial banking.

Income Bond:

The key characteristic of an income bond is that the interest is payable only if it is earned. An income bond might be used to finance some type of income-producing property such as a parking garage. If the facility is unprofitable in the first few years, the interest does not have to be paid. It may or may not accumulate depending on the specifications of the bond indenture. Income bonds are a relic from a bygone age and are no longer common.

4. **Bond Cash Flows:**

Relative to other types of securities, bonds produce cash flows that an analyst can predict with a high degree of accuracy. The cash flow patterns fall into four categories: annuities, zero coupon bonds, variable rate bonds, and consols.

Annuities:

Most bonds are annuities plus an ultimate repayment of principal. An annuity promises payments of a fixed amount on a regular periodic schedule for a finite length of time. In the United States and Japan, virtually all bonds pay interest twice per year. In Europe, the tradition is to pay interest once annually.

Zero Coupon:

A zero coupon bond has a specific maturity date when it returns the bond principal, but it pays no periodic income. In other words, the bond has only a single cash inflow the par value returned at maturity. An investor might pay $450 for a bond that promises to return $1,000 in 7.5 years. The investor's return comes from the $550 increase in value over the seven-and-one-half years. These types of bonds are still relatively new in the United States. The retail department store JCPenney (JCP, NYSE) issued the first publicly offered zero coupon bond in 1982. Chase Manhattan Bank (CMB, NYSE) and McDonald's (MCD, NYSE) followed suit later that year.

Variable Rate:

Some securities do not carry a fixed interest rate, but allow the rate to fluctuate in accordance with some market index. Such a bond is a variable rate bond, also called an adjustable rate bond. U.S. savings bonds are a good example. The interest paid on these is 90 percent of the prevailing rate on five-year Treasury securities, with a 4 percent minimum. If market rates move higher, the income earned on these bonds increases, and vice versa.

A special type of variable rate bond is the step-up bond, one whose coupon increases according to a predetermined schedule. In February 1995 the Federal Home Loan Bank issued a three-year step-up bond[10] with a coupon that began at 7.25%. Every six months thereafter the coupon increases, eventually settling at 9.25%.'

Most bonds are composed of an annuity plus a single sum at maturity.

Consols:

With a consol, a level rate of interest is paid perpetually; the bond never matures, and the interest is paid forever. Bonds of this type are traded in Europe and in Canada, but they are rare in the United States. Two examples are the Lehigh Valley Railroad 4'/2% and 6% issues. Issued in 1873, these bonds were "due only on default of interest." A mortgage on one of the company's main railroad lines secured them. Bondholders agreed to a modification of the indenture in 1949 giving the bonds a definite maturity of 1989. They are now gone and part of history.

U.S. companies do occasionally issue very long-term bonds, however. In fact, on January 1, 1937, of the 4,425 U.S. corporate bonds outstanding, 88 (2.7 percent of the total) had a maturity in excess of 99 years." Long-term bonds seem to be returning to favor with corporate issuers. Walt Disney Company issued $150 million par value of a 100-year, 7.5% coupon bond in July 1993. The offering was an enormous success, although one analyst predicted that the bond would become a "historic artifact, a curiosity."

Earlier in 1993 five other companies issued 50-year bonds. In 1992 there was only one 50-year bond issued, and prior to that none had been issued in decades. The last 100-year bond issued prior to the Disney bond was a Chicago & Eastern Illinois Railroad bond in 1954.

Inflation-Indexed Treasury Bonds:

Beginning the end of January, 1997, investors have been able to purchase Treasury Inflation Protected Securities (TIPS) from the U.S. Treasury department. The securities are obligations of the federal government with a maturity and coupon, but with an added feature to provide protection against inflation.

The bonds have a face value of $1,000 and a semiannual coupon that so far has ranged between 3% and 4% per year. Every six months the government adjusts the principal value of the bond according to changes in the Consumer Price Index. If, for instance, the CPI rises 4%, the par value of the bond rises to $1,040 and the coupon rate is applied to this higher rate.

5. Convertible and Exchangeable Bonds:

Some debt instruments have a valuable conversion option. The bondholder has the right, but not the obligation, to exchange the debt instrument fqr another security or for some physical asset. A convertible bond may be exchanged for common stock in the company that issued the bond. An exchangeable bond may be exchanged for shares in a different firm. At one time International Business Machines (IBM, NYSE) owned a substantial chunk of Intel (JNTC, NASDAQ). IBM issued a 6^3/8% bond exchangeable into 26.143 shares of Intel. An investor in this bond had the security of IBM and the market potential of Intel.

The conversion is a one-way street. Once conversion occurs, the security holder cannot elect to reconvert and regain the original debt security. Chapter Twelve of this book provides detailed coverage of convertible securities.

6. Registration:

Bond registration refers to how the ownership interest is recorded. There are three methods: bearer bonds, registered bonds, and book entry bonds.

Bearer Bonds:

A bearer bond is one that does not have the name of the bondholder printed on it, Like a hundred dollar bill, the bond belongs to whomever legally holds it. These bonds have actual coupons around the perimeter that must be physically clipped with scissors as interest payment dates arrive. Because of this characteristic, bearer bonds are also called coupon bonds. Each coupon bears a date and a dollar amount. Once clipped, the coupons can usually be deposited into the bondholder's bank account at any teller window. New debt may no longer be issued in this form in the United States.

Bearer bonds are popular outside the United States, however. The Internal Revenue Service is largely responsible for this fact, as bearer bonds have for years been popular among those interested in evading taxes on their interest income. Interest earned on a bearer bond is difficult for the IRS to trace, and much of it was (and probably still is) unreported on individual income tax returns. They are also popular with international embezzlers and drug cartels. Ironically, the principal source of bearer bonds has historically been the U.S. Treasury department.

Registered Bonds:

Bonds that do show the bondholder's name are registered bonds. Rather than clipping coupons, holders of registered bonds receive an interest check in the mail from the issuer of the debt.

Book Entry Bonds:

The U.S. Treasury issues new bonds in book entry form only, meaning that ownership is reflected only in the accounting records. No actual bond certificate changes hands. Until a few years ago an investor could buy a Treasury note or bond and actually take delivery of the security. Now, however, a person who wants to buy these securities on their own must open a Treasury Direct Account (TDA) at any of the 35 Federal Reserve banks or branches. The Treasury department issues no certificates; instead, they open an account on an investor's behalf, crediting interest as it is earned and principal as it is repaid. The principal may also be reinvested m a new Treasury security.

Opening a Treasury Direct Account is a simple matter. Most local banks have the one-page application available from a customer service representative. Investors generally submit noncompetitive bids, meaning they agree to accept the average price and yield prevailing at the next Treasury auction. Figure 4-1 shows the application forms.

It used to be that investors interested in a TDA had to get a certified check from their bank and mail it in. Now, an investor can make arrangements with the U.S. Treasury authorizing a direct transfer from his or her checking or savings account. If an investor chooses to sell a Treasury security before its maturity, he or she can easily do so via the Sell Direct option.

For a flat fee of $34 regardless of the size of the transaction, the government will take three bids and sell your bonds to the highest bidder within 24 hours.

You can check your TDA balance either by phone or over the Internet. The Treasury charges an annual custodial fee of $25 for accounts greater than $100,000, but nothing for smaller accounts. Given that interest on treasury securities is exempt from state and local tax, it is odd that more investors do not choose these investments.

Your local bank offers certificates of deposit backed by treasury securities, but CD interest is fully taxable, while the underlying assets are not. It would make much more sense to do the investing directly rather than going through the intermediary.

Investors also commonly buy Treasury securities through a brokerage firm, thereby eliminating the need to open a TDA. The brokerage firm lets investors use their account, but they pay a commission for the purchase or sale of bonds traded this way. Trading $10,000 par value of Treasury securities might cost as much as $200 at a full-service brokerage house. Another disadvantage of buying through a broker is that thę newspaper price for a Treasury security is based on a $l-million purchase. Buying a smaller quantity probably adds about 0.5 percent to the-bond price. This "premium" reflects the cost of the brokerage firm handling the "small" order. Depending on the bond term, this higher price lowers the yield by 7 to 10 basis points. A basis point is 0.01%. By using the TDA, an investor would not give up any of the yield.

BOND FUNDAMENTALS Contd…

BOND PRICING AND RETURNS:

As with any time-value-of-money application, there is a deterministic relationship between the current prices of a security, it's promised future cash flows, and the riskiness of those cash flows. The current price is the market's estimation of what the expected cash flows are worth in today's dollars.

Valuation Equations:

Annuities:

For an ordinary annuity bond paying interest semiannually and assuming it has just made an interest payment, the valuation equation is as follows:

$$P_o=\sum C_t/ (1+r/2)^t$$

where;

n = term of the bond in semiannual periods
C_t = cash flow at time t
r = discount rate
P_o = current price of the bond
t = time in semiannual periods from the present

The bond pricing relationship is customarily expressed in terms of the number of semiannual payment periods. An eight-year bond, for example, has 16 semiannual payments. This procedure also requires dividing the annual discount rate, r, by two to turn it into a semiannual equivalent.

To illustrate, we split equation into two parts, one for the interest component (the cash flows C_t and one for the principal:

$$P_o=\sum C_t/ (1+r/2)^t + Par/1+r/2)^n$$

Bond price = PV (interest) +PV (principal)

Suppose a bond currently sells for $900, pays $95 per year (interest paid semiannually), and returns the par value of $1,000 in exactly eight years. What discount rate is implied in these numbers? To find out, we solve the following valuation equation:

$$\$900=\sum \$47.50/(l+r/2)^t + \$1,000/(l+r/2)^{16}$$

This equation can be solved using time-value-of-money tables, a finance calculator, or a spreadsheet package such as Lotus 1-2-5 or Microsoft Excel. We find r = 11.44%.

This bond's return comes from two sources: periodic interest and the return of the bond principal in eight years. These two components can be valued separately after determining the appropriate interest rate. Using 11.44%, the value of the interest component is $489.40, while the principal value is $410.60 in current dollars. These two values sum to the bond's current market price of $900.

The bond pricing relationship is customarily expressed in terms of semiannual periods.

Yield to Maturity:

In the preceding valuation equations, investors call the discount rate, r, the yield to maturity. This concept is precisely the same as internal rate of return in corporate finance applications.

Calculating the Yield to Maturity:

An easy-to-use approximation method usually provides an estimate within a few basis points of the true yield to maturity.

$$\text{YTM}_{\text{approximate}} = \text{(annual interest} - \text{((market price-par value)/years until maturity))/0.6(market price)} + \text{0.4(par value)}$$

Plugging in the values from the previous example, we find an approximate yield to maturity of 6.32%

In this case, the value from the approximation formula is near the true value from the complete valuation equation. When the bond sells for near par, the approximation method is accurate. Some error is introduced when a bond sells for a substantial discount or premium.

Spot Rates:

For a given issuer, all securities of a particular maturity will not necessarily have the same yield to maturity, even if they have the same default risk. A spot rate is the yield to maturity of a zero coupon security of the chosen maturity. You can observe spot rates directly from the U.S. Treasury strips portion of the government bond. A treasury strip is a government bond or note that has been decomposed into two parts, one for the stream of interest payments and one for the return of principal at maturity- These are sometimes called interest only and principal only securities, respectively. The codes in the newspaper listing are c_i for coupon interest, np for note principal, and bp for bond principal- The principal-only version of a U.S. treasury strip is a manufactured zero coupon security, but one whose price reflects the prevailing spot rate.

The yield to maturity is the single interest rate that, when applied to the stream of cash flows associated with a bond, causes the present value of those cash flows to equal the bond's market price. Yield to maturity is a useful and frequently cited statistic. It is akin to an average of the various spot rates over the security's life. The market, however, does not value a bond using the yield to maturity concept. Rather, the yield to maturity is a derived statistic after the bond value is already known; we need to know the bond price in order to get the yield to maturity.

For valuation purposes, a bond should be thought of as a package of zero coupon securities, each providing a single cash flow, and each valued using the appropriate spot rate. In other words, each component is discounted by a specific rate rather than by some average rate.

You can think of the yield to maturity as an "average" of the spot rates, or you can visualize it as a flat yield curve at some constant interest rate. This single interest rate makes the present value of the future cash flows equal to the bond's market price.

It is important to note in the valuation process that the yield to maturity is an after-the-fact calculation. Investors value each cash flow by discounting them at the appropriate spot rate. The sum of these values is the bond's market price. From this price we derive the yield to maturity.

Realized Compound Yield:

A modest complication occurs when comparing a bond that pays semiannual interest with some competing investment that pays interest on a different lime schedule. If bonds are being compared to other securities, you can best reduce the likelihood that you compare apples with oranges by computing the effective annual rate for all of them.

We do this via equation:

$$\textbf{Effective annual rate} = (1+ r/x)^x - 1$$

Where;

r= yield to maturity
x = number of payments per year

Current Yield:

A bond's yield to maturity measures the total return the bondholder receives if the bond is kept for its entire life. The current yield, only measures the return associated with the bond's interest payments. Capital gains or losses are not included in the current yield.

Current yield is an important statistic for someone primarily concerned with the spendable income their investments generate. The fact that the long-run rate of return (the yield to maturity) may be higher is not as important. A zero coupon bond has a current yield of zero. It would be an inappropriate investment for a retired person who needed routine interest checks for living expenses.

A bond whose market price is less than its par value is selling at a discount. If the market price is more than the par value, the bond sells at a premium. Note that for bonds selling at a discount, the yield to maturity will always be greater than the current yield because of the capital gain an investor receives when the bond matures at par value. Similarly, for bonds selling at a premium, the yield to maturity will be less than the current yield.

The reason a coupon-paying bond sells for a discount is that its package of cash flows is worth less than that offered by the average competing investment.

Accrued Interest:

Bondholders earn interest each calendar day they hold a bond, unlike the situation with common stock, where the dividend is an all-or-nothing feature. Despite this aspect, firms generally only mail interest payment checks twice each year. Someone might buy a bond today and receive a check for six months' interest two weeks later — a substantial return in 14 days. The situation does not work this way, however, for the story is incomplete.

The buyer of a bond must pay the accrued interest to the seller of the bond. Similarly, the bond seller receives accrued interest from the new bond owner- One day's interest accrues

for each day the bond exists. The owner of the bond is entitled to it even though it might not be distributed for several more months. The price of a bond including the accrued interest is known as the dirty price. The price without accrued interest is the clean price. By convention in (lie United States, we compute the accrued interest on corporate and municipal bonds using a 360-day year (12 months of 30 days each) and do not count the transaction settlement date in the total. With Treasury securities, we use the actual number of days.

At the end of the calendar year, bond investors must report the interest they earned to the Internal Revenue Service. Interest income from bonds equals the interest checks received plus accrued interest received minus accrued interest paid.

BOND RISKS:

Statements Such as "stock is risky, bonds arc not," are not accurate. Bonds do carry risk, although the nature of their risk; is different from that of an equity security. To properly manage a group of bonds, an investor must understand the types of -risk they bear.

Price Risks:

The price of a bond can change ever)' day as the "net chg" column in Figure 4-2 indicates. The two components of price risk are default risk and interest rate risk.

Default Risk:

The possibility that a firm will be unable to pay the principal and interest on a bond in accordance with the bond indenture is known as the default risk. Standard & Poor's and Moody's are the two leading advisor)' services reporting on the default risk of individual bond issues. Standard & Poor's gives bonds a rating based on a scale of AAA (least risk) to D (bonds in default). The ratings from AA to CCC may carry a plus or minus. Table 4-5 shows the complete set of ratings. An investment grade bond is rated BBB or higher; any bond with a lower rating is known as a junk bond. Many fiduciaries are limited by law to bonds that are investment grade.

Some bonds originate with an investment grade, but are later downgraded below BBB. Such a bond is a fallen angel. Salomon Brothers uses the term zombie bond to refer to a highly speculative bond, once thought long dead, that shows signs of life by a price run-up.

Standard & Poor's has a separate description for each of the ratings AAA, AA, A, and BBB. Junk bonds, however, are all covered by a single definition, the salient portion of which states that these bonds are regarded on balance, as predominately speculative with respect to capacity to pay interest and repay principal in accordance with the terms of the obligation.

Interest Rate Risk:

Bonds also carry interest rate risk, which is the chance of loss because of changing interest rates. If someone buys a bond with a 10.4% yield to maturity and market interest rates rise a week later, the market price of this bond will fall. It would fall because risk-averse investors will always prefer a higher yield for a given level of risk. Newly issued, equally risky bonds will yield more after the interest rate rise, and investors will only be willing to purchase the old bonds if their price is reduced. Relative to the purchase price, a bondholder has a paper

loss after the rise in interest rates. If the bonds were to be sold at this point, there would be a realized loss.

Suppose in December 1999 an investor buys a newly issued, 7% coupon, 15-year bond at par. Because the bond is purchased at par, its yield to maturity equals the coupon rate of 7%. At the purchase date, the valuation equation is as follows:

$$P_o=\sum \$35.00/(1+.07/2)^t + \$1000/(1+.07/2)^{30} = \$1000$$

One year later (December 2000) bonds of similar risk yield 6.5%. The decline in interest rates will cause our investor's bond to appreciate. Its new price should be

$$P_o=\sum \$35.00/(1+.065/2)^t + \$1000/(1+.065/2)^{28} = \$1045.5$$

The principal value of the bond appreciated by 4.55% from the purchase price, plus the bondholder received $70 in interest over the year. If the bond were sold at this point, the investor's holding period return would be:

$$(1045.51-1000+70)/1000 = 11.55\%$$

which is substantially greater than the anticipated 7% yield to maturity. Note that if the investor does not sell at this point, choosing instead to keep the bond until its maturity, the bond price will eventually converge on the $1,000 par value.

Suppose that two years later, in December 2002, interest rates have gone up to 8%. The bond price will necessarily come down:

$$P_o=\sum \$35.00/(1+.08/2)^t + \$1000/(1+.08/2)^{24} = \$923.77$$

These changing values illustrate the nature of interest rate risk: changing interest rates will change the market value of a bond investment. While it is true that investors who hold bonds until maturity almost always get their investment back, they can never know for certain what path the price will take as it moves toward its maturity date.

Convenience Risks:

Convenience risks comprise another category of risk associated with bond investments. These risks may not be easily measured in dollars and cents, but they still have a cost.

Lesson # 29

BOND YIELDS AND PRICES

Bond Yields:

Bond yields and interest rates are the same concept. Therefore, we begin our discussion of bond yields with a brief consideration of interest rates. Interest rates measure the price paid by a borrower to a lender for the use of resources over some time period—that is, interest rates are the price for loan able funds. The price differs from case to case, based on the demand and supply for these funds, resulting in a wide variety of interest rates. The spread between the lowest and highest rates at any point in time could be as much 10 to 15 percentage points. In bond parlance, this would be equivalent to 1,000 to 1,500 basis points, since 1 percentage point of a bond yield consists of 100 basis points.

It is convenient to focus on the one interest rate that provides the foundation for other rates. This rate is referred to as the short-term riskless rate (designated RF in this 'text) and is typically proxied by the rate on Treasury bills. All other rates differ from RF because of two factors:

1. Maturity differentials
2. Risk premiums

The Basic Components of Interest Rates:

Explaining interest rates is a complex task that involves substantial economics reasoning and study. Such a task is not feasible in this text. However, we can analyze the basic determinants of nominal (current) interest rates with an eye toward recognizing the factors that affect such rates and cause them to fluctuate. The bond investor who understands the foundations of market rates can then rely on expert help for more details, and be in a better position to interpret and evaluate such help.

The basic foundation of market interest rates is the opportunity cost of foregoing consumption; representing the rate that must be offered to individuals to persuade them to save rather than consume. This rate is sometimes called the-real risk-free rate of interest because it is not affected by price changes or risk factors. We will refer to it simply as the real rate and designate it RR in this discussion.

Thus, for short-term risk-free securities, such as three-month Treasury bills, the nominal interest rate is a function of the real rate of interest and the expected inflationary premium. This is expressed as, which is an approximation:

$RF \approx RR + EI$

Where;
RF = short term Treasury bill rate
RR = the real risk-free rate of interest
El = the expected rate of inflation over the term of the instrument

Measuring Bond Yields:

Several measures of the yield on a bond are used by investors. It is very important for bond investors to understand which yield measure is being discussed, and what the underlying assumptions of any particular measure are. To illustrate these measures, we will use as an

example a three-year, IC-percent coupon, AAA-rated corporate bond, with interest payments occurring exactly six months from now, one year from now, and so forth.

Current Yield:

The ratio of the coupon interest to the current market price is the current yield, and, this is the measure reported daily In the Wall Street Journal for those corporate bonds shown under the sections "New York Exchange Bonds" and "AMEX Bonds." The current yield is clearly superior to simply citing the coupon rate on a bond, because it uses the current market price as opposed to the face amount of a bond (almost always $1,000). However, current yield is not a true measure of the return to a bond purchaser, because it does not account for the difference between the bond's purchase price and its eventual redemption at par value.

Yield to Maturity:

The rate of return on bonds most often quoted for investors is the yield to maturity (YTM), a promised rate of return that will occur only under certain assumptions. It is the compound rate of return, an investor will receive from a bond purchased at the current market price if:

1. The bond is held to maturity, and
2. The coupons received while the bond is held are reinvested at the calculated yield to maturity.

Barring default, investors will actually cam this promised rate if, and only if, these two Conditions are met. As we shall see, however, the likelihood of the second condition actually being met is extremely small.
The yield to maturity, is the periodic interest rate that equates the present value of the expected future cash flows (both coupons and maturity value) to be received on the bond to the initial investment in the bond, which is its current price. This means that the yield to maturity is the internal rate of return (IRR) on-the bond investment, similar to the IRR used in capital budgeting analysis.

Yield to Call:

Most corporate bonds, as well as some government bonds, are callable by the issuers, typically after some deferred call period. For bonds likely to be called the yield to maturity calculation is unrealistic. A better calculation is the yield to call. The end of the deferred call period, when a bond can first be called, is often used for the yield to call calculation.
This is particularly appropriate for bonds selling at a premium (i.e. high-coupon bonds with market prices above par value).

Realized Compound Yield:

After the investment period for a bond is over, an investor can calculate the realized, compound yield (RCY). This rate measures the compound yield on the bond investment actually earned over the investment period, taking into account all intermediate cash flows and reinvestment rates. Defined in this mannerist cannot be determined until the investment is concluded and all of the cash flows are known. Thus, if you invest $1,000 in a bond for five years, reinvesting the coupons as they are received, you will have X dollars at the

conclusion of the five years, consisting of the coupons received, the amount earned from reinvesting the coupons, and the $1,000 par value of the bond payable at, maturity. You can then calculate your actual realized rate of return on the investment.

The RCY for a bond can be calculated by dividing the total ending wealth (including the purchase price) at the bond's maturity by the amount invested; and raising the result to the 1/n power, where n is the number of compounding periods. Next, subtract 1.0 from the result. Finally, because of the semiannual basis for bonds, multiply by 2 to obtain the bond equivalent rate.

The semi-annual realized compound yield can be calculated using the following formula:

RCY = [total ending wealth / purchase price of bond] 1/ n – 1.0

BOND PRICES:

The Valuation Principle:

A security's intrinsic value, or estimated value, is the present value of the expected cash flows from that asset. Any security purchased is expected to provide one or more cash flows some time in the future. These cash flows could be periodic, such as interest or dividends, or simply a terminal price or redemption value, or a combination of these. Since these cash flows occur in the future, they must be discounted at an appropriate rate to determine their present value. The sum of these discounted cash flows is the estimated intrinsic, value of the asset. Calculating intrinsic value, therefore, requires the use of present value techniques.

$$\text{Value } t = 0 = \sum_{i=1}^{n} \text{cash flows} / (1 + k)t$$

Where;
Value t = 0 = the estimated value of the asset now (time period 0)
Cash flows = the future cash flows resulting from ownership of the asset
k = the appropriate discount rate or rate of return required by an investor for an investment of this type
n = number of periods over which the cash flows are expected

To solve and derive the “intrinsic value of a security”, it is necessary to determine the following:

1. The expected cash flows from the security. This includes the size and type of cash flows, such as dividends, Interest, face value expected to be received at maturity, or the expected price of the security at some point in the future.
2. The riming of the expected cash flows. Since the returns to be generated from security occur at various times in the future, they must be properly documented far discounting back to time period 0 (today). Money has a time value, and the timing of future cash flows significantly affects the value of the asset today.
3. The discount rate, required rate of return demanded by investors. The discount rate used will reflect the time value of the money and the risk of the security. It is an opportunity cost, representing the rate foregone by an investor in the next best alternative with comparable risk.

Bond Valuation:

The price of a bond should equal the present value of its expected cash flows. The coupons and the principal repayment of $1,000 are known, and the present value, or price, can be determined by discounting these future payments from the issuer at an appropriate required yield, r, for the issue. To solve for the value of an option-free coupon bond.

$$P = \sum_{i=1}^{n} ct / (1 + r)^{t} + FV / (1 + r)^{n}$$

Where;

P = the present Value or price of the bond today (time period 0)
c = the semiannual coupons or interest payments
FV = the face value (or par value) of the bond
n = the number of semiannual periods until the bond matures
r = the appropriate semiannual discount rate or market yield

In order to conform with the existing payment practice on bonds of paying interest annually rather than annually, the discount rate being used (r), the coupon (ct on the bond, and the number of periods are all on a semiannual basis.

For expositional purposes, we will illustrate the calculation of bond prices by referring to the present value tables at the end of the text; in actuality, a calculator or computer is used. The present value process for a typical coupon-bearing bond involves three steps, given the dollar coupon on the bond, the face value, and the current market yield applicable to a particular bond:

1. Using the present value of an annuity table, determine the present value of the coupons (interest payments).
2. Using the present value table, determine the present value of the maturity (par) value of the bond; for our purposes, the maturity value will always be $1,000.
3. Add the present values determined in steps 1 and 2 together.

BOND PRICE CHANGES:

Bond Price Changes Over Time:

We now know how to calculate, the price of a bond, using the cash flows to be received and the YTM as the discount rate. Assume that we calculate the price of a 20-year bond issued five years ago and determine that it is $910. The bond still has 15 years to maturity. What can we say about its price over the next 15 years?

When everything else is held constant, including market interest rates, bond prices that differ from the bond's face value (assumed to be $1,000) must change over time. Why? On a bond's specified maturity date, it must be worth its face value or maturity value. Therefore, over time, holding all other factors constant, a bond's price must converge to $1,000 on the maturity date because that is the amount the issuer will repay on the maturity date.

After bonds are issued, they sell at discounts (prices less than $1,000) and premiums (prices greater than $1,000) during their lifetimes. Therefore, a bond selling at a discount will experience a rise in price over time, holding all other factors constant, and a bond selling at

a premium will experience a decline in price over time, holding all other factors constant, as the bond's remaining life approaches the maturity date.

Bond Price Changes As a Result of Interest Rate Changes:

Bond prices change because interest rates and required yields change. Understanding how bond prices change given a change in interest rates is critical to successful bond management. The basics of bond price movements as a result of interest rate changes have been known for many years. For example, over 40 years ago, Burton Malkiel derived five theorems about the relationship between, bond prices and yields. Using the bond valuation model, he showed the changes that occur in the price of a bond (i.e., its volatility), given a change in yields, as a result of bond variables such as time to maturity and coupon. We will use Malkiel's bond theorems to illustrate how bond prices change as a result of changes in interest rates.

Bond Prices Move Inversely to Interest Rates:

Investors must always keep in mind the fundamental fact about the relationship between bond prices and bond yields. Bond prices, move inversely to market yields. When the level of required yields demanded by investors on new issue changes, the required yields on all bonds already outstanding will also change. For-these yields to change, the prices of these bonds must change. This inverse relationship is the basis for understanding, valuing, and managing bonds.

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Effects of Maturity:

The effect of a change in yields on bond prices depends on the maturity of the bond. An important principle is that for a given change in market yields, changes in bond prices are directly related to time to maturity: Therefore, as interest rates change, the prices of longer term bonds will change more than the prices of shorter term bonds, everything else being equal.

The Effects of Coupon:

In addition to the maturity effect, the change in the price of a bond as a result of a change in interest rates depends on the coupon rate of the bond. We can state this principle as (other, things equal): Bond price fluctuations (volatility) and bond coupon rates are inversely related. Note that we are talking, about percentage-price fluctuations; this relationship does not necessarily hold if we measure volatility in terms of dollar price changes rather than percentage-price changes..

BOND YIELDS AND PRICES Contd…

MEASURING BOND PRICE VOLATILITY:

Duration:

In managing a bond portfolio, perhaps the most important consideration is the effects of yield changes on the prices and rates of return for different bonds. The problem is that a given change in interest rates can result in very different percentage-price changes for the various bonds that investors hold. We saw earlier that both maturity and coupon affect bond price changes for a given change in yields. One of the problems, however, is that we examined the effects of these two variables separately.

Duration is a measure of a bond's lifetime that accounts for the entire' pattern of cash flows over the life of the bond

Duration measures the weighted average maturity of a (non-callable) bond's cash flows on a present value basis. We can also say that duration is the weighted average of the times until each payment (coupon or principal repayment) from the bond is received.

Calculating Duration:

To calculate duration, it is necessary to calculate a weighted time period, because duration is stated in years, the time periods at which the cash flows are received are expressed in terms of years and denoted by t in this discussion. When all, of these t's have been weighted and summed, the result is the duration, stated in years.

The present values of the cash flows, as a percentage of the bond's current market price, serve as the weighting factors to apply to the time periods. Each weighting factor shows the relative importance of each cash flow to the bond's total present value, which is simply its current market price. The sum of these weighting factors will be 1.0, indicating that all cash flows have been accounted for. The sum of all the discounted cash flows from the bond will equal the bond's price. The equation for duration is shown as:

$$\textbf{Macaulay Duration} = D = \sum_{i=1}^{n} \textbf{PV (CFt) / market price * t}$$

Where;
t = the time period at which the cash flow is expected to be received
n = the number of periods to maturity
PV (CFt) = present value of the cash flow in period t, discounted at the yield to maturity.
Market price = the bond's current price or present value of all the cash flows

Understanding Duration:

How is duration related to the key bond variables previously analyzed? The calculation of duration depends on three factors:

- The final maturity of the bond
- The coupon payments
- The yield to maturity

1. Duration expands with time to maturity but at a decreasing rate (holding the size of coupon payments and the yield to maturity constant particularly beyond 15 years time to maturity). Even between 5 and 10 years time to maturity, duration is expanding at a significantly lower rate than in the case of a time to maturity of up to 5 years, where it expands rapidly. Note that for all coupon-paying bonds, duration is always less than maturity. For a zero-coupon bond, duration is equal -to time to maturity.
2. Yield to maturity is inversely related to duration (holding coupon payments and maturity constant).
3. Coupon is inversely related to duration (holding maturity and yield to maturity constant). This is logical, because higher coupons lead to quicker recovery of the bond's value, resulting in a shorter duration, relative to lower coupons.

Why is duration important in bond analysis and management? First, it tells us the difference, between the effective lives of alternative bonds. Bonds A and B, with the same duration but different years to maturity, have more in common than bonds C and .D with the same maturity but different durations. For any particular bond, as maturity increases, the duration increases at a decreasing rate.

Estimating Price Changes Using Duration:

The real value of the duration mea-sure to bond investors is that it combines coupon and maturity, the two key variables that investors must consider in response to expected changes in interest rates, As noted earlier, duration is positively related to maturity and negatively related to coupon; However, bond-price changes are directly related to duration; that is, the percentage change in a bond's price, given a change in interest rates, is proportional to its duration. Therefore, duration can be used to measure interest rate exposure.

Convexity:

For very small changes in the required yield the approximation is quite close and at times could be exact. However, as the changes become larger the approximation becomes poorer. We refer to the curved nature of the price-yield relationship as the bond's convexity (the relationship is said to be convex because it opens upward). More formally, convexity is a term used to refer to the degree to which duration changes as the yield to maturity changes. The degree of convexity is not the same for all bonds. Calculations of price changes should properly account for this convexity in order to improve the approximation of a bond's price change given some yield change.

Convexity is largest for low coupon bonds, long-maturity bonds, and low yields to maturity. If convexity is large, large changes in duration are implied, with corresponding inaccuracies in forecasts of price changes. Therefore, when dealing with securities that have high convexity, the convexity effect on price change must be considered.

Some Conclusions on Duration:

What does this analysis of price volatility mean to bond investors? The message is simple to obtain the maximum (minimum) price volatility from a bond; investors should choose bonds with the longest (shortest) duration. If an investor already owns a portfolio of bonds, he or she can act to increase the average modified duration of the portfolio if a decline in interest rates is expected and the investor is attempting to achieve the largest price appreciation possible. Fortunately, duration is additive, which means that a bond portfolio's

modified duration is a (market value) weighted average of each individual bond's modified duration.
How popular is the duration concept in today's investment world? This concept has become widely known and referred to in the popular press. Investors can find duration numbers in a variety of sources, particularly with regard to bond funds.

Although duration is an important measure of bond risk, it is not necessarily always the most appropriate one. Duration measures volatility, which is important, but is only one aspect of the risk in bonds. If an investor considers volatility to be an acceptable proxy for risk, duration is the measure of risk to use along with the correction for convexity. Duration may not be a complete measure of bond risk, but it does reflect some of the impact of changes in interest rates.

Zero-Coupon Bonds:

Original issue discount bonds are less common than coupon bonds issued at par. These are bonds that are issued intentionally with low coupon rates that cause the bond to sell at a discount from par value. An extreme example of this type of bond is the zero-coupon bond, which carries no coupons and must provide all its return in the form of price appreciation. Zeros provide only one cash flow to their owners, and that is on the maturity date of the bond.

What should happen to prices of zeros as time passes? On their maturity dates, zeros must sell for par value. Before maturity, however, they should sell at discounts from par, because of the time value of money. As time passes, price should approach par value. In fact, if the interest rate is constant, a zero's price will increase at exactly the rate of interest.

UNDERSTANDING RISK AND RETURN

INTRODUCTION:

Two key concepts provide the foundation for the field of finance. The first is A dollar today is worth more than a dollar tomorrow, and is often called the time value of money. The second is a safe dollar is worth more than a risky dollar. Anyone who studies finance learns the universal application of these statements and rational decision making. The tradeoff between risk and return is the principles theme in the investment decision.

Most people are risk averse, which does not mean, however, they will not take a risk. It means the only take a risk when they expect to be rewarded for taking it. People have different degrees of risk aversion; some are more willing to take a chance than are others.

People invest because they hope to get a return from their investment. Return is the good stuff that makes people feel better or improves their standard of living. Risk is the bad stuff of risk averse person seeks to avoid. It is a fact of investment life and is unavoidable for anyone who seeks more than a trivial rate of return. This chapter explores the fundamental principles underlying the relationship between risk and return.

RETURN:

Some return measures are more useful than others. It is important to understand the calculation and limitations of various measures.

Holding Period Return:

The simplest measure of return is the holding period return. This calculation is independent of the passage of time and incorporates only a beginning point and an ending point.

$$\text{Holding period return} = \frac{\text{Ending value} - \text{Beginning value} + \text{Income}}{\text{Beginning value}}$$

Someone might buy 100 shares of stock at $25, receives a 10 cent per share dividend, and later sell the shares for $30. The holding period return is

$$\frac{\$30 - \$25 + \$0.10}{\$25} = 20.4\%$$

It makes no difference if the holding period return is calculated on the basis of a single share or 100 shares. The holding period return is exactly the same because every term is multiplied by 100.

Has this investment done well? The answer depends on how much time transpired between the purchase and the sale. If the stock was acquired in 1989 and sold in 2000, the total gain of 20.4% is less than what could have been earned in a bank account. If, however, the stock was purchased 60 days ago, the return is handsome.

Because we are accustomed to thinking of the rates of return on an annual basis, it is common to annualize returns. To annualize returns, multiply the holding period return by

the fraction 365/days in the holding period. In the previous example, the 20.4% return came from and holding period of 60 days: 20.4% (365/60) = 124.1%.

Holding period returns must be used with caution. When comparing investment, the periods should all be the same length. With a collection of stocks, comparing returns over calendar year 1999 or returns over the past five years is acceptable. One cannot, however, meaningfully compare Stock A's 1999 return with Stock B's 1994-1999 return.

When calculating holding period returns, look out for stock splits or other corporate actions that would muddy the water. For example, in September 1999, your mother points out that she purchased 100 shares of Wal-Mart at $25 in September, 1990. Today's Wall Street Journal reports a WMT price of $44½, and this modest increase surprises hard given all the recent news about the companies nationwide growth. Capital appreciation over this nine-year period seems to be ($44.50 – $25)/ $25 = 78.0%.

Mom is overlooking the fact that the firm split its stock two for one in February 1993 and again in April 1999. A two for one stock split effectively cuts the share price in half. Someone who owned 100 shares of WMT in early 1990 would have owned 400 shares in September 1999. Anyone unaware of the stock split would calculate an incorrect holding period return. The split per se would not affect the true return if it is correctly accounted for in the calculation. The calculation appreciation on Mom's stock is actually

$$\frac{4(\$44.50) - 25}{\$25} = 612.0\%$$

Yield and Appreciation:

A certain amount of ambiguity surrounds the term yield in the investment business. To many (probable most) people involved with investments, when yield is used by itself, it usually refers to the dollar amount an investment "throws off" as dividends or interest. This definition will be followed in this book. The financial pages indicate the yield of stocks and bonds. Technically, the newspaper shows the current yield, which is the annual income an investment, is expected to generate divided by its current market price. For a common stock whose income comes exclusively from dividends, the current yield is typically referred to as the dividend yield.

A stock might currently sell for $40 and be expected to pay $1 in dividends over the next 12 months. The newspaper will show its current yield as 2.5% — the $1 dividend divided by the $40 current share price.

Another stock might excellent prospects for the coming year and be recommended by many investment advisors. It might, however, pay no dividends. The fact that a stock pays no dividends does not mean it is a poor investment. Consider Microsoft. Ask a stockbroker "What is Microsoft's yield?" and the answer will be "zero". The uninitiated person might wonder why anyone would ever buy a stock that was not expected to yield anything. The explanation lies within another component of return: appreciation.

Appreciation is the increase in the value of an investment independent of its yield. When people speak of a stock going up, they are talking about its appreciation. Suppose an investor buys MSFT at $95, and it rises to $97½. It appreciated by $2½, or $2.50/$95 = 2.6 %. If it is paid no dividend, its yield was zero. Contrast the MSFT investment with an interest earning savings account in which a saver deposits $95 to accumulate interest. One

year later the account contains $97.50. Even though these situations might seem identical, technically the savings account showed a yield of 2.6% and appreciation of zero. The increase in value comes from the interest earned that is left in the account.

Accrued interest does not count as depreciation, nor does an increase in account and value due to additional deposits. Suppose an investor opens a brokerage account and buys stocks for $25,000. Five years later the account is worth $45,000. It is meaningless to say the account appreciated by $20,000 if the investor has been depositing $150 per month into the account. A good part of increases is because of the additional investment, not because of investment performance.

This point is especially important when reviewing portfolios managed by an outside agency. Don't assume that because the YWCA endowment fund is worth $200,000 more now than it was last year that the fund management was good. The fund managers should not get credit for bequests or other deposits into the fund over the past year.

The Time Value of Money:

The notion that one dollar received today is more valuable than one dollar received tomorrow is usually called the time value of money. It is one of the two key concepts in finance that form the basis for most valuation equations and pricing and relationships. Financial theory states that the current price of any financial asset should be the present value of its expected future cash flows. You have to understand the time value of money to properly calculate present values.

Time value of money problems involves the relationship among present values, future values, interest rates and time periods. Most problems involve solving for one of these values when the other three are known. The simplest time value of money problem is the single sum problem and can easily be illustrated in the corporate bond market.

PepsiCo Capital Resources has a bond issue coming due in the year 2004. Assume the redemption date is four years from today. At that time, the company must pay $1,000 for each of its bonds when presented for redemption. Unlike most bond issues, these bonds pay no periodic interest. Because of the time value of money, investors are unwilling to pay $1,000 today for a security that will be worth $1,000 in four years by providing no interest income. This bond must sell at a discount in the marketplace.

How much should the discount be? The answer depends on the rate of return available on other investments of comparable risk in the marketplace. Suppose the Wall Street Journal shows the price of this bond as $730. Barring default, this bond will gradually rise in value to be worth $1,000 on its redemption date. The $270 increase in value is the bond holder's return. From these values we can calculate the investors anticipated holding period return:

$$\frac{\$1,000 - \$730}{\$730} = 36.99\%$$

The holding period of return is not particularly useful in this context because it ignores the time value of money. What we really want to know is the annual interest rate that would cause a $730 investment to appreciate to $1,000 in four years. That is, we want to know the value of R in equation:

$$P(1 + R)^n = F$$

Where P = present value (i.e., price today)
F = future value
R = interest rate per period
n = number of periods

Substituting our numbers, $730 (1 + R)^4 = $1,000. We find R = 8.19%.

Support economic conditions change. Investors become pessimistic about the future and government's ability to keep inflation under control. As a consequence, market interest rates rise by one point. Investors are no longer willing to accept an 8.19% rate of return on a bond of this risk; they won't settle for less than 9.19%. What is the most an investor could pay for the bond to achieve this rate of return? In other words, what is P, the present value (price of the bond) in the following equation?

$$\mathbf{P\ (1 + .0919)^4 = \$1{,}000}$$

Rearranging and doing the math,

$$\mathbf{P = \frac{1}{(1.0919)^4}\ (\$1{,}000)}$$
$$\mathbf{= 0.7035\ (\$1{,}000)}$$
$$\mathbf{= \$703.50}$$

If the investor pays $703.50 and receives$1,000 in four years, the compound annual return would be 9.19%.the factor 0.7035 is called the discount factor for four years at 9.19%. Financial calculators are preprogrammed to compute these factors for time value of money problems. Factors are also routinely presented in tabular form in the back of accounting and finance textbooks.

Many securities pay more than one cash flow over their life. Adelphia Communications, a cable TV company, also has a bond maturing in the year 2004, but this bond pays $95 per year in interest. Its value logically should be influenced by these additional cash flows. An investor in this bond receives a single sum of $1,000 in four years, but also receives an annuity of $95 per year for the four years. An Annuity is a series of evenly spaced, equal dollar payments.

An investor in this bond receives income from two sources: the return of the $1,000 principal in 4 years, and the $95 per year annuity. One way to determine the present value of the annuity is to decompose it into four single sums of $95 each and find the present value of each, but this method is inefficient. A more convenient expression for the present value of an annuity is shown below:

$$\mathbf{P = C\ [1/R - 1/R\ (1 + R)^n]}$$

Where C = periodic payment

Suppose the risk of this bond is comparable to that of the PepsiCo capital resources board, and is trading at a price that also implies a 9.19% rate of return. The present value of the annuity is then

$$\mathbf{P = \$95\ [1/.0919 - 1/.0919\ (1 + .0919)^4] = \$306.49}$$

The present value of the $1,000 return of principle is

$$\frac{\$1{,}000}{(1.0919)^4} = \$703.51$$

The bondholder is entitled to both the return of principle and the annuity, so the bond market price must be the sum of these two values: $306.49 + $703.51 = $1,010.
The holding period return over the remaining 4 years of this bond's life would be

$$\frac{\$1{,}000 - \$\ 1{,}010 + 4(\$95)}{\$1{,}010} = 36.63\%$$

Compounding:

Compounding refers to the earning of interest on previously earned interest. Its effects are more pronounced as the frequency with which interest is computed and credited to the principal balance increases. At a financial institution, interest on a savings account might be calculated once per year, semiannually, quarterly, monthly, or daily. Each of these methods constitutes discreet compounding because the number of times per year the bank calculates the interest can be counted.

Suppose an account earns 8% per year, compounded quarterly. In this scenario, the account holder does not earn 8% every three months. Rather, the account is credited with ¼ of 8% four times per year. After three months, an initial deposit of $100 would earn $2, resulting in an account balance of $102. Three months later, the $102 has earned 2%, so its value is $102(1.02) = $104.04. Interest is added again three months later, and once more at the end of the year. At the end of one year account is worth $100(1.02)^4 = $108.24.

If the 8% interest were compounded annually, at the end of one year the account balance would be $100(1.08), or $108.00. Note that with quarterly compounding the account earns 24 cents more than with annual compounding. The rule is this: if money is invested at an annual rate of R for t years an interest is compounded n times per year and multiply the number of years in the problem by n. mathematically,

$$F = P\,(1 + R/n)^{nt}$$

Where F = future value
n = number of compounding periods per year
t = investment horizon in years

Compounding can also occur hourly, by the minute, by the second, or by any arbitrarily small time interval. In the limit, compounding occurs continuously, with an in finite a number of time intervals. This changes the equation to

$$F = P\,(1 + R/\infty)^{\infty t}$$

This mathematical result forms the basis for natural logarithms. The quantity $(1 + R/n)^{nt}$ approaches e^{Rt} as n approaches infinity. The value e is 2.71828. Most financial calculators have e programmed as an internal function. The equation can be restated as

$$F = Pe^{Rt}$$

Compound Annual Return:

The compound annual rate is a more useful return measure than the holding period return. It takes account of the time value of money and the fact that investment horizons are not always the same. This is also called the effective annual rate.

Supports an investor paid $40 for a non-and dividend paying stock for 4.5 years ago. Today the stock sells for $78. Assuming no stock splits along the way, the holding period return is ($78 – $40)/ $40 = 95%.After 4.5 years have passed, the 95% figure probably lacks a frame of reference for performance comparison purposes. Because we are accustomed to thinking of interest rates per year, we usually look at annual returns to provide that frame of reference. The compound annual return is the annual interest rate that makes the time value of money relationship hold: $40(1 + R) $^{4.5}$ = $78. In this equation, R is 16%, a meaningful number. It tells us that if the $40 had been invested at 16%, after 4.5 years the investment would be worth $78. The compound annual returns on competing investments can be directly compared.

A danger with compound annual returns, however, stems from computing them over short periods of time. Suppose Wal-Mart closes today at $51, a $1.00 from yesterday's close. What is the compound annual return? Solve for R in the equation $50(1 + R) $^{1/365}$ = $51. The answer is 137,641%! Associating this annual rate with your $50 Wal-Mart stock means that in 12 months, a share would be worth $68,870 — not a likely scenario.

A recent new story provides a useful example of the importance of associating time with returns. In January 1928, Julia Ford Bundy Blue, a widow of one of the founders of international business machines, bequeathed 100 shares of IBM trust on behalf of a retirement home Altadena, California. At that time and the stock sold for $123 per share, making the bequest worth $12,300. 66 years later the trust dissolved and paid $4.5 million to the retirement home. The Associated Press reported this story with the headline, "66 year old IBM stock yields 36,600 percent." The headline creates two problems here. First is the incorrect use of the terms yield. Increase in principle value is not part of yield. Second, the appreciation occurred over 66 years, so the 36,600% figure needs to be translated to frame of reference terms. A fund that began with a value of $12,300 and 66 years later was worth $4.5 million showed a compound annual return of 9.35% per year over the same period. The latter figure, however, does not make headlines.

UNDERSTANDING RISK AND RETURN Contd…

RISK:

It is not sensible to talk about investment returns without talking about risk, because investment decisions involve a trade-off between the two—return and risk are opposite sides of the same coin. Investors must constantly be aware of the risk they are assuming, know what it can do to their investment decisions, and be prepared for the consequences.

Investors should be "willing to purchase a particular asset if the expected return is, adequate to compensate for the risk, but they must understand that their expectation about the asset's return may not materialize. If not, the realized return will differ from the expected return. In fact, realized returns on securities show considerable variability sometimes they are larger than expected, and other times they are smaller than expected, or even negative. Although investors may receive their expected returns on risky securities on a long-run average basis, they often fail to do so on a short-run basis.

SOURCES OF RISK:

What makes a financial asset risky? Traditionally, investors have talked about several sources of total risk, such as interest rate risk and market risk, which are explained below, because these terms are used so widely, Following this discussion, we will define the modern portfolio sources of risk, which will be used later when we discuss portfolio and capital market theory.

1. **Interest Rate Risk:**

The variability in a security's return resulting from changes in the level of interest rates is referred to as interest rate risk. Such changes generally affect securities inversely; that is, other things being equal, security prices move inversely to interest rates. Interest rate risk affects bonds more directly than common stocks, but it affects both and is a very important consideration for most investors.

2. **Market Risk:**

The variability in returns resulting from fluctuations in the overall market that is, the aggregate stock market is referred to as market risk. All securities are exposed to market risk, although it affects primarily common stocks.

Market risk includes a wide range of factors exogenous to securities themselves, including recessions, wars, structural changes in the economy, and changes in consumer preferences.

3. **Inflation Risk:**

A factor affecting all securities is purchasing power risk, or the chance that the purchasing power of invested dollars will decline/With uncertain inflation, the real (inflation-adjusted) return involves risk even if the nominal return is safe (e.g., a Treasury bond). This risk is related to interest rate risk, since interest rates generally rise as inflation increases, because lenders demand additional inflation premiums to compensate for the loss of purchasing power.

4. Business Risk:

The risk of doing business in a particular industry or environment is called business risk. For example, AT&T, the traditional telephone powerhouse, faces major changes today in the rapidly changing telecommunications industry.

5. Financial Risk:

Financial risk is associated with the use of debt financing by companies. The larger the proportion of assets financed by debt (as opposed to equity), the larger the variability in the returns, other things being equal. Financial risk involves the concept of financial leverage, which is explained in managerial finance courses.

6. Liquidity Risk:

Liquidity risk is the risk associated with the particular secondary market in which a security trades. An investment that can be bought or sold quickly and without significant price concession is considered to be liquid. The more uncertainty about the time element arid the price concession, the greater the liquidity risk. A Treasury bill has little or no liquidity risk, whereas a small over-the-counter (OTC) stock may have substantial liquidity risk.

7. Exchange Rate Risk:

All investors who invest internationally in today's increasingly global investment arena face the prospect of uncertainty in the returns after they-convert the foreign gains back to their own currency Unlike the past when most U.S. investors ignored international investing alternatives, investors today must recognize and understand exchange rate risk, which can be defined as the variability in returns on securities caused by currency fluctuations. Exchange rate risk is sometimes called currency risk.

For example, a U.S. investor who buys a German stock denominated in marks must ultimately convert the returns from this stock back to dollars. If the exchange rate has moved against the investor, losses from these" exchange rate' movements can partially or totally negate the original return earned.

8. Country Risk:

Country risk, also referred to as political risk, is an important risk for investors today probably more important now than in the past. With mote investors investing internationally, both directly and indirectly, the political, and therefore economic, stability and viability of a country's economy need to be considered. The United States arguably has the lowest country, risk, and other countries can be judged on a-relative basis using the United States as a benchmark. Examples-of countries that needed careful monitoring in the 1990s because of country risk included the, former Soviet Union ^and Yugoslavia, China, Hong Kong, and Smith Africa. In the-early part of the twenty-first century, several countries in South America, Turkey, Russia, and Hong Kong, among others, require careful attention.

TYPES OF RISK:

Thus far, our discussion has concerned the total risk of an asset, which is one important consideration in investment analysis. However, modern investment analysis categorizes the traditional sources of risk identified previously as .causing variability in returns into two general types: those that are pervasive in nature, such as market risk or interest rate risk, and

those that are specific to a particular security issue, such as business or financial risk. Therefore, we must consider these two categories of total risk.

Dividing total risk into its two components, a general (market) component and a specific (issuer) component, we have systematic risk and nonsystematic risk, which are additive:

Total risk = General risk + Specific risk
= Market risk + Issuer risk
= Systematic risk + Nonsystematic risk

Systematic (Market) Risk:

Risk attributable to broad macro factors affecting all securities

Systematic Risk is an investor can construct a diversified portfolio and eliminate pan of the total risk, the diversifiable or non-market part. What is left is the non-diversifiable portion or the market risk. Variability in a security's total returns that is directly associated with overall movements in the general market or economy is called systematic (market) risk.

Virtually all securities have some systematic risk, whether bonds or stocks, because systematic risk directly encompasses the interest rate, market, and inflation risks. The investor cannot escape this part of the risk, because no matter how well he or she diversifies, the risk of the overall market cannot be avoided. If the stock market declines sharply, most stocks will be adversely affected; if it rises strongly, as in the last few months of 1982, most stocks will appreciate in value. These movements occur regardless of what any single investor does. Clearly, market risk is critical to all investors.

Nonsystematic (Non-market) Risk:

Risk attributable to factors unique to the security

Nonsystematic Risk is the variability in a security's total returns not related to overall market variability is called the nonsystematic (non-market) risk. This risk 1s unique to a particular security and is associated with such factors as business and financial risk as well as liquidity risk. Although all securities tend to have some nonsystematic risk, it is generally connected with common stocks.

MEASURING RETURNS:

1. **Total Return:**

Percentage measure relating all cash flows on a security for a given time period 10 its purchase price

A correct returns measure must incorporate the two components of return, yield and price change, as discussed earlier. Returns across time or from different securities can be measured and compared using the total return concept. Formally, the total return (TR) for a given holding period is a decimal (or percentage) number relating all the cash flows received by an investor during any designated time period to the purchase price of the asset. Total return is defined as:

$$\textbf{TR} = \frac{\textbf{Any cash payments received + Price changes over the period}}{\textbf{Price at which the asset is purchased}}$$

The dollar price change over the period, defined as the difference between the beginning (or purchase) price and, the ending (or sale) price, can be either positive (sales price exceeds purchase price), negative (purchase price exceeds sales price), or zero. The cash payments can be either positive or zero. Netting the two items in the numerator together and dividing by the purchase price results in a decimal return figure that can easily be converted into percentage form. Note that in using the TR, the two components of return, yield and price change, have been measured.

The general equation for calculating TR is;

$$\textbf{TR} = \frac{CF_t + (P_E - P_B)}{P_B}$$

$$= \frac{CF_t + PC}{P_B}$$

Where;

CF_t = cash flows during the measurement period t
P_E = price at the end of period t or sale price
P_B = purchase price of the asset or price at the beginning of the period
PC = change in price during the period, or P_E minus P_B

The cash flow for bond pomes from the interest payments received, and that for a stock comes from the dividends received. For some assets, such as a warrant or a stock that pays no dividends, there is only a price change.

2. **Return Relative:**

It is often necessary to measure returns on a slightly different basis than TRs. This is particularly true when calculating either a cumulative wealth index or a geometric mean, both of which are explained below, because negative returns cannot be used in the calculation. The return relative (RR) solves this problem by adding 1.0 to the total return.

RR = TR in decimal form + 1.0
TR in decimal form = RR - 1.0

Although return relatives may be less than 1.0, they will be greater than zero, thereby eliminating negative numbers.

3. **Cumulative Wealth Index:**

Cumulative wealth over time given an initial wealth and a series of returns on some asset

Return measures such as TRs measure changes in the level of wealth. At times, however, it is more desirable to measure levels of wealth {or prices) rather than changes. In other words, we measure the cumulative effect of returns over time given some stated beginning dollar amount invested, which typically is shown as $1 for convenience. Having calculated ending wealth (cumulative wealth) over some period on the base of a beginning $1, it is

simple enough to multiply by the actual beginning amount, such as $10,000 or $100,000 or

whatever the number is. The value of the cumulative wealth index, CWI_n is computed, as:

$$\mathbf{CWI_n = WI_0 (1 + TR_1) (1 + TR_2) \ldots (1 + TR_n)}$$

Where;

CWI_B = the cumulative wealth index as of the end of period n
WI_0 = the beginning index value, typically $1
$TR_{1, n}$ = the periodic TRs in decimal form

Taking a Global Perspective:

International investing offers potential return opportunities and potential reduction in risk through diversification. Based on the historical record, investments in certain foreign markets would have increased investor returns during certain periods-of time. However, investors need to understand how these-returns are calculated and the risk they are taking.

International Returns and Currency Risk:

When investors buy and sell assets in other countries, they must consider exchange rate risk or currency risk. This risk can convert a gain from an investment into .a loss or a loss from an investment into a gain. We need to remember that international stocks are priced in local currencies, for example, a Swiss stock is priced in Swiss francs and a Japanese stock is priced in yen. For a U.S. investor, the ultimate return to him or her in spendable dollars depends upon the rate of exchange between the foreign currency and the dollar, and this rate typically changes daily. Currency risk is the risk that the changes in the value of the dollar and the foreign currency involved will be unfavorable; however, like risk in general, currency risk can work to the investor's favor, enhancing the return that would otherwise be received.

An investment denominated in an appreciating currency relative to the investor's domestic currency will experience a gain from the currency movement whereas an investment denominated in a depreciating currency relative to the investor's domestic currency will experience a decrease in the return because of the currency movement. Said differently, when you buy a foreign asset, you are selling the dollar, and when you cash in by selling the asset, you are buying back the dollar.

$$\text{Total return in Domestic terms} = \left[RR \times \frac{\text{Ending value of foreign currency}}{\text{Beginning value of foreign currency}} \right]$$

SUMMARY STATISTICS FOR RETURNS:

The total return, return relative, and wealth index are useful measures of return for a specified period of time. Also needed in investment analysis are statistics to describe a series of returns. "For example, investing in a particular stock for 10 years or a different stock in each of 10 years could result in 10 TRs, which must be described by one or more statistics. Two such measures used with returns data are described below.

Arithmetic Mean the best known statistic to most people is the arithmetic mean. Therefore,

when someone refers to the mean return they usually are referring to the arithmetic mean unless otherwise specified. The arithmetic mean, customarily designated by the symbol;

$\overline{X}$(X-bar), of a set of values is calculated as:

$$\overline{X} = \frac{\sum X}{n}$$

or the sum of each of the values being considered divided by the total, number of values n.

Geometric Mean the arithmetic mean return is an appropriate measure of the central tendency of a distribution consisting of returns calculated for a particular time" period, such as 10 years. However, when percentage changes in value over time are involved, as a result of compounding, the arithmetic mean of these changes can be misleading. A different mean, the geometric mean, is needed to describe accurately the "true" average rate of return, over multiple periods.

The geometric mean return measures the compound rate of growth over time. It is often used in investments and finance to reflect the steady growth rate of invested funds over some past period; that is, the uniform rate at which money actually few over time per period. Therefore, it allows us to measure the realized change in wealth over multiple periods.

The geometric mean is defined as the nth root of the product resulting from multiplying a series of return relatives together,

$$G = [(1 + TR_1)(1 + TR_2)... (1 + TR_n)]^{1/n} - 1$$

where TR is a series of total returns in decimal form. Note that adding 1.0 to each total return produces a return relative. Return relatives are used in calculating geometric mean returns, because TRs, which can be negative, cannot be used.

Arithmetic Mean versus Geometric Mean:

When should we use the arithmetic mean and when should we use the geometric mean to describe the returns from financial assets? The answer depends on the investor's objective:

The arithmetic mean is a better measure of average (typical) performance over single periods. It is the best estimate of the expected return for next period.
The geometric mean is a better measure of the change in wealth over the past (multiple periods). It is a backward-looking concept, measuring the realized compound rate of return at which money grew- over a specified period.

Inflation Adjusted Returns:

All of the returns discussed above art nominal returns, or money returns. They measure dollar amounts or changes but say nothing about the purchasing power of these dollars. To capture this dimension, we need to consider real returns, or inflation-adjusted returns. To calculate inflation-adjusted returns, we divide 1 + nominal total return by 1 + the inflation

rate, this calculation is sometimes simplified by subtracting rather than dividing, producing a close approximation.

$$TR_{IA} = \frac{(1 + TR)}{(1 + IF)} - 1$$

Where;

TR_{IA} = the inflation-adjusted total return
IF = the rate of inflation

This equation applies to both individual years and average total returns.

Risk Premiums:

A risk premium is the additional return investors expect to receive, or did receive, by taking on increasing amounts of risk. It measures the payoff for taking various types of risk. Such premiums can be calculated between any two classes of securities.

An often-discussed risk premium is the equity risk premium, defined as the difference between the return on stocks and a risk-free rate (proxied by the return on Treasury bills). The equity risk premium measures the additional compensation for assuming risk, since Treasury bills have no practical risk (on a nominal basis). Obviously, common stock investors care whether the expected risk premium is 5 percent, or 8 percent, because that affects what they earn on their investment in stocks. Holding interest rates constant, a narrowing of the equity risk premium implies a decline in the rate of return on steaks, because the amount carried beyond the risk-free rate is reduced.

MORE ON THE RELATIONSHIP BETWEEN RISK AND RETURN:

Risk and potential return need to be analyzed together throughout the investment decision-making process. Considering their relationship is a big part of what investment advisers get paid to do.

The Direct Relationship:

The fundamental relationship between risk and return is well known to those who have studied the market.

The more risk someone bears, the higher are their expected return. It also points out that some rate of return can be earned without bearing any risk, and is called the riskless rate of interest, or the risk free rate in finance theory. Two important points should be noted. First, the risk-return relationship is based on expected return. Expected return is a before the fact, not after the fact concept. It is not correct to say that riskier securities have higher returns, although people often make this statement. If riskier securities always had a higher return they would not be risky. Sometimes an investor is hurt by a risk taken that resulted in a negative return. Such is the essence of risk.

The second important point is that the risk we are talking about is unavoidable, or undiversifiable, risk. An investor is not generally rewarded for bearing risk that could have been diversified away.

Empirical financial research reveals clear evidence of the direct relationship between systematic risk and expected return. Riskier portfolios, on average, earn higher. Additionally, returns on well diversified portfolios tend to plot in a generally linear fashion. The point of this discussion is that whether looking ahead to possible future returns or looking back at realized results, a person can usually observe this direct relationship between risk and return. Once again, though, it is not accurate to conclude that "higher risk means higher return." Risky investments often lose money for their owners over the short run. They may also earn less than "safer" investments.

PORTFOLIO THEORY

Measuring Risk:

Risk is often associated with the dispersion in the likely outcomes. Dispersion refers to variability. Risk is assumed to arise out of variability', which is consistent with our definition of risk as the chance that the actual outcome of an investment will differ from the expected outcome. If an asset's return has no variability, in effect it has no risk. Thus, a one-year treasury bill purchased to yield 10 percent and held to maturity will, in fact, yield (a nominal) 10 percent No other outcome is possible, barring default by the U.S. government, which is not considered a reasonable possibility.

Consider an investor analyzing a series of returns (TRs) for the major types of financial asset over some period of years. Knowing the mean of .this series is not enough; the investor also needs to know something about the variability in the returns. Relative to the other assets, common stocks show, the largest variability (dispersion) in returns, with small common stocks showing f ten greater variability. Corporate bonds have a much smaller variability and therefore a more compact distribution of returns. Of course, Treasury bills are the least risky. The "dispersion of annual returns for bills is compact.

Standard Deviation:

The risk of distributions' can be measured with an absolute measure of dispersion, or variability. The most commonly used measure of dispersion over some period of years is the standard deviation, which measures the deviation of each observation from the arithmetic mean of the observations and is a reliable measure of variability, because all the information in a sample is used.

The standard deviation is a measure of the total risk of an asset or a portfolio. It captures the total variability in the assets or portfolios return whatever the source of that variability. The standard deviation can be calculated from the variance, which is calculated as:

$$\sigma^2 = \frac{\sum_{i=1}^{n} (X - \overline{X})}{n - 1}$$

Where;

σ^2 = the variance of a set of values
X = each value in the set
$\overline{X}$ = the mean of the observations
n = the number of returns in the sample
$\sigma^2 = (\sigma^2)^{1/2}$ = standard deviation

Knowing the returns from the sample, we can calculate the standard deviation quite easily.

Dealing with Uncertainty:

Realized returns are important for several reasons. For example, investors need to know how their portfolios have performed. Realized returns, also can be particularly important in helping investors to form expectations about future returns, because investors must concern themselves with their best estimate of return over the next year, or six months, or whatever.

How do we go about estimating returns, which is what investors must actually do in managing their portfolios?

The total return measure, TR, is applicable whether one is measuring realized returns; or estimating, future (expected) returns. Because it includes everything the investor can expect to receive over any specified future period, the TR is useful in conceptualizing the estimated returns from securities.

Similarly, the variance, or its square root, the standard deviation, is an accepted measure of variability for both realized returns and expected returns. We will calculate both the variance and the standard deviation below and use them interchangeably as the situation dictates. Sometimes it is preferable to use one and sometimes the other.

Using Probability Distributions:

The return an investor will earn from investing is not known; it must be estimated. Future return is an expected return and may or may not actually be-realized. An investor may expect the TR on a particular security to be 0.10 for the coming year, but in truth this is only a "point estimate." Risk, or the chance that some unfavorable event will occur, is involved when investment decisions are made. Investors are often overly optimistic about expected returns.

Probability Distributions:

To deal with the uncertainty of returns, investors need to think explicitly about a security's distribution of probable TRs. ln other words, investors need to keep in mind that, although they may expect a security to return 10 percent, for example, this is only a one-point estimate of the entire range of possibilities. Given that investors must deal with the uncertain future, a number of possible returns can, and will, occur.

In the case of a Treasury bond paying fixed rate of interest, the interest payment will be made with l00-percent certainty barring a financial collapse of the economy. The probability of occurrence is 1.0; because no other outcome is possible.

With the possibility of two or more outcomes, which is the norm for common stocks, each possible likely outcome must be considered and a probability of its occurrence assessed. The probability for a particular outcome is simply the chance that the specified outcome will occur. The result of considering these outcomes and their probabilities together is a probability distribution consisting of the specification of the likely outcomes that may occur and the probabilities associated with these likely outcomes.

Probabilities represent the likelihood of various outcomes and are typically expressed as a decimal. The sum of the probabilities of all possible outcomes must be 1.0, because they must completely describe all the (perceived) likely occurrences.

How are these probabilities and associated outcomes obtained? In the final analysis, investing for some future period involves uncertainty, and therefore subjective estimates. Although past occurrences (frequencies) may be relied on heavily to estimate the probabilities the past must be modified for any changes expected in the future.

Calculating Expected Return for a Security:

To describe the single most likely outcome from a particular probability distribution, it is necessary to calculate its expected value. The expected value is the weighted average of'all possible return outcomes, where each outcome is weighted by its respective probability of occurrence. Since investors are interested in returns, we will-call this expected value the expected rate of return, or simply expected-return, and for any security, it is calculated as;

$$E(R) = \sum_{i=1}^{m} R_i \, pr_i$$

Where;

E (R) = the expected return on a security'
R_i = the ith possible return
pr_i = the probability of the ith return R_i
m = the number of possible returns

Calculating Risk for a Security:

Investors must be able to quantify and measure risk. To calculate the total risk associated with the expected return, the variance or standard deviation is used, the variance and, its square root, standard deviation, are measures of the spread or dispersion in the probability distribution; that is, they measure the dispersion of a random variable around its mean. The larger this dispersion, the larger the variance or standard deviation.

To calculate the variance or standard deviation from the probability distribution, first calculate the expected return of the distribution. Essentially, the same procedure used to measure risk, but now the probabilities associated with the outcomes must be included,

$$\text{The variance of returns} = \sigma^2 = \sum_{i=1}^{m} - [Ri - E(R)]^2 pr_i$$

And

$$\text{The standard deviation of returns} = \sigma = (\sigma^2)^{1/2}$$

Portfolio Expected Return:

The expected return on any portfolio is easily calculated as a weighted average of the individual securities expected returns. The percentages of a portfolio's total value that are invested in each portfolio asset are referred to as portfolio weights, which will denote by w. The combined portfolio weights are assumed to sum to 100 percent of, total investable funds, or 1.0, indicating that all portfolio funds are invested. That is,

$$w_1 + w_2 + \ldots + w_n = \sum_{i=1}^{n} w_i = 1.0$$

Portfolio Risk:

The remaining computation in investment analysis is that of the risk of the portfolio. Risk is measured by the variance (or standard deviation) of the portfolio's return, exactly as in the case of each individual security. Typically, portfolio risk is stated in terms of standard deviation which is simply the square root of the variance.

It is at this point that the basis of modern portfolio theory emerges, which can be stated as follows: Although the expected return of a portfolio is a weighted average of its expected returns, portfolio risk (as measured by the variance or standard deviation) is not a weighted average of the risk of the individual securities in the portfolio. Symbolically,

$$E(R_p) = \sum_{i=1}^{n} w_i E(R_i)$$

But

$$\sigma^2_p \neq \sum_{i=1}^{n} w_i \sigma^2_i$$

Precisely, investors can reduce the risk of a portfolio beyond what it would be if risk were, in fact, simply a weighted average of the individual securities' risk. In order to see how this risk reduction can be accomplished, we must analyze portfolio risk in detail.

PORTFOLIO THEORY Contd…

ANALYZING PORTFOLIO RISK:

Risk Reduction: The Insurance Principle:

To begin our analysis of how a portfolio of assets can reduce risk, assume that all risk sources in a portfolio of securities are independent. As we add securities to this portfolio, the exposure to any particular source of risk becomes small. According to the Law of Large Numbers, the larger the sample size, the more likely it is that the sample mean will be close to the population expected value. Risk reduction in the case of independent risk sources can be thought of as the insurance principle, named for the idea that an insurance company reduces its risk by writing many policies against many independent sources of risk.

We are assuming here that rates of return on individual securities are statistically independent such that any one security's rate of return is unaffected by another's rate of return. In this situation, the standard deviation of the portfolio is given by,

$$\sigma_p = \sigma_i / n^{1/2}$$

Diversification:

The insurance principle illustrates the concept of attempting to diversify the risk involved in a portfolio of assets (or liabilities). In fact, diversification is the key to the management of portfolio risk, because it allows investors significantly to lower portfolio risk without adversely affecting return.

Random Diversification:

Random or naive diversification refers to the act of randomly diversifying without regard to relevant investment characteristics such as expected return and industry classification. An investor simply selects a relatively large number of securities randomly—the proverbial "throwing a dart at the Wall Street Journal page showing stock quotes. For simplicity, we assume equal dollar amounts are invested in each stock.

Markowitz Portfolio Theory:

Before Markowitz, investors dealt loosely with the concepts of return and risk. Investors have known intuitively for many years that it is smart to diversify; that is, not to "put all of your eggs in one basket? Markowitz however, was the first .to develop the concept of portfolio diversification in a formal way— he quantified the concept of diversification. He showed quantitatively why and how portfolio diversification works to reduce the risk of a portfolio to an investor.

Markowitz sought to organize the existing thoughts and practices into, a more formal framework and to answer a basic question. Does the risk of a portfolio equal to the sum of the risks of the individual securities comprising it? Markowitz was the first to develop a specific measure of portfolio risk and to derive the Expected return and risk for a portfolio based on covariance relationships. We consider covariances in detail in the discussion below.

Portfolio risk is not simply a weighted average of the individual security risks. Rather, as Markowitz first showed, we must account for the interrelationships among, security returns in order to calculate portfolio risk, and in order to reduce portfolio risk to its minimum level for any given level of return. The reason we need to consider these, interrelationships, or comovements, among security return.

In order to remove the inequality sign from Equation and develop that will calculate the risk of a portfolio as measured by the variance or standard deviation, we must account for two factors;

1. Weighted individual security risks (i.e. the variance of each individual security, weighted by the percentage of investable funds placed in each individual security.)

2. Weighted comovements between securities returns (i.e., the coyariance between, the securities returns, again weighted by the percentage of investable funds placed in each security).

Measuring Comovements in Security Returns:

Covariance is an absolute measure of the comovements between security returns used in the calculation of portfolio risk. We need the actual covariance between securities in a portfolio in order to calculate portfolio variance or standard deviation. Before considering covariance, however, we can easily illustrate how security returns move together by considering the correlation coefficient, a relative measure' of association learned in statistics.

Correlation Coefficient:

As used in portfolio theory, the correlation coefficient ρ_{ij} (pronounced "rho") is a statistical measure of the relative comovernents between security returns. It measures the extent to which the returns on any two securities are related, however, it denotes only association, not causation. It is a relative measure of association that is bounded by +1.0 'and—1.0, with;

ρ_{ij} = +1.0
= perfect positive correlation

ρ_{ij} = -1.0
= perfect negative (inverse) correlation

ρ_{ij} = 0.0
= zero correlation

Covariance:

Given the significant amount of correlation among security returns, we must measure the actual amount of comovement and incorporate it into any measure of portfolio risk, because such comovements affect the portfolio's variance (or standard deviation). The Covariance measure does this.
The covariance is an absolute measure of the degree of association between the returns for a pair of securities. Covariance is defined as the extent to which two random variables covary (move together) over time. As is true throughout our discussion, the variables in question are the returns (TRs) on two securities. As in the case of the correlation coefficient, the covariance can be:

1. Positive, indicating that the returns on the two securities tend to move in the same direction at the same time; when one increases (decreases), the other tends to do the same. When the covariance is positive, the correlation coefficient will also be positive.
2. Negative, indicating that the returns on the two securities tend to move inversely; when one increases (decreases), the other tends to decrease (increase), When the covariance is negative, the correlation coefficient will also be negative.
3. Zero, indicating that the returns on two securities are independent and have no tendency to move in the same or opposite directions together.

The formula for calculating covariance on an expected basis is;

$$\sigma_{AB} = \sum_{i=1}^{m} [R_{A,i} - E(R_A)] [R_{B,i} - E(R_B)] pr_i$$

Where;

σ_{AB} = the covariance between securities A and B
R_A = one possible return on 'security A
$E(R_A)$ = the expected value of the return on security A ,
m = the number of likely outcomes for a security for the period

Covariance is the expected value of the product of deviations from the mean. The size of the covariance measure depends upon the units of the variables involved and usually changes when these units are changed. Therefore, the, covariance primarily provides information about whether the association between variables is positive, negative, or zero because simply observing the number itself is not very useful.

Relating the Correlation Coefficient and the Covariance:

The covariance and the correlation coefficient can be related in the following manner:

$$\rho_{AB} = \sigma_{AB} / \sigma_A \sigma_B$$

This equation shows that the correlation coefficient is simply the covariance standardized by dividing by the product of the two standard deviations of returns.

Given this definition of the correlation coefficient, the covariance can be written as;

$$\sigma_{AB} = \rho_{AB} \sigma_A \sigma_B$$

Therefore, knowing the correlation coefficient, we can calculate the covariance because the standard deviations of the assets rates of return will already be available. Knowing the covariance, we can easily calculate the correlation coefficient.

Calculating Portfolio Risk:

Co variances account for the comovements in security returns; we are ready to calculate portfolio risk. First, we will consider the simplest possible case, two securities, in order to see what is happening in the portfolio risk equation. We will then consider the case of many securities, where the calculations soon become too large and complex lo analyze with any

means other than a computer.

THE n-SECURITY CASE:

The two-security case can be generalized to the n-security case. Portfolio risk can be reduced by combining assets with less than perfect positive correlation. Furthermore, the smaller the positive correlation, the better.

Portfolio risk is a function of each individual security's risk and the covariances between the returns on the individual securities. Stated in terms of variances portfolio risk is;

$$\sigma^2_p = \sum_{i=1}^{n} w_i^2 \sigma_i^2 + \sum_{i=1}^{n} \sum_{\substack{j=1 \\ i \neq j}}^{n} w_i w_j \sigma_{ij}$$

Where

σ^2_p = the variance of the return on the portfolio
σ_i^2 = the variance of return for security
σ_{ij} = the covariance between the returns for securities i and j .
w_i = the portfolio weights or percentage of investable funds invested in security i
$\sum_{i=1}^{n} \sum_{j=1}^{n}$ = a double summation sign indicating that n^2 numbers are to be added together (i.e., all possible pairs of values for i and j)

It states exactly the same messages for the two-stock portfolio. This message is portfolio risk is a function of;

- The weighted risk of each individual security (as measured by its variance)
- The weighted covariance among all pairs of securities

Note that three variables actually determine portfolio risk: variances, covariances, and weights.

Simplifying the Markowitz Calculations:

In the case of two securities, there are, two covariances, and we multiply the weighted covariance term by two,' since the covariance of A with B is the same as the covariance of B with A. In the case of three securities, there are six covariances; with four securities, 12 covariances; and so forth, based on the fact that the total number of covariances in the Markowitz model is calculated as n (n - 1), where n is the number of securities.

For the case of two securities, there are n^2, or four, total terms in the matrix—two variances and two covariances. For the case of four securities, there are n^2, or 16 total terms in the matrix—four variances and 12 covariances. The variance terms are on the diagonal of the matrix; in effect represent the covariance of a security with itself.

Efficient Portfolios:

Markowitz's approach to portfolio selection is that an investor should evaluate portfolios on the basis of their expected returns and risk as measured by the standard deviation. He was

the first to derive die concept of an efficient portfolio, which is defined as one that has the smallest portfolio risk for a given level of expected return or the largest expected return for a given level of risk. Investors can identify efficient portfolios by specifying an expected portfolio return and minimizing the portfolio-risk at this level of return. Alternatively, they can specify a portfolio risk level they are willing to assume and maximize the expected return on the portfolio for this level of risk. Rational investors will seek efficient portfolios, because these portfolios are optimized on the two dimensions of most importance to investors, expected return and risk.

To begin our analysis, we must first determine the risk-return opportunities available to an investor from a given set of securities. A large number of possible portfolios exist when we realize that varying-percentages of an investor's wealth can be invested in each of the assets under consideration investors should be interested in only that subset of the available portfolios known as the efficient set.

The assets generate the attainable set of portfolios, or the opportunity set. The attainable set is the entire set of all portfolios that could be found from a group of n securities. However, risk-averse investors should be interested only in those portfolios with the lowest possible risk for any given level of return. All other portfolios in the attainable set are dominated. Using the inputs described earlier—expected returns, variances, and covariances—-we can calculate the portfolio with the smallest variance, or risk, for a given level of expected return based on these inputs. Given the minimum-portfolios, we can plot the minimum-variance frontier. Point A represents, the global minimum-variance portfolio, because no other minimum-variance portfolio has a smaller risk. The bottom segment of tile minimum variance frontier, AC, is dominated by portfolios on the upper segment, AB. For example, since portfolio X has a larger return than portfolio Y for the same level of risk, investors would not want to own portfolio Y.

The segment of the minimum-variance frontier above the global minimum variance portfolio, AB, offers the best risk-return combinations available to investors from this particular set of inputs, this segment is referred to as the efficient set of portfolios. This efficient set is determined by the principle of dominance—portfolio X dominates portfolio Y if it has the same level of risk but a larger expected return or the same expected return but a lower risk.

The solution to the Markowitz model revolves around the portfolio weights, or percentages of investable funds to be invested in each security. Because the expected returns, standard deviations, and correlation coefficients for the securities being considered are inputs in, the Markowitz analysis, the portfolio weights are the only variable that can be manipulated to solve the portfolio problem of determining efficient portfolios.

Think of efficient portfolios as being derived in the following manner. The inputs are obtained and a level of desired expected return for a portfolio is specified; for example, 10 percent. Then all combinations of securities that can be combined to form a portfolio with an expected return of I0 percent are determined, and the one with the smallest variance of return is selected as the efficient portfolio. Next, a new level of portfolio expected return is specified— for example; 11 percent — and the process is repeated. This continues until the feasible range of expected returns is processed. Of .course, the problem could be solved by specifying levels of portfolio risk and choosing that portfolio with the largest expected return for the specified level of risk.

PORTFOLIO SELECTION

Building a Portfolio Using Markowitz Principles:

To select an optimal portfolio of financial assets using the Markowitz analysis; investors should;

1. Identify optimal risk-return combinations available from the set of risky assets being considered by using the Markowitz efficient frontier analysis. This step; uses the inputs from, the expected returns, variances, and covariances for a set of securities.

2. Choose the final portfolio from among those in the efficient set based on an investor's preferences.

Using the Markowitz Portfolio Selection Model:

Even if portfolios are selected arbitrarily, some diversification benefits are gained. This results in a reduction of portfolio risk. However, to take; the full information set into account, we use portfolio theory as developed by Markowitz, Portfolio theory is nonnative, meaning that it tells investors; how they should act to diversify optimally. It is based on a small set of assumptions, including;

1. A single investment period; for example, one year.
2. Liquidity of positions; for example, there are no transaction costs.
3. Investor preferences based only on a portfolio's expected return and risk; as measured by variance or standard deviation.

Efficient Portfolios:

Markowitz's Approach to portfolio selection is that an investor should evaluate portfolios on the basis of their expected returns and risk as measured by the standard deviation. He was the first to derive the concept of an efficient portfolio, defined as one that, has the smallest portfolio risk for a given level of expected return or the largest expected return for a given level of risk. Rational investors will seek ethcient portfolios, because these portfolios are optimized on the two dimensions of most importance to investors, expected return and risk.

The basic details of how to derive efficient portfolios? In brief, based on inputs consisting of estimates of expected return and risk for each security being considered of well as the correlation between pairs of securities, an optimization program varies the weights for each security until an efficient portfolio is determined. This portfolio will have the maximum expected return for a given level of risk or the minimum risk for a given level of expected return.

Selecting an Optimal Portfolio of Risky Assets:

Once the efficient set of portfolios is determined using the Markowitz model, investors must select from this set the portfolio most appropriate for them. The Markowitz model does not specify one optimum portfolio. Rather it generates the efficient set of portfolios, all of which, by definition; are optimal portfolios (for a given level pf expected return or risk).

In economics in general and finance in particular, we assume investors are risk averse. This

means that investors, if given a choice, will not take a "fair gamble," defined as one with an expected payoff of zero and equal probabilities of a gain or a loss. In effect, with a fair gamble, the disutility from the potential loss is greater than the utility from the potential gain. The greater the risk aversion; the greater the disutility from the potential loss.

ALTERNATIVE METHODS OF OBTAINING THE EFFICIENT FRONTIER:

The single-index model provides an alternative expression- for portfolio variance, which is easier to calculate than in the case of the Markowitz analysis. This alternative approach can be used to solve the portfolio problem as formulated by Markowitz—determining the efficient set of portfolios. It requires considerably fewer calculations.

The Single - Index Model:

William Sharpe, following Markowitz, developed the single-index model, which relates returns on each security to the returns on a common index. A broad market index of common stock returns is generally used for this purpose. Think of the S&P 500 as this index.

The single-index model can be expressed by the following equation:

$$\mathbf{R_i = \alpha_i + \beta_i R_M + e_i}$$

Where;

R_i = the return (TR) on security i
R_M = the return (TR) on the market index
α_i = that part of security i's .return independent of market performance
β_i = a constant measuring the expected change in the dependent variable, R_i given a change in the independent variable, R_M
e_i = the random residual error;

The single-index model divides a security's return into two components: a unique part, represented by a_i and a market related part represented by $\beta_i R_M$. The unique part is a micro event, affecting an individual company but not all companies in general. Examples include the discovery of new ore reserve, a fire, a strike, or the resignation of a key company figure. The market related part, on the other hand, is a macro event that is broad based and affects all (or; most) firms. Examples include a Federal Reserve announcement about the discount rate, a change in the prime rate, or an unexpected announcement about the money supply.

Given these values, the error term is the difference between the left-hand side of the equation, the return on security i, arid the right-hand side of the equation, the sum of the two components of return. Since the single-index model is, by definition, equality, the two sides must be the same.

Selecting Optimal Asset Classes—the Asset Allocation Decision:

The Markowitz model is typically thought of in terms of selecting portfolios of individual securities; indeed, that is how Markowitz expected his model to be used. As we know, however, it is a cumbersome model to employ because of the number of covariance estimates needed when dealing with a large number of individual securities.
An alternative way to use the Markowitz model as a selection technique is to think in terms of asset classes, such as domestic stocks, foreign stocks of industrialized countries, the

stocks of emerging markets, bonds, and so forth. Using, the model in this manner, investors decide what asset classes to own and what proportions of the asset classes to hold.

The allocation of a portfolio's funds to classes of assets, such as cash equivalents, bonds, and equities

The asset allocation decision refers to the allocation of portfolio assets to broad asset markets; in other words, how much of the portfolio's funds are to be, invested in stocks, in bonds, money market assets, and so forth. Each weight can range from zero percent to 100 percent. Asset allocation is one of the most; widely used applications of modern portfolio theory (MPT).

Examining the asset allocation decision globally leads us to ask the following questions:

1. What percentage of portfolio funds is to be invested in each of the countries for which financial markets are available to-investors?
2. Within each country, what percentage of portfolio funds is to be invested in stocks, bonds, bills, and other assets?
3. Within each of the major asset .classes, what percentage of portfolio funds is to be invested in various individual securities?

Many knowledgeable market observers agree that the asset allocation decision is the most important decision made by an investor. According to some studies, for example, the asset allocation decision accounts for more than 90 percent of the variance in quarterly returns for a typical large pension fund.

The rationale behind this approach is that different asset classes offer various potential returns and various levels of risk, and the correlation coefficients between some of these asset classes may be quite tow, thereby providing beneficial diversification effects. As with the Markowitz analysis applied to individual securities, inputs remain a problem, because they must be estimated. However, this" will always ¥e a problem in investing, because we are selecting assets to be held over the uncertain future.

The Impact of Diversification on Risk:

The Markowitz analysis demonstrates that the standard deviation of a portfolio is typically less than the weighted average of the standard deviations of the securities in the portfolio. Thus, diversification typically reduces the risk of a portfolio—as "the number of portfolio holdings increases, portfolio risk declines.

Systematic and Nonsystematic Risk:

The riskiness of the portfolio generally declines as more stocks are added, because we are eliminating the nonsystematic risk, or company-specific risk. This is unique risk related to a particular company. However, the extent of the risk reduction depends upon the degree of correlation among the stocks. As a general rule, correlations among stocks, at least domestic stocks and particularly large domestic stocks, are positive, although less than 1.0. Adding more stocks will reduce risk at first, but no matter how many partially correlated stocks we add to the portfolio, we can riot eliminate all of the risk. Variability in a security's total returns that is directly associated with overall movements in the general market or economy is called systematic risk, or market risk, or non diversifiable risk. Virtually all securities

have some systematic risk, whether bonds or stocks, because systematic risk directly

encompasses interest rate risk, market risk, and inflation risk.

After the non systematic risk is eliminated, what is left is the non diversifiable portion, or the market risk (systematic part). This part of the risk is inescapable, because no matter how well an investor diversifies, the risk of the overall market cannot he avoided.

Investors can construct a diversified portfolio and eliminate part of the total risk, the diversifiable or non market, part. As more securities are added, the non systematic risk becomes smaller and smaller, and the total risk for the portfolio approaches its systematic risk. Since diversification cannot reduce systematic risk, total portfolio risk can be reduced no lower than the total risk of the market portfolio. Diversification can substantially reduce the unique risk of a portfolio. However, we cannot eliminate systematic risk. Clearly, market risk is critical to all investors. It plays a central role in asset-pricing, because it is the risk that investors can expect to be rewarded for taking.

The Implications of the Markowitz Portfolio Model:

The construction of optimal portfolios and the selection of the best portfolio for, an investor have implications for the pricing of financial assets. Part of the riskiness of the, average stock can be eliminated by holding a well-diversified portfolio. This means that part of the risk of the average stock can be eliminated and part cannot. Investors need to focus on that part of 'the risk that cannot be eliminated by diversification, because this is the risk that should be priced in the financial markets.

The relevant risk of an individual stock is its contribution to the-riskiness of a well-diversified portfolio. The return that should be expected on the basis of this contribution can be estimated by the capital asset pricing model.

ASSET PRICING MODEL

Capital Market Theory:

Capital market theory is a positive theory in that it hypothesis how investors do behave rather than, how investors should behave, as, in the case of Modem Portfolio Theory (MPT). It is reasonable "to view capital market" theory; as an extension of portfolio theory, but it is important to understand that MPT is not based on the validity, or lack thereof, of capital market theory.

The equilibrium model of interest to many investors is known as the capital asset pricing model, typically referred to as the CAPM. It allows us to measure the relevant risk of an individual security as well as to assess the relationship between relevant risk of and the returns expected from investing. The CAPM is attractive as an equilibrium model because of its simplicity and its implications. Because of serious challenges, to the model, however, alternatives have been developed. The primary alternative to the CAPM is arbitrage pricing theory, or APT, which allows for multiple sources of risk.

Capital Theory Assumptions:

Capital market theory involves a set of predictions concerning equilibrium expected return on risky assets. It typically is derived by making some simplifying assumptions in order to facilitate the analysis and help us to understand the arguments without fundamentally changing the predictions of asset pricing theory.

Capital market theory builds on Markowitz portfolio theory to diversify his or; her portfolio, according to the Markowitz model, choosing a location on the efficient frontier that matches his or her return-risk references. Because of the complexity of the real world, additional assumptions; are made to make individual more alike.

1. All investors can borrow or lend money at the risk-free rate of return.
2. All investors have identical probability distributions for future rates of return; they have homogeneous expectations with respect to the three inputs of the portfolio model i.e. expected returns, the variance of returns, and the correlation matrix. Therefore, given a set of security prices and a risk-free rate, all investors use the same information to generate an efficient frontier.
3. All investors have the same one-period time horizon.
4. There are no transaction costs.
5. There are no personal income taxes---investors are indifferent between capital gains and dividends.
6. There is no inflation.
7. There are many investors, and no single investor can affect the price of a stock through his or her buying and selling decisions. Investors are price takers and act as if prices are unaffected by their own trades.
8. Capital markets are in equilibrium.

These assumptions appear to be unrealistic and often disturb investors encountering capital market theory for the first time. However, the important issue is how well the theory predicts or describes reality, and not the realism of its assumptions. If CMT does a good job of explaining the returns on risky .assets, it is very useful, and the assumptions made in deriving the theory are of less importance.

Most of these assumptions can be relaxed without significant effects on the CAPM or its implications in other words, the CAPM is robust. Although the results from such a relaxation of the assumptions may be less clear-cut and precise no significant damage is done. Many conclusions of the basic model still hold.

Finally, most investors recognize that all of the assumptions of CMT are not unrealistic. For example, some institutional investors are tax exempt, and brokerage costs today, as percentage of the transaction, are quite small. Nor is it too unreasonable to as that for the, one-period horizon of the model, inflation may be fully (or mostly) anticipated and, therefore, not a major factor.

The Equilibrium Return-Risk Tradeoff:

Given the previous analysis, we can now derive some predictions concerning equilibrium expected returns and risk. The CAPM is an equilibrium model that encompasses two important relationships. The first, the capital market line specifies the equilibrium relationship between expected return and risk for efficient portfolios. The second, the security market line specifies the equilibrium relationship between expected return and systematic risk. It applies to individual securities as well as portfolios.

The Capital Market Line:

We now know that portfolio M is die tangency point to a straight line drawn front RF to the efficient frontier and that this straight line is the best obtainable efficient set line. All investors will hold portfolio M as their optimal risky portfolio, and all investors will be somewhere on this steepest; trade-off line between expected return and risk, because it represents, those combinations of risk-free investing / borrowing and portfolio M that yield the highest return obtainable for a given level of risk.

The straight line usually referred to as the capital market line (CML, depicts the equilibrium conditions that prevail in the market for efficient portfolios consisting of the optimal portfolio of risky assets and die risk-free assets. All combinations of the risk-free asset and the risk portfolio M are on the CML, and, in equilibrium, all investors will end up ;with portfolios somewhere on the CML.

The Market Portfolio:

Portfolio M is called the market portfolio of risky securities. It is the highest point of tangency between RF and the efficient frontier and is the optimal risky portfolio. All investors would want to be on the optimal line RF-M-L, and, unless they invested 100 percent of their wealth in the risk-free asset, they would own portfolio M with some portion of their investable wealth or they would invest their own wealth plus borrowed funds in portfolio M. This portfolio is the optimal portfolio of risky assets.

Why do all investors hold identical risky portfolios? Based on our assumptions above, all investors use the same Markowitz analysis on the same set of securities, have the same expected returns and covariance's and have an identical time horizon Therefore, they will, arrive at the same optimal risky portfolio, arid it will be the market portfolio, designated M.

The Separation Theorem:

We have established that each investor will hold combinations of the risk-free asset (either lending or borrowing) and the tangency portfolio from the efficient frontier, which is the market portfolio. Because we are assuming homogeneous expectations, in equilibrium all investors will determine the same tangency portfolio. Further, under the assumptions of CMT all investors agree on the risk-free rate.

Borrowing and lending possibilities, combined with one portfolio of risky assets M, offer an investor whatever risk-expected return combination he or she seeks; that is, investors can be anywhere they choose on this line depending on their risk-return preferences. An investor could:

1. Invest 100 percent of investable funds in the risk-free asset, providing an expected return of RF and zero risk.
2. Invest 100 percent of investable funds in risky-asset portfolio-M, offering $E(R_M)$, with its risk σ_M.
3. Invest in any combination of return and risk between these two points; obtained by varying the proportion w_{RF} invested in the risk-free asset.
4. Invest more than 100 percent of investable funds in the risky-asset portfolio M by borrowing money at the rate RF, thereby increasing both the expected return and the risk beyond that offered by portfolio M.

Different investors will choose different portfolios because of their risk preferences (they have different indifference curves), but they will choose the same combination of risky securities as denoted by the tangency point M. Investors will then borrow or lend to achieve various positions on the linear trade-off, between expected return and risk.

Unlike the Markowitz analysis; it is not necessary to match each client's indifference curves with a particular efficient portfolio, because only one efficient portfolio is held by all investors. Rather each client will use his or her indifference curves to determine where along the new efficient frontier RF-M-L he or she should be; In effect, each client must determine how much of investable funds should be lend or borrowed at RF and how much should be invested in portfolio M. This result is referred to as a separation property.

The Security Market Line:

The capital market line depicts the risk-return trade-off in the financial markets in equilibrium. However, it applies only to efficient portfolios and cannot be used to-assess the equilibrium expected return for a single security. What about individual securities or inefficient portfolios?

Under the CAPM all investors will hold the market portfolio, which is the bench-mark portfolio against which other portfolios are measured. How does an individual security contribute to the risk of the market portfolio?

Investors should expect a risk premium for buying a risky asset such as a, stock. The greater the riskiness of that stock, the higher the risk premium should be. If investors hold well-diversified portfolios, they should be interested in portfolio risk rather than individual security risk. Different stocks will affect a well-diversified portfolio differently. The relevant risk for an individual stock is its contribution to the riskiness of a well-diversified portfolio. And the risk of a well-diversified portfolio is market risk, or systematic risk,

which is non-diversifiable.

Beta:

We now know that investors should hold diversified portfolios to reduce the portfolio risk. When an investor adds a security to a portfolio what matters is the security's average covariance with the other securities in the portfolio. We also now know that under CMT all investors will hold the same portfolio of risky assets, the market portfolio. Therefore, the risk that matters when we consider any security is its covariance with the market portfolio. We could relate the expected return on a stock to its covariance with the market portfolio. However, it is more convenient to use a standardized measure of the systematic risk that cannot be avoided through diversification. Beta is a relative measure of risk-—the risk of an individual stock relative to the market portfolio of all stocks. If the security's returns move, more (less) than, the market's returns as the latter changes, the security's returns have more (less) volatility (fluctuations in price) than those of the market. For example, a security whose returns rise or fall on average 15 percent when the market return rises or falls 10 percent is said to be an aggressive or volatile security.

CAPM's Expected Return-Beta Relationship:

The security market line (SML) is the CAPM specification of how risk and required rate of return for any asset security, or portfolio are related. This theory posits a linear relationship between an asset's risk and its required rate of return. This linear relationship, called the security market line (SML). Required rate of return is on the vertical axis and beta, the measure of risk, is on the horizontal axis. The slope of the line is the difference between the required rate of return on the market index and RF, the risk-free rate.

The capital asset pricing model (CAPM) formally relates the expected rate of return for any security or portfolio with .the relevant risk measure. The CAPM's expected return-beta relationship is the most-often cited form of the relationship. Beta is the relevant measure of risk that cannot be diversified away in a portfolio of securities and, as such, is the measure that investors should consider in their portfolio management decision process.

The CAPM in its expected return-beta relationship form is a simple but elegant statement. It says that the expected rate of return on an asset is a function of the two components of the required rate of return—the risk-free rate and the risk premium. Thus;

$$\mathbf{k_i = Risk\text{-}free\ rate + Risk\ premium}$$
$$\mathbf{= RF + \beta_i [E (R_M) - RF]}$$

Where;

k_i = the required rate of return on asset i
$E (R_M)$ = the expected rate of return on the market portfolio
β_i = the beta coefficient for asset i

This relationship provides an explicit measure of the risk premium. It is the product of the beta for a particular security i and the market risk premium, $E (R_M) - RF$. Thus,

$$\mathbf{Risk\ premium\ for\ security\ i = \beta_i (market\ risk\ premium)}$$
$$\mathbf{= \beta_i [E (R_M) - RF]}$$

The CAPM's expected return-beta relationship is a simple but elegant statement about expected (required) return and risk for any security or portfolio. It formalizes the basis of investments which is that the greater the risk assumed, the greater the expected (required) return should be. This relationship states that an investor require (expects) a return on arisky asset equal to the return on a risk-free asset plus a risk premium and the greater the risk assumed, the greater the risk premium.

ASSET PRICING MODEL Contd…

Introduction of the Risk-Free Asset:

The first assumption of CMT listed above is that investors can borrow and lend at the risk-free rate. Although the introduction of a risk-free asset appears to be a simple step to take in the evolution of portfolio and CMT, it is a very significant step. In-fact, it is the introduction of a risk-free asset that allows us to develop CMT from portfolio theory.

With the introduction of risk-free asset, investors can now invest part of their wealth; in this asset and the remainder in any of the risky portfolios in the Markowitz efficient set. Lt allows Markowitz portfolio theory to be extended in such a way that the efficient frontier is completely changed, which in turn leads to a general theory for pricing assets under uncertainty.

A risk-free asset can be defined as one, with a certain-to-be-earned expected return and a variance of return of zero. Since variance = 0, the nominal risk-free rate in each period will be equal to its expected value. Furthermore, the covariance between the risk-free asset and any risky asset i will be zero.

The true risk-free asset is best thought of as a Treasury Security, which has no risk of default, with a maturity matching /the holding period of the investor. In this case, the amount of money to be received at the end of, the holding period is known with certainty at the beginning of the period. The Treasury bill typically is taken to be the risk-free asset, and its rate of return is referred to here as RF.

Risk-Free Borrowing and Lending:

Assume; that the efficient frontier, has been derived by an investor. The arc AB delineates the efficient set of portfolios of risky assets. We now introduce a risk-free asset with return RF and $\sigma = 0$.

What if we extend this analysis to allow investors to borrow money? The investors no longer restricted to his or, her wealth when investing in risky assets. Technically, we are show selling the riskless asset. One way to accomplish this borrowing is to buy stocks on margin, which has a current initial margin requirement of 50 percent. We will assume that investors can also borrow at the risk-free rate RF. This assumption can be removed without changing the basic arguments.

Borrowing additional investable funds and investing them together with the investor's own wealth allows investors to seek higher, expected returns while assuming greater risk. These borrowed funds can be used to lever the portfolio position beyond point M, the point of tangency between the straight line emanating from RF and the efficient frontier AB.

Estimating the SML:

To implement the SML approach described here an investor needs estimates of the return on the risk-free asset (RF), the expected return on the market index, and the beta for an individual security. How difficult are these to obtain?

The RF should, be the easiest of the three variables, to obtain. In estimating RF, the investor

can use as a proxy the return on Treasury bills for the coining period (e.g., a year).

Estimating the market return is more difficult, because the expected return for the market index is not observable. Furthermore, several different market indexes could be used. Estimates of the market return could be derived from a study of previous market returns. Alternatively, probability estimates of market returns could be made, and the expected value calculated. This would provide an estimate of both the expected return and the standard deviation for the market.

Finally, it is necessary to estimate the betas for individual securities. This is a crucial part of the CAPM estimation process. The estimates of RF and the expected return on the market are the same for each security being evaluated. Only beta is unique, bringing together the investor's expectations of returns for the stock with those for the market. Beta is the only company-specific factor in the CAPM; therefore, risk is the only asset-specific forecast that must be made in the CAPM.

Estimating Beta:

A less restrictive form of the single-index model is known as the market model. This model is identical to the Single-index model except that the assumption of the error terms for different securities being uncorrelated is not made.

The market model equation is the same as for the single-index model:

$$\mathbf{R_i = \alpha_i + \beta_i R_M + e_i}$$

Where;

R_i = the return (TR) on security i
R_M = the return (TR) on the market index
α_i = the intercept term
β_i = the slope term
e_i = the random residual error;

The market model produces an estimate of return for any stock.

To estimate the market model, the TRs for stock i can be regressed on the corresponding TRs, for the market index. Estimates will be obtained of α_i (the constant return on security i that is earned regardless of the level of market returns) and β_i, (the slope coefficient that indicates the expected increase in a security's return for a 1 -percent, increase in market return). This is how the estimate of a stock's beta is often derived.

Arbitrage Pricing Theory:

An equilibrium theory of expected returns for securities involving few assumptions about investor preferences

The CAPM is not the only model of security pricing. Another model that has received attention is based on arbitrage pricing theory (APT) as developed by Ross and enhanced by others. In recent years, APT has emerged as an alternative theory-of asset pricing to the CAPM. Its appeal is that it is more general than the[1] CAPM, with less restrictive assumptions. However, like the CAPM, it has limitations, and like the CAPM, it is not the final word in asset pricing.

Similar to the CAPM, or any other asset-pricing model, APT posits a relationship between expected return and risk. It does so, however, using different assumptions and procedures. Very importantly, APT is not critically dependent on an underlying market portfolio as is the CAPM, which predicts that only market risk influences expected returns. Instead, APT recognizes that several types of risk may affect security returns.

APT is based on the law of one price, which states that two otherwise identical assets cannot sell at different prices. APT assumes that asset returns are linearly related to a set of indexes, where each index represents a factor that influences the return on an asset. Market participants develop expectations about the sensitivities of assets to the factor. They buy and sell securities so that, given, the law of one price, securities affected equal by the same factors will have equal expected returns. This buying and selling is the arbitrage process, which determines the prices of securities.

APT states that equilibrium market prices will adjust to eliminate any arbitrage opportunities, which refer to situations where a zero investment portfolio can be constructing that, will yield a risk-free profit. If arbitrage opportunities arise, a relatively few investors can act to restore equilibrium.

Unlike the CAPM, APT does not assume:

1. A single-period investment horizon
2. The absence of taxes
3. Borrowing and lending at the rate RF
4. Investors select portfolios on the basis of expected return and variance

APT, like the CAPM, does assume:

1. Investors have homogeneous beliefs
2. Investors are risk-averse utility maximizers
3. Markets are perfect
4. Returns are generated by a factor model

Factor Model used to depict the behavior of security prices by identifying major factors in the economy that affect large numbers of securities

A factor model is based on the view that there are underlying risk factor's that affect realized and expected security returns. These risk factors represent broad economic forces and hot company-specific characteristics, and by definition they represent the element of surprise in the risk factor—the difference between the actual value for the factor and its expected value.

The factors must possess three characteristics:

1. Each risk factor must have a pervasive influence on stock returns. Firm-specific events are not APT risk factors.
2. These risk factors must influence expected return, which means they must have nonzero prices. This issue must be determined empirically, by statistically analyzing stock returns to see which factors pervasively affect returns.
3. At the beginning of each period, the risk factors must be unpredictable to the market as a whole, this raises an important point. In our example above, we used in flatten and the economy's output as the two factors affecting portfolio returns. The rate of inflation is not an APT risk factor, because it is at least partially predictable. In an

economy with reasonable growth where the quarterly rate of inflation has averaged 3 percent on an annual basis, we can reasonably assume that next quarter inflation rate is not going to be 10 percent. On the other hand, unexpected inflation—the difference between actual inflation, and expected inflation—is an APT risk factor. By definition, it cannot be predicted, since it is unexpected.

What really matters are the deviations of the factors from their expected values. For example, if the expected value of inflation is 5 percent and the actual rate of inflation for a period is only 4 percent, this, 1-percent deviation will affect the actual return for the period.

Portfolio Management:

Portfolio management involves a series of decisions and actions that must be made by every investor whether an individual or institution. Portfolios must be managed whether investors follow a passive approach or ail active approach to selecting and holding their financial assets. As we saw when we examined portfolio theory, the relationships among the various investment alternatives that are held as a portfolio must be considered if an investor is to hold an optimal portfolio, and achieve his or her investment objectives.

Portfolio management can be thought of as a process. Having the process clearly in mind is very important, allowing investors to proceed in an orderly manner.

In this chapter, we outline the portfolio management process, making it clear that a logical and orderly flow does exist. This process can be applied to each investor and by any investment manager. Details may vary from client to client, but the process remains the same.

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Portfolio Management as a Process:

The portfolio management process has been described by Maginn and Tuttle in a book that forms the basis for portfolio management as envisioned by the Association for Investment Management and Research (AIMR), and advocated in its curriculum for the Chartered Financial Analyst (CFA) designation. This is an important development because of its contrast with the past, where portfolio management was treated on an ad hoc basis, matching investors with portfolios on an individual basis. Portfolio management should be structured so that any investment organization can carry it out in an effective and timely manner without serious omissions.

Maginn and Tuttle emphasize that portfolio management is a process, integrating a set of activities in a logical and orderly manner. Given the feedback loops and monitoring that is included; the process is both continuous and systematic. It is a dynamic and flexible concept, and extends to all portfolio investments, including real estate, gold, and other real assets.

The portfolio management process extends to all types of investment organizations and investment styles. In fact, Maginn and Tuttle specifically avoid advocating how the process should be organized by money management companies or others, who should make the decisions, and so forth. Each investment management organization, should decide for itself how best to carry out its activities consistent with viewing portfolio management as a process.

Having structured portfolio management as a process, any portfolio manager can

execute the necessary decisions for an investor. The process provides a framework and a control over the diverse activities involved, and allows every investor, an individual or institution, to be accommodated in a systematic, orderly manner.

As outlined by Maginn and Tuttle, portfolio management is an ongoing process by which:

1. Objectives, constraints, and preferences are identified for each investor. This leads to the development of an explicit investment policy statement which is used to guide the money management process.
2. Capital market expectations for the economy, industries and sectors, and individual securities are considered arid quantified.
3. Strategies are developed arid implemented. This involves asset allocation, portfolio optimization, and selection of securities.
4. Portfolio factors are monitored and responses are; made as investor objectives and constraints and/or market expectations change.
5. The portfolio is rebalanced as necessary by repeating the asset allocation, portfolio strategy, and security selection steps.
6. Portfolio performance is measured and evaluated to ensure attainment of the investor objectives.

Individual Investors Vs Institutional Investors:

Significant differences exist among investors as to objectives, constraints, and preferences. We are primarily interested here in the viewpoint of the individual investor, but the basic investment management process applies to all investors, individuals, and institutions. Furthermore, individuals are often the beneficiaries of the activities of institutional investors, and an understanding of how institutional investors fit into the investment management process is desirable.

A major difference between the two occurs with regard to time horizon, because institutional investors are often thought of on a perpetual basis, but this concept has no meaning when applied to individual investors. For individual investors, it is often useful to think of a life-cycle approach, as people go from the beginning of their careers to retirement. This approach is less useful for institutional investors, because they typically maintain a relatively constant profile across time.

Kaiser has summarized the differences between individual investors and institutional investors as follows:

1. Individuals define risk as "losing money", whereas institutions use approach, typically defining risk in terms of standard deviation.
2. Individuals can be characterized by their personalities, whereas for institutions, we consider the investment characteristics of those with a beneficial interest in the portfolios managed by the institutions.
3. Goals are a key part of what individual investing is all about, along with their assets, whereas for institutions, we can be more precise as to their total package of assets and liabilities.
4. Individuals have great freedom in what they can do with regard to investing whereas institutions are subject to numerous legal and regulatory constraints.
5. Taxes often are a very important consideration for individual investors, whereas many institutions, such as pension funds, are free of such considerations.

The implications of all of this for the investment management process are as follows:

- **For individual investors**: Because each individual's financial profile is different, an investment policy for an individual investor must incorporate that investor's unique factors. In effect, preferences are self-imposed constraints.
- **For institutional investors**: Given the increased complexity in managing institutional portfolios, it is critical to establish a well defined and effective policy. Such a policy must clearly delineate the objectives being sought, the institutional investor's risk tolerance, and the investment Constraints and preferences under which it must operate.

The primary reason for establishing a long term investment policy for institutional investors is two fold:

1. It prevents arbitrary revisions of a soundly designed investment policy.
2. It helps the portfolio manager to plan and execute on a long term basis and resist short term pressures that could derail the plan.

PORTFOLIO MANAGEMENT

Formulate an Appropriate Investment Policy:

The determination of portfolio policies—referred to as the investment policy statements is the first step in the investment process. It summarizes the objectives, constraints, and preferences for the investor. A recommended approach in formulating ah investment policy statement is simply to provide information, in the following order, for any investor individual or institutional:

Objectives:

- Return requirements
- Risk tolerance

Followed by:

- Constraints and Preferences:
  - Liquidity
  - Time horizon
  - Laws and regulations
  - Taxes
  - Unique preferences and circumstances

Objectives:

Portfolio objectives are always going to center on return and risk, because these are the two aspects of most interest to investors. Indeed, return and risk are the basis of all financial decisions in general and investing decisions in particular. Investors seek returns, but must assume risk in order to have an opportunity to earn the returns.

Furthermore, an individual can be a composite of these stages at the same time. The four stages are:

1. Accumulation Phase: In the early stage of the life cycle, net worth is typically small, but the time horizon is long. Investors can afford to assume large risks.
2. Consolidation Phase: In this phase, involving the mid-to-late career stage of the life cycle when income exceeds expenses, an investment portfolio can be .accumulated. A portfolio balance is sought to provide a moderate trade-off between risk and return.
3. Spending Phase: In this phase, living expenses are covered from accumulated assets rather than earned income. Although some risk taking is still preferable, the emphasis is on safety, resulting in a relatively low position on the risk-return trade-off.
4. Gifting Phase: In this phase, the attitudes about the purpose of investments changes. The basic position on the trade-off remains about the same as in phase 3.

Establishing a Portfolio Risk Level:

Investors should establish a portfolio risk level that is suitable for them, and then seek the highest returns consistent with that level of risk. We will assume here that investors have a

long-run horizon. If not, they probably should avoid stocks, or at least minimize any equity position.

Assuming you are a long-term investor, and that you own an S&P 500-type portfolio, ask yourself what is the worst that is likely to happen to you as an investor in stocks. Ignoring the Great Depression, which hopefully will not occur again, consider the worst events that have, occurred. During the bear market of 1973 to 1974, investors could have lost about 37 percent of their investment in S&P 500 stocks. During the bear market of 2000 to 2002, investors could have lost over 40 percent. Therefore, it is reasonable to assume that with a long-time horizon, investors will face one or more bear markets with approximately 40 percent declines. This is in line with the long-term standard deviation of S&P 500 returns of about 20 percent with two standard deviations on either side of the mean return encompassing 95 percent of all returns.

If an investor can accept a loss (at least on paper) of approximately 40 percent once or twice in an investing life time, and in otherwise optimistic about the economy and about stocks, the investor can assume the risk of U.S. stocks. On the other hand, if such a potential decline is unacceptable, an investor will have to construct a portfolio with a lower risk profile. For example, a portfolio of 30 percent stocks and 50 percent Treasury bills would cut the risk in half. Other alternatives consisting of stocks and bonds would also decrease the risk.

Inflation Considerations:

An investment policy statement often will contain some statement about inflation-adjusted returns because of the impact of inflation on investor results over long periods of time. For example, a wealthy individual's policy statement may be stated in terms of maximum. After tax, inflation-adjusted total return consistent with the investor's rise profile, whereas another investor's primary return objective may be stated as inflation-adjusted capital preservation, perhaps with a growth-oriented mix to reflect the need for capital growth over time.

Inflation is clearly a problem for investors. The inflation rate of 13 percent in 1979 to-1980 speaks for itself in terms of the awful impact it had on investors' real wealth. But even with a much lower inflation—say, 3 percent--the damage is substantial. It can persist steadily, eroding values. At a 3 percent inflation rate, for example, the purchasing power of a dollar is cut in half in 10s than 25 years. Therefore, someone retiring at age 60 who lives to approximately age 85 and does not protect him or herself from inflation will suffer a drastic decline in purchasing power over the years.

The very low inflation rates of the late 1990s and early 2000s probably lulled many investors into thinking that inflation is no longer a serious problem, and that they did not need to consider this issue as being very important. However, for the last 80 or so years, the compound annual rate of inflation has been approximately 3 percent. It is reasonable to assume that in the future inflation will| be higher than it has been recently, and therefore this is an issue that investors need to consider.

Constraints and Preferences:

To complete the investment policy statement, these items are described for a particular investor as the circumstances warrant. Since investors vary widely in their constraints and preferences, these details may also vary widely. Time Horizon Investors need to think about the time period involved in their investment plans. The objectives being pursued may

require a policy statement that speaks to specific planning horizons. In the case of an individual investor, for example; this could well be the investor's expected lifetime. In the case of an institutional investor, the time horizon can be quite long. For example, for a company with a defined benefit retirement plans whose employees are young; and which has no short-term liquidity needs, the time horizon can be quite long.

Liquidity Needs:

Liquidity is the ease with, which an asset can be sold without a sharp change in price as the result of selling. Obviously, cash equivalents (money market securities) have high liquidity, and are easily sold at close to face value. Many stocks also have great liquidity, but the price at which they are sold will reflect their current market valuations.

Investors' must decide how likely they are to sell some part of their portfolio in the short run. As part of the asset allocation decision, they must decide how much of their funds to keep in cash equivalents.

Tax Considerations:

Individual investors, unlike some institutional investors, must consider the impact of taxes on their investment programs. The treatment of ordinary income as opposed to capital gains is an important issue, because typically there is a differential tax rate. Furthermore, the tax laws in United States have been changed several times, making it difficult for investors to forecast the tax rate that will apply in the future.

In addition to the differential tax rates and their changes over time, the capital gains component of security returns benefits from the fact that the tax is not payable until the gain is realized. This tax deferral is, in effect a tax-free loan that remains invested for the benefit of the taxpayer. As -explained below, some securities become "locked up" by the reluctance of investors to pay the capital gains that will result from selling the securities.

Retirement programs offer tax sheltering whereby any income and/or capital gains taxes are avoided until such time as the funds are withdrawn. Investors with various retirement and taxable accounts must grapple with the issue of which type of account should hold stocks as opposed to bonds (given that bonds generate higher current Income).

Legal and Regulatory Requirements:

Investors must obviously deal with regulatory requirements growing out of both common law and the rulings and regulations of state and federal agencies. Individuals are subject to relatively few such requirements, whereas a particular institutional portfolio, such as an endowment fund of a pension fund, is subject to several legal and regulatory requirements.

With regard to fiduciary responsibilities, one of the most famous concepts is the Prudent Man Rule. This rule, which concerns fiduciaries, goes back to 1830, although it was not formally stated until more than 100 years later. Basically, the rule states that a fiduciary, in managing assets for another party shall act like people of prudence, discretion and intelligence act in governing their own affairs.

The important aspect of the Prudent Man Rule is its flexibility; because interpretations of the rule can change with time and circumstances. Unfortunately, some judicial rulings have specified a very strict interpretation, negating the, value of flexibility for the time period and

circumstances involved. Also unfortunately, in the case of state laws governing private trusts the standard continues to be applied to individual investments rather than the portfolio as a whole which violates all of the portfolio-building principles.

One of the important pieces of federal legislation governing institutional investors is the Employment Retirement Income Security Act, referred to as ERISA. This act, administered by the Department of Labor, regulates employer-sponsored retirement plans. It requires that plan assets be diversified and that the standards being applied under the act be applied to management of the port/olio as a whole.

The investment policy thus formulate is an operational statement. It clearly specifies the actions to be taken to try to achieve the investor's goals, or objectives, given the preferences of the investor and any constraints imposed. Although portfolio investments consider aliens are often of a qualitative nature, they help to determine a quantitative statement of return and risk requirements that are specific to the needs of any particular investor.

Unique Needs and Circumstances:

Investors often face a variety of unique circumstances. For example, a trust established on their behalf may specify that investment activities be limited to particular asset classes, or even specified assets. Or in individual may feel that their life span is threatened by illness and wish to benefit within a certain period of time.

Determine and Quantify Capital Market Expectations:

Having considered their objective's and constraints, the next step is to determine a set, of investment strategies based on the policy statement. Included here ape such issues as asset allocation portfolio diversification and the impact of taxes. Once the portfolio strategies are developed, they are used along with the investment manager's expectations' fit the capital market and' for individual assets to choose a portfolio of assets. Most importantly, the asset allocation decision must be made.

Forming Expectations:

The forming of expectations involves two steps:

1. **Macroexpectational factors**: These factors influence the market for bonds, stocks and other assets on both a domestic and international basis. These are expectations about the capital markets.
2. **Microexpectational influences**: These factors invoke the cause agents that underlie the desired return and risk estimates and influence the selection of a particular asset for a particular portfolio.

Rate of Return Assumptions:

Most investors base their actions on some 'assumptions about the rate of return expected from various assets, obviously it is important to investors to plan their investing activities on realistic rate of return assumptions.
Investors should study carefully the historical rates of return available in such sources as the data provided by Ibbotson Associates or the comparable data. We know the historical mean returns, both arithmetic and geometric, and the standard deviation of the returns for major asset classes such as stocks, bonds and bills.

Asset Allocation:

The asset allocation decision involves .deciding the percentage of investable funds to be placed in stocks, bonds, and cash equivalents. It is the most important investment decision made by investors, because it is the basic determinant of the return and risk taken.

The returns of a well-diversified portfolio within a given asset class are highly correlated with the returns of the asset class itself. Within an asset class, diversified portfolios will tend to produce similar returns over time. However, different asset classes are likely to produce results that ire quite dissimilar. Therefore, differences in asset allocation will be the key factor over time causing differences in portfolio performance.

The Asset Allocation Decision:

Factors to consider in making the asset allocation decision include the investor's return requirements (current income versus future income), the investor's risk tolerance, and the time horizon. This is done in conjunction with the investment manager's expectations about the Capital markets and about individual assets.

How asset allocation decisions are made by investors remains a subject that is not fully understood. It is known that actual allocation decisions often differ widely from how investors say they will allocate assets.

Types of Asset Allocation:

William Sharpe has outlined several types of asset allocation. If all major aspects of the process have been considered, the process is referred to as integrated asset' allocation. These include issues specific to an investor, particularly the investor's risk tolerance, and issues pertaining to the capital markets, such as predictions concerning expected returns, risks, and correlations. If some of these steps are omitted, the asset allocation approaches are more specialized. Such approaches include:

1. **Strategic asset allocation**: This type of .allocation is usually done once every few years; using simulation procedures to determine the likely range of outcomes associated with each mix. The investor considers the range of outcomes for each mix; and chooses the preferred one, thereby establishing a long-run or strategic asset mix.

2. **Tactical asset allocation**: This type of allocation is performed routinely, as part of the ongoing process of asset management. Changes in asset mixes are driven by changes in predictions concerning asset returns. As predictions of the expected returns on stocks, bonds, and other assets change, the percentages of these assets held in the portfolio changes. In effect, tactical asset allocation is a market timing approach to portfolio management intended to increase exposure to a particular market when its performance is expected to be good and decrease exposure when performance is expected to be poor.

Changes in Investor's Circumstances:

An investor's circumstances can change for several reasons. These can be easily organized on the basis of the framework for determining portfolio policies outlined above.

1. Change in Wealth: A change in wealth may cause an investor to behave differently, possibly accepting more risk in the case of an increase in wealth, or becoming more risk averse In the case of, a decline in wealth.
2. Change in Time Horizon: Traditionally, we think of investors aging and becoming more conservative in their investment approach.
3. Change in Liquidity Requirements: A need for more current income could increase the emphasis on dividend-paying stocks, whereas a decrease in current income requirements could lead to greater investment in small stocks whose potential payoff may be, years in the future.
4. Change in Tax Circumstances: An investor who moves to a higher tax bracket may find municipal bonds more attractive. Also, the timing of the realization of capital gains can become more important.
5. Change in Legal / Regulatory Considerations: Laws affecting investors change regularly, whether tax laws or laws governing retirement accounts, annuities, and so forth.
6. Change in Unique Needs and Circumstances: Investors face a number of possible changes during their life depending on many economic, social, political, health; and work-related factors.

Rebalancing the Portfolio:

Even the most carefully constructed portfolio is not intended to remain intact without change. Portfolio managers spend much of their time monitoring their portfolios and doing portfolio rebalancing. The key is to know when arid how to do such rebalancing because a trade-off is involved the cost of trading versus the cost of not trading.

The cost of trading involves commissions, possible impact on market price, and. the time involved in deciding to trade. The cost of not trading involves holding positions that are not best suited for the portfolio's owner, holding positions that violate the asset allocation plan, hording a portfolio that is no longer adequately diversified and so forth.

One of the problems involved in rebalancing is the "lock-up" problem. This situation arises in taxable accounts subject to capital gains taxes. Even at low level of turnover the tax liabilities generated can be larger than the gains achieved by the active management driving the turnover. In the absence of taxes, such, as with tax deferred IRA and 401(k) plans, investors would simply seek to hold those securities with the highest risk adjusted expected, rates of return.

Performance Measurement:

The portfolio management process is designed to facilitate making investment decisions in an organized, systematic manner. Clearly, it is important to evaluate the effectiveness, of the overall decision-making process. The measurement of portfolio performance allows investors to determine the success of the portfolio management process and of the portfolio manager. It is a key part of monitoring the investment strategy that was based on investor objectives, constraints and preferences.

Performance measurement is important to both those who employ a professional portfolio manager, on their behalf as, well as to those who invest personal funds. It allows investors to evaluate the risks that are being taken, the reasons for the success or failure of the investing program; and the costs of any restrictions that may have been placed on the

investment manager.

Unresolved issues remain in performance measurement despite the development of an entire industry to provide data and analyses of expost performance. Nevertheless, it is a critical part of the investment management process, and the logical capstone in its, own right of the entire study of investments.

EVALUATION OF INVESTMENT PERFORMANCE

Framework for Evaluating Portfolio Performance:

When evaluating a portfolio's performance, certain factors must be considered. Assume that in early 2004 you are evaluating the Go Growth mutual fund, a domestic equity fund in the category of large growth (it emphasizes large-capitalization growth stocks). This fund earned a total return of 20 percent for its shareholders for 2003. It claims in an advertisement that it is the #1 performing mutual funds in its category. As a shareholder, you are trying to assess Go Growth's performance.

SOME OBVIOUS FACTORS TO CONSIDER IN MEASURING PORTFOLIO PERFORMANCE:

Differential Risk Levels:

Based on our discussion throughout this text of the risk-return trade-off that underlies all investment actions, we can legitimately say relatively little about Go Growth's performance. The primary reason is-that investing is always a two-dimensional process based on both return and risk. These two factors are opposite sides of the same coin, and both must be evaluated if intelligent decisions are to be made. Therefore, if we know nothing about the risk of this fund, little can be said about its performance. After all, Go Growth's managers may have taken twice the risk of comparable portfolios to achieve this 20-percent return.

Given the risk that all investors face, it is totally inadequate to consider only the returns from various investment alternatives. Although all investors prefer higher returns, they are also risk averse. To evaluate portfolio performance properly, we must determine whether the returns are large enough given the risk involved. If we are to assess portfolio performance correctly, we must evaluate performance on a risk-adjusted basis.

Differential Time Periods:

It is not unusual to pick up a publication from the popular press and see two different mutual funds of the same type—for example, small-capitalization growth funds or balanced funds—advertise themselves as the #1 performer. Each of these funds is using a different time period over which to measure performance. For example, one fund could use the 10 years ending December 31, 2003, whereas another fund uses the five years ending June 30, 2003.GoGrowth could be using a one-year period ending on the same date or some other combination of years. Mutual fund sponsors may emphasize different time periods in promoting their performance. Funds can also define the group or index to which comparisons are made.

Although it seems obvious when one thinks about it, investors tend not to be careful when making comparisons of portfolios over various time periods. As with the case of differential risk, the time element must be adjusted for if valid performance of portfolio results is to be obtained.

Appropriate Benchmarks:

A third reason why we can say little about the performance of Go Growth is that it's 20 percent return given its, risk, is meaningful only when compared to a legitimate alternative.

Obviously, if the average-risk fund or the market returned 25 percent in 2003, and Go Growth is an average-risk fund, we would find its performance unfavorable. Therefore, we must make relative comparisons in performance measurement, and an important related issue is the benchmark to be used in evaluating the performance of a portfolio.

It is critical in evaluating portfolio performance to compare the returns, obtained on the portfolio being evaluated with the returns that could have been obtained from a comparable alternative. The measurement process must involve relevant and obtainable alternatives; that is, the benchmark portfolio must be a legitimate alternative that accurately reflects the objectives of the portfolio being evaluated.

An equity portfolio consisting of Standard & Poor's Composite 500 Index (S&P 500) stocks should be evaluated relative to the S&P 500 index or other equity portfolios that could be constructed from the Index, after adjusting for the risk involved. On the other hand, a portfolio of small-capitalization stocks should not be judged against the benchmark of the S&P 500. Or, if a bond portfolio manager's objective is to invest in bonds rated A or higher, it would be inappropriate to compare his or her performance with that of a junk bond manager.

It may be more difficult to evaluate equity funds that hold some mid-cap and small stocks while holding many S&P 500 stocks. Comparisons for this group can be quite difficult.

Constraints on Portfolio Managers:

In evaluating the portfolio manager rather than the portfolio itself, an investor should consider the objectives set by (or for), the manager and any constraints under which he or she must operate. For example if a mutual fund's objective is to invest in small speculative stocks investors must expect the risk to be larger than that of a fund invested in S&P 500 stocks with substantial swings in the annual realized returns.

It is imperative to recognize the importance of the investment policy statement pursued, by a portfolio manager in determining the portfolio's results in many cases he investment policy determines the return and/or the risk of the portfolio. For example, Brinson, Hood, and Bee bower found that for a sample of pension plans the asset allocation decision accounted for approximately 94 percent of the total variation in the returns to these funds. In other words, more than 90 percent of the movement in a fund's returns, relative to the market returns, is attributable to a fund's asset allocation policy.

If a portfolio manager is obligated to operate under certain constraints these must be taken into account. For example, if a portfolio manager of an equity fund is prohibited from selling short, it is unreasonable to expect the manager to protect the portfolio in this manner in a bear market. If the manager is further prohibited from trading in options and futures the only protection left in a bear market may be to reduce the equity exposure.

Other Considerations:

Of course, other important issues are involved in measuring the portfolio's performance, including evaluating the manager as opposed to the portfolio itself if the manager does not have full control over the portfolio's cash flows. It is essential to determine how well diversified the portfolio was during the evaluation period, because, diversification can reduce portfolio risk.

All investors should understand that even in today's investment World of computers and databases, exact, precise universally agreed-upon methods of portfolio evaluation remain an elusive goal. One popular press article summarized the extent of the problem by noting that "most investors ... don't have the slightest idea how well their portfolios are actually performing." This article suggests some do-it-yourself techniques as well, as some “store-bought solutions" and discusses some new trends in the money management industry 10 provide investors with better information.

Investors can use several "well-known, techniques to assess, the actual performance of a portfolio relative to one or more alternatives. In the final analysis, when investors are selecting money managers to turn their money over to, they evaluate these managers only on the basis of their published performance statistics. If the published "track record" looks good, that is typically enough to convince many investors to invest in, a particular mutual fund. However, the past is no guarantee of an investment manager's future. Short-term results may be particularly misleading.

Return and Risk Considerations:

Performance measurement begins with portfolio valuations and transactions translated into rate of return. Prior to 1965, returns were seldom related to measures of risk. In. evaluating portfolio performance, however, investors must consider both the realized return and the risk that was assumed. Therefore, whatever measures or techniques are used these parameters must be incorporated into the analysis.

MEASURES OF RETURN:

When portfolio performance is evaluated, the investor should be concerned with the total change in wealth. A proper measure of this return is the total return (TR), which captures both the income component and the capital gains (or losses) component of return. Note that the Performance Presentation Standards require the use of total return to calculate performance.

In the simplest case, the market value of a portfolio can be measured at the beginning and ending of a period, and the rate of return can be calculated as

$$\mathbf{Rp=V_E - V_B / V_B}$$

Where V_E is the ending value of the portfolio and V_B is its beginning value.

This calculation assumes that no funds were added to or withdrawn from the portfolio by the client during the measurement period. If such transactions occur, the portfolio return as calculated, Rp may not be an accurate measure of the portfolio's performance. For example, if the client adds funds close to the end of the measurement period, would produce inaccurate results, because the ending value was not determined by the actions of the portfolio manager. Although a close approximation of portfolio performance might be obtained by simply adding any withdrawals or subtracting any contributions that are made very close to the end of the measurement period, timing issues are a problem.

Dollar-Weighted Returns:

Traditionally, portfolio measurement consisted of calculating the dollar-weighted rate of return (DWR), which is equivalent to the internal rate of return (IRR) used in several

financial calculations. The IRR measures the actual return earned on a beginning portfolio value and on any net contributions made during the period. The DWR equates all cash flows, including ending market value, with the beginning market value of portfolio. Because the DWR is affected by cash flows to the portfolio it measures the rate of return to the portfolio owner. Thus, it accurately measures the investor's return. However because the DRW is heavily affected by cash flows, it is inappropriate to use when making comparisons to other portfolios or to market indexes, a key factor in performance measurement. In other words, it is a misleading measure of the manager's ability, because the manager does not have control over the timing of the cash inflows and outflows. Clearly, if an investor with $1,000,000 allocates these funds to a portfolio manager by providing half at the beginning of the year and half at mid-year, that portfolio value at the end of the year will differ from another manager who received the entire $1,000,000 at the beginning, of the year. This is true even if both managers had the same two 6-month returns during that year.

Time-Weighted Returns:

In order to evaluate a manager's performance properly, we should use the time-weighted rate of return (TWR). TWRs are unaffected by any cash flows to the portfolio; therefore, they measure the actual rate of return earned by the portfolio manager.

We wish to determine how well the-portfolio manager performed regardless of the size or timing of the cash flows. Therefore, the time-weighted rate of return measures the compound rate of growth of the portfolio during the evaluation period. It is calculated by computing the geometric average of the portfolio subperiod returns. That is, we calculate the geometric mean of a set of return relatives (and subtract out the 1.0).

Which Measure to Use:

The dollar-weighted return and, the time-weighted return, can produce different results, and at times these differences are substantial. In fact, the two will produce identical results only in the case of no withdrawals or contributions during the evaluation period and with all investment income being reinvested. The time-weighted return captures the rate of return actually earned by the portfolio manager, whereas the dollar-weighted return captures the rate of return earned by the portfolio owner.

For evaluating the performance of the portfolio manager, the time-weighted return should be used, because he or she generally has no control over the deposits and withdrawals made by the clients. The objective is to measure the performance of the portfolio manager independent of the actions of the client, and this is better accomplished by using the time weighted return.

RISK MEASURES:

Why can we not measure investment performance on the basis of a properly calculated rate of return measure? After all rankings of mutual funds are often done this way in the popular press, with one-year, three-year, and sometimes five-year returns shown. Are rates of return, or averages, good indicators of performance?

Differences in risk will cause portfolios to respond differently to changes in the overall market and should be accounted for in evaluating performance.

We now know that the two prevalent measures of risk used in investment analysis are total

risk and non-diversifiable or systematic risk. The standard deviation for a portfolio's set of returns can be calculated easily with a calculator or computer and is a measure of total risk. As we know from portfolio theory, part of the total risk can be diversified away.

Beta, a relative measure of systematic risk, can be calculated with any number of software programs, However, we must remember that Betas are only estimates of systematic risk. Betas can be calculated using weekly, monthly, quarterly, or annual data, and each will produce a different estimate. Such variations in this calculation could produce differences in rankings which use beta as a measure of risk. Furthermore, betas can be unstable, and they change over time.

Risk-Adjusted Measures of Performance:

Based on the concepts of capital market theory, and recognizing the necessity to incorporate return and risk into the analysis, three researchers— William Sharpe, Jack Treynor, and Michael Jensen— developed measures of portfolio performance in the 1960s. These measures are often referred to .as the composite (risk-adjusted') measures of portfolio performance, meaning that .they incorporate 'both realized return and risk into the evaluation. These measures are often still used, as evidenced by Morningstar, perhaps the best-known source of mutual fund information, reporting the Sharpe ratio explained below.

The Sharpe Performance Measure:

William Sharpe, whose contributions to portfolio theory have been previously discussed, introduced a risk-adjusted measure of portfolio performance called the reward–to-variability ratio (RVAR) based on his work in capital market theory. This measure uses a benchmark based on the expost capital market line. This measure can be defined as:

$$\mathbf{RVAR = [\overline{TRp} - \overline{RF}] / SDp}$$

= excess return / risk

$\overline{TRp}$ = the average TR for portfolio p during some period of time

$\overline{RF}$ = he average risk-free rate of return during the period
SDp = the standard deviation of return for portfolio p during the period

$\overline{TRp} - \overline{RF}$ = the excess return (risk premium) on portfolio p

The Treynor Performance Measure:

At approximately the same time as Sharpe's measure was developed (the mid-1960s), jack Treynor presented a similar measure called the reward-to-volatility ratio (RVOL) like Sharpe, Treynor sought to relate the return on a portfolio to its risk. Treynor, however, distinguished between total risk and systematic risk, implicitly assuming that portfolios are well diversified; that is, he ignored any diversifiable risk. He used as a benchmark the ex post security market line.

In measuring portfolio performance, Treynor introduced the concept of the characteristic line which was used to partition a security's return into its systematic and non-systematic components. It is used in a similar manner with portfolios, depicting the relationship between the returns on a portfolio and those of the market. The slope of the characteristic

line measures the relative volatility of the fund's returns. As we know, the slope of this line is the beta coefficient, which is a measure of the volatility (or responsiveness) of the portfolio's returns in relation to those of the market index.

Characteristic lines, can be estimated by regressing each portfolio's returns on the market proxy returns using either raw returns for the portfolios and raw proxy returns or excess portfolio returns and excess[1] market proxy it turns where the risk-free rate has been subtracted out: The latter method is theoretically better and is used here.

Treynor's measure relates the average excess return on the portfolio during some period (exactly the same variable as in the Sharpe measure) to its systematic risk as measured by the portfolio's beta. The reward-to-volatility ratio is:

$$\mathbf{RVOL = [TRp - RF] / \beta p}$$

= Average excess return on portfolio p

βp = the beta for portfolio p

In this case, we are calculating the excess return per unit of systematic risk. As with RVAR, higher values of RVOL indicate better portfolio performance. Portfolios can be ranked on their RVOL, and assuming that the Treynor measure is a correct measure of portfolio performance, the best performing portfolio can be determined.

Comparing the Sharpe and Treynor Measures:

Given their similarity, when should RVAR or RVOL be used, and. why? Actually, given the assumptions underlying each measure, both can be said to be correct. Therefore, it is usually desirable to calculate both measures for the set of portfolios being evaluated.

The choice of which to use could depend on the definition of risk. If an investor thinks it correct to use total risk, RVAR is appropriate; however, if the investor thinks that it is correct to use systematic risk, RVOL is appropriate.

What about the rankings of a set of portfolios using the two measures? If the portfolios are perfectly diversified that is, the correlation coefficient between the portfolio return and the market-return is l.0 the rankings –will be identical. For typical large, professionally managed portfolios, such as broad-based equity mutual funds, the two-measures often provide identical, or almost identical, rankings.

As the portfolios become less well diversified, the possibility of differences in rankings increases. This leads to the following conclusions about these two measures: RVAR takes into account how well diversified a portfolio was during the measurement period. Differences in rankings between the two measures can result from substantial differences in diversification in the portfolio. If a portfolio is inadequately diversified, its RVOL ranking can be higher than its RVAR ranking. The nonsystematic risk would not affect the RVOL calculation. Therefore, a portfolio with a Jaw amount of systematic risk and a large amount of total risk could show a high RV0L value and a low RVAR; value. Such a difference in ranking results from the substantial difference in the amount of diversification of the portfolio.

This analysis leads to an important observation about the Sharpe and Treynor measures. Investors who have all (or substantially all) of their assets in a portfolio of securities should

rely more on the Sharpe measure, because it assesses the portfolio's total return in relation to total risk, which: includes any unsystematic risk assumed by the investor. However for those investors, whose portfolio constitutes only one (relatively) small part of their total assets that is, they have numerous other assets systematic risk may well be the relevant risk.

In these circumstances, RVOL Is appropriate, because it considers only systematic or non-diversifiable risk.

Measuring Diversification:

Portfolio diversification is typically measured by correlating the returns on the portfolio with the returns oh the market index, this is accomplished as part of the process of fitting a characteristic, line whereby the' portfolio's returns are regressed: against the market's returns. The square of the correlation coefficient produced as a part of the analysis, called the coefficient of determination, or R^2, is used to, denote the degree of diversification. The coefficient, of determination indicates the percentage of the variance in the portfolio's returns that is explained by the market's-returns. If the fund is totally diversified, the R^2 will approach 1.0, indicating that the fund's returns are .completely explained by the market's returns: The lower the coefficient of determination, the less the portfolio returns are attributable to the market's returns. This indicates that other factors, which could have been diversified away, are being allowed to .influence-the portfolio's returns.

Jensen's Differential Return Measure:

A measure related to Treynor's RVOL is Jensen's differential return measure (or alpha). Jensen's measure of performance like Treynor's measure is based on the capital asset pricing model (CAPM). The expected return for any security (i) or, in this case, portfolio (p) is given as;

$$\mathbf{E\ (R_{pt}) = RF_t + \beta_p\ (E\ (R_{Mt}) - RF_t)}$$

Problems with Portfolio Measurement:

Using the three risk-adjusted performance measures just discussed to evaluate portfolios is not without problems. Investors should understand their limitations, and be guided accordingly.

First, these measures are derived from capital market theory and the CAPM and are therefore dependent on the assumptions involved with this theory. For example, it the Treasury bill rate is not a satisfactory- proxy for the risk-free rate, or if investors cannot borrow and lend at the risk-free rate this will have an impact on these measures of performance.

An important assumption of capital market theory that directly affects the use of these performance measures is the assumption of a marker portfolio that can be proxied by a market index. We have used the S&P 500 Index as a market proxy, as is often. However, there are potential problems.
Although a high correlation exists among most of the commonly used market proxies this does not eliminate the problem that some may be efficient but others are not. According to Roll, no unambiguous test of the CAPM has yet been conducted. This point should be kept in mind when we consider performance measures based on the CAPM, such as the Treynor and Jensen; measures.

The movement to global investing increases the problem of benchmark error. The efficient frontier changes when foreign securities are added to the portfolio. The measurement of beta will be affected by adding foreign securities. Given that a world portfolio is likely to

have a smaller variance than the S&P 500 Index, any measure of systematic risk is likely to be smaller.

A long evaluation period is needed to determine successfully performance that is truly superior. Over short .periods, luck can overshadow all else, but luck cannot be expected to continue. According to some estimates, the number of years needed to make such an accurate determination is quite large.

OTHER ISSUES IN PERFORMANCE EVALUATION:

Monitoring Performance:

Portfolio evaluation of managed portfolios should be a continuing process. The results of the portfolio must be calculated using some of the techniques discussed above. In addition, a monitoring process should evaluate the success of the portfolio relative to the objectives and constraints of the portfolio's owners.

Performance Attribution:

Most of this chapter has considered how to measure a portfolio manager's performance. However, portfolio evaluations also to concern with the reasons why a manager did better or worse than a properly constructed benchmark with complete risks adjustment. This part of portfolio evaluation is called performance attribution, which seeks to determine, after the fact, why a particular portfolio had a given return over some specified time period and, therefore, why success or failure occurred.

Typically, performance attribution is a top-down approach; it looks first at the broad issues and progresses by narrowing the investigation its purpose is to decompose the total performance of a portfolio into specific components that can be associated with specific decisions made by the portfolio manager.

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Performance attribution often begins with, the policy statement that guides the management of the portfolio; the portfolio normally would have a set of portfolio weight to be used. If the manager uses a different set, this will account for some of the results. In effect, we are looking at the asset allocation decision. If the manager chooses to allocate portfolio funds differently than the weights that occur in the benchmark portfolio, what are the results?

After this analysis performance attribution might analyze sector (industry) selection and security selection. Did the manager concentrate on or avoid certain sectors, and if so what were the results? Security selection speaks for itself.

Part of this process involves identifying-a benchmark of performance to use in comparing the portfolio results. This bogey is designed to measure passive results, ruling out both asset allocation and security selection decisions. Any differences between the portfolio's results and the bogey must be attributable to one or more of these decisions made by the portfolio manager.

Another way to think about performance attribution is to recognize that performance

different from a properly constructed benchmark comes from one of two sources, or both:

1. Market timing
2. Security selection

Techniques are available to decompose the performance of a portfolio into these two components.

THE ROLE OF DERIVATIVE ASSETS

A Banker and corporate treasure perambulate past in pet shop window and spy a dog for sale. The banker buys it for $5, then sells it to treasure for $10. A few days later, the banker wants it back, so he bids $20. The dog keeps changing hand until the banker buys it for $1 million. Then the dog escapes from the bank and is killed by a car. The treasurer is furious: "Couldn't you have been more careful?" he complains to the banker. "Don't you realize how much money we were making in that dog?"

INTRODUCTION:

Derivative assets get their name from the fact that their value derives from some other asset. A coupon for a free Big Mac is not inherently valuable; the paper on which it is printed is virtually worthless. We all agree that the coupon is valuable for what it represents: the chance to get a $ 2.50 sandwich for nothing. The coupon is a simple derivative asset.

The best- known derivative assets are futures and options are the focus of this chapter. Many other kinds of derivative assets, such as swaps, swaptions, and inverse floaters, have vastly different risk characteristics. Plain vanilla derivative assets are enormously useful to corporate treasurers, mutual funds, endowments, pension funds, and financial institutions. At the same time, they are widely misunderstood by the general public, by Congress, and by many people in the investment business (including many who should know better). Ralph Mercer, writing in Global Finance, states, "The adoption of generic term 'derivative' (i.e., derived from something else') to describe a complex spectrum of financial products, was a public relation disaster." Derivatives are not all the same; some are inherently speculative, some are highly conservative.

BACKGROUND:

The Rationale for Derivative Assets:

The first organized derivatives exchange in the United States was probably the Chicago Board of Trade, founded in 1848. This future exchange developed in order to bring stability in agricultural prices. The farmer's problem is easy to understand. Everyone's wheat was harvested at essentially the same time. As it arrived at market in quantity, principles of economics prevailed. The huge supply caused prices to decline sharply, with the decline aggravated by farmers who sold "at any price" for fear they would not be able to sell at all. Later, during the winter, prices rose because of consistent demand in the face of dwindling supply.

The future market enabled farmers to eliminate or reduce their price risk, the risk of not knowing the ultimate proceeds from the sale of their crops. It serves this same function today. Using futures, the farmers could (if they wished) promise to deliver their crop in the future at a known a price, thereby reducing anxiety and promoting market stability. Of equal importance is the fact that financial managers can use derivatives to eliminate the price risk of their stock, bond, and foreign currency portfolios or obligations.

Today's communication technology brings us virtually instantaneous information about events such as earthquakes in Turkey, airline accidents, world trade balances, and Federal Reserve Board interest rate activity. These events influence the value of our investments. Experienced investors are seldom 100 percent bullish or 100 percent bearish. The constant

arrival of new information means the investment process is dynamic. Positions need to be constantly reassessed and portfolios adjusted.

DERIVATIVE ASSETS AND THE NEWS:
Current Events:

Newspapers in recent years have been full of reports on various businesses that have lost billions "investing in derivatives." Orange county, California; Proctor and Gamble; Metalgesellschaft; Gibson Greeting Cards are a few of firms receiving particularly voluminous press coverage. Brokerage firms have been deluged with calls from individuals asking if there are any "derivatives" in their account. Reminiscent of Seven Up's "no caffeine" advertising that infuriated the soft drink industry a number of years ago and set off the subsequent caffeine-free range, some money market mutual funds bill themselves as "derivative free."

Difficulty in educating the user is a perennial problem in the investments business. It is hard enough to get the typical citizen to understand that stock pays dividends, not interest and that you can sell abound before its 30-year life is up. Puts, calls, futures, and other derivatives is the outside the vocabulary of all but the best informed.

Bonds, in fact, provide a good example of quandary in which rational people might find themselves immersed during a discussion of derivatives. Suppose a county treasure bond $1 million par value pf the principal portion of the stripped U.S. Treasury bond as a long-term investment, full expecting to hold the bond for its 30-year life.

Risk of Derivative Assets:

One of the most important things a finance professional can learn about derivative asset is that they neutral products. Futures and options are not inherently risky, dangerous, inappropriate, or anything else. Their risk depends on what an investor does with them.

A person responsible for the management of someone else's money has a fiduciary responsibility to act prudently. Legal experts in this area have struggled for years with the fact that the term speculation is almost impossible to define adequately. People will agree that church endowment funds, the YWCA, and public library should not "speculate" with entrusted funds, but there is no consensus on what it means. Some books say that a speculation is anything accompanied by a chance of loosing money. If this definition is accepted, then common stock is an ineligible investment, because the stock market certainly experiences ups and downs. Almost, everyone recognizes the necessity of equities in long-term portfolios, so this definition is unsatisfactory.

The same definitional problem plagues the user of derivative assets. The public overwhelmingly views futures and options as "super risky" even though few folks with this opinion ca tell you what they are. You can explain that insurance policies, adjustable rate mortgages, and football tickets are derivative assets, but, as the philosopher said, "To prove the thing is not enough; you must convince someone to accept it." We will see in the following chapters that futures and options make life much simpler for portfolio managers and that policies precluding their use are usually ill conceived.

Listed vs. Over-the-Counter Derivatives:

Before ending this discussion, one more point needs to be made. There is a world of difference between an exchange-traded asset and one created as a private transaction between two parties. An APR Microsoft call from the Chicago Board Options Exchange, for instance, is a listed option. As such, it has standardized characteristics, is guaranteed by the Options Clear Corporations, is fungible and can be quickly traded if desired.

The vast majority, if not all, of the derivative horror stories deal with derivatives that are not exchange- traded. They are called over-the-counter derivatives. A large, multinational firm might approach several money center banks and ask each to design and price a product carefully defined degree of protection against market risk, interest rate risk, and foreign exchange rate risk. Each of the banks wants to provide the service, and each knows that other institutions are bidding on the job.

One of the fascinating things about the derivatives business is that a product can be built for the client in many different ways. One version might be sturdy (and expensive), capable of withstanding volatility and unexpected shocks in the marketplace. Another product might be much less expensive, but prone to explode into a million pieces if the market moves too much in the wrong direction. Often the client lacks the sophistication to understand these differences, and buys the product largely on the basis of the lower cost. Unexpectedly large increases in interest rates caused this latter situation to occur with the derivative products used by the unlucky firms of the 1990s newspapers headlines.

As investor can still get in trouble with inappropriate use of listed derivative. Outright speculation is always dangerous, and leverage should be used judiciously. Still a well-conceived derivatives strategy is part of good management at many businesses. Risk is a fact of life, and derivatives are a helpful tool in dealing with it. We don’t like fires, but that should not mean we hate the fire department.

FUTURES

THE FUTURES MARKET:

A futures contract is a promise; the person who initially sells the contract promises to deliver a quantity of a standardize commodity to a designated delivery point during a certain month called a delivery month. The other party to the trade promises to pay a predetermined price for the goods upon delivery. The person who promises to buy is said to be long; the person who promises to deliver is short.

UNDERSTANDING FUTURES MARKETS:

Why Futures Markets?

Physical commodities and financial instruments typically are traded in cash markets. A cash contract calls for immediate delivery and is used by those who need a commodity now (e.g., food processors). Cash contracts cannot be canceled unless both parties agree. The current cash prices of commodities and financial instruments can be found daily in such sources as The Wall Street Journal.

There are two types of cash markets, spot markets and forward markets. Spot markets are markets for immediate: delivery. The spot price refers to- the current market price of an item available for immediate delivery.

Forward markets are markets for deferred delivery. The forward price is the price of an item for deferred delivery.

Futures Contracts:

A forward contract is an agreement between two parties that calls for delivery of a commodity (tangible or financial) as, a specified future time at a price agreed upon today. Each contract has a buyer and a seller: Forward markets have grown primarily because of the growth in swaps, which in general are similar to forward contracts.

- Forward contracts involve credit risk—either party can default on their obligation. These contracts also involve liquidity risk because of the difficulties involved in getting out of the contract. On the other hand, forward contracts can be customized to the specific needs of the, parties involved.

A futures contract is a standardized, transferable agreement providing for the deferred delivery of either a specified grade or quantity of a designated commodity within a specified geographical area or of a financial instrument (or its cash value). In simple language, a futures contract locks in a price for delivery, on a future date.

The futures price at which this exchange will occur at contract maturity is determined today. The trading of futures contracts means only that commitments have been made by buyers and sellers; therefore,, "buying" and "selling" do not have the same meaning in futures transactions as they do in stock and bond transactions. Although these commitments are binding because futures contracts are legal contracts, a buyer or seller can eliminate the commitment simply by taking an opposite position in-the same commodity or financial instrument for the same futures month.

- Futures contracts are standardized and easily traded. Credit risk is removed by the clearinghouse (explained below) which ensures performance on the contract. On the other hand, they cannot readily be customized to fit particular needs.

Futures contracts are not securities and are not regulated by the Securities and Exchange Commission (SEC). The Commodity Futures Trading Commission (CFJC), a federal regulatory agency, is responsible for regulating trading in all domestic futures markets. In practice, the National Futures Association, a self-regulating body, has assumed some of the duties previously performed by the CFTC. In addition, each futures exchange has a supervisory body to oversee its members.

Futures vs. Options:

Some analogies can be made between futures contracts and options contracts. Both involved a predetermined price and contract duration. An option, however, is precisely that. The person holding the option has the right, but not the obligation, to exercise the put or the call. If an option has no value at its expiration, the option holder will allow it to expire unexercised. But with futures contract, a trade must occur if the contract is held until its delivery deadline. Futures contracts do not "expire" unexercised. One party has promised to deliver a commodity, which another party has promised to buy.

An important concept keep in mind with futures is that the purpose of contracts is not to provide a means for the transfer of goods. Stated another way, property rights to real or financial assets cannot be transferred with futures contracts. Futures contracts do, however, enable people to reduce some of the risks they assume in their business.

People who buy puts or calls do not usually intend to exercise them; valuable options are sold before expiration day. Similarly, an individual who is long a corn futures contract usually does not want to take delivery of the 5,000 bushels covered by the contract. Also, a farmer who has promised to deliver wheat through the futures market may prefer to sell the crop locally rather than deliver it to an approved delivery point. In either case the contract obligation can be satisfied by making an offsetting trade, or trading out of the contract. An individual with a long position sell a contract, canceling the long position. The farmer with short position would buy. Both individuals would be out of the market after these trades.

Market Participants:

Two types of participants are required in order for a futures market to be successful: hedgers and speculators. Without hedgers the market would not exist, and no economic function would be performed by speculators.

1. **Hedgers:**

In the context of future market, a hedger is someone who is engaged in some type of business activity with an unacceptable level of price risk. A farmer must decide what crop to put in the ground in each spring. The welfare of the farmer's family or business depends on the price of the chosen commodity at harvest. If the price is high the farmer will earn a nice profit in the crop. Should prices be low because of overabundance or reduced demand, and then prices may fall to such a level that operating costs cannot even be recovered.
It is important to recognize that the farmer cannot eliminate the risk of a poor crop through the futures market; only price risk can be eliminated. Crop insurance may help protect against such an eventuality, but the futures market cannot.

2. Speculators:

In order for the hedger to eliminate unacceptable price risk, someone must be willing to assume that risk is the hedger's place. This person is the speculator. The speculator has no economic activity requiring use of futures contract, but rather finds attractive investment opportunities there and takes positions in futures in hopes of making a profit rather than protecting one. In certain aspects, the speculator performs the same role that insurance companies perform when they prepare policies. The person who buys insurance is unwilling to bear the full risk of economic loss an accident occur, consequently chooses to transfer that risk to the insurance company. The insurance company is willing to bear the risk because it feels a profit can be made by providing this coverage in exchange for the insurance premium.

A speculator might promise to deliver 5,000 bushels of wheat at $ 4.00 for September delivery if he or she feels that wheat will not sell for that much at delivery time. Speculators cannot conveniently deliver wheat because they are not in the business of growing it, but this point is not relevant because speculators can easily exit the market by buying September wheat contracts to cancel out the previous position. The difference in price on the two trades will be the speculator's profit or loss.

In considering what makes a futures contract valuable and what makes the price of the contract fluctuate from day to day, remember that a futures contract is a promise to exchange certain goods at a future date. You must keep your part of the promise unless you get someone to take the promise off your hands. In other words, you must make a closing transaction. The promised goods are valuable now, and their value in the future may be more or less than their current worth. Prices of commodities change for many reasons such as new weather forecasts, the availability of substitute commodities, psychological factors, and changes in storage or insurance costs. These factors all involve shifts in demand for a commodity, changes in the supply of the commodity, or both.

3. Marketmakers:

Marketmakers provide liquidity for the marketplace. These people on the floor of the exchange seek to buy from one person and sell to someone else at a slightly higher price many times during the day. Marketmakers seldom have the capital to hold large positions and hope prices move in a particular way. Their bread and butter us earning a spread between the bid and ask prices prevailing at the moment.

Without marketmarkes, hedgers and speculators would face a less efficient market. The cost of trading would be higher because the spread between buying and selling prices would be wider.

THE STRUCTURE OF FUTURES MARKETS:

Futures Exchanges:

As noted, futures contracts are traded on designated futures exchanges, which are voluntary, nonprofit associations, composed of members. There are several major, U.S, exchanges.

The exchange provides an organized marketplace where established rules govern the

conduct of the members. The exchange is financed by both membership dues and fees charged for services rendered.

All memberships must be owned by individuals, although they may be controlled by firms. The limited number of memberships, like stock exchange seats, can be traded at market determined prices. Members can trade for their own accounts or as agents for others. For example, floor traders trade for their own accounts, whereas floor brokers (or commission brokers) often act as agents for others. Futures commission merchants (FCMs) act as agents for the general public, for which they receive commissions. Thus, a customer can establish an account with an FCM, who in turn may work through a floor broker at the exchange.

The Clearing House:

The clearinghouse, a corporation separate from, but associated with, each exchange plays an important role in every futures transaction. Since all futures trades are cleared through the clearinghouse each business day, exchange members must either be members of the clearinghouse or pay a member for this service. From a financial requirement basis, being a member of the clearinghouse is more demanding than being a member of the associated exchange.

Essentially, the clearinghouse for futures markets operates in the same way as the clearinghouse for options. Buyers and sellers settle with the clearinghouse, not each other. Thus, the clearinghouse, and not- another investor, is actually on the other side of every transaction and ensures that all payments are made as specified. It stands ready to fulfill a contract if either buyer or seller ^defaults, thereby helping to facilitate an orderly market in futures. The clearinghouse makes the futures market impersonal, which is the key to its success, because any buyer or seller can always close out a position and be assured of payment. The first failure of a clearinghouse member in modern times occurred in the 1980s, and the system worked perfectly in preventing any customer from losing money. Finally, as explained below, the clearinghouse allows participants easily to reverse a position before maturity, because the clearinghouse keeps trade of each participant's obligations.

THE MECHANICS OF TRADING:

Basic Procedures:

Because the futures contract is a-commitment to buy or sell at a specified future settlement date, a contract is not really .being solder bought, as in tire case of Treasury bills, stocks, or Certificate's of Deposit (CDs), because no money is exchanged at the time the contract is negotiated. Instead, the seller and the buyer simply are agreeing to make and take delivery, respectively, at some future, time for a price: agreed upon today. As noted above, the terms buy and sell do not have the same meanings here. It is more accurate to think in terms of;

1. A short position (seller), which commits a trader to deliver an item at contract maturity.

2. A long position (buyer), which commits a trader to purchase an item at contract maturity

Selling short in futures trading means only that a contract not previously purchased is sold. For every futures contract, some one sold it short and someone else holds it long. Like options, futures trading are a zero-sum game.

Whereas an options contract involves the right to make or take delivery, a futures contract

involves an 'obligation to take or make delivery. However, futures contracts can be settled by delivery or by offset. Delivery, or settlement of the contract, occurs in months that are designated by the various exchanges for each of the items traded. Delivery occurs in less than 2 percent of all transactions.

Offset is the typical method of settling a contract. Indeed, about 95 percent of futures contracts are closed before the contract expire by offset. Holders liquidate a position by arranging an offsetting transaction. This means that buyers sell their positions, and sellers buy in their positions sometime prior to delivery. When an investor offsets his or her position, it means that their trading account is adjusted to reflect the final gains (or losses) arid their position is closed.

Thus, to eliminate futures market position, the investor .simply does the reverse of what was done originally. As explained above, the clearinghouse makes this easy to accomplish. It is essential to remember that if a futures contract is not offset, it must be closed out by delivery.

- An option involves the right, but not the obligation to take action
- A futures contract involves an obligation either offset occurs or delivery occurs.

Margin:

Recall that in the case of stock transactions, the term margin refers to the down payment in a transaction in which money is borrowed from the broker to finance the total cost. Futures margin, on the other hand, is not a down payment, because ownership of the underlying item is not being transferred at the time of the transaction. Instead, it refers to the "good faith" (or earnest money) deposit made by both buyer and seller to ensure the completion of the contract. In futures trading, unlike stock trading, margin is the norm. All futures markets participants, whether buyers or sellers, must deposit minimum specified amounts in their futures margin accounts to guarantee contract obligations.

- In effect; futures margin is a performance bond.

Each clearinghouse sets its own minimum initial margin requirements (in dollars). Furthermore, brokerage houses can require a higher margin and typically do so. The margin required for futures contracts, which is small in relation to the value of the contract itself, represents the equity of the transactor (either buyer or seller). It is not unusual for the initial margin to be only a few thousand dollars although the value of the contract is much larger. As a generalized approximation, the margin requirement for futures contracts is about 6 percent of the value of the contract. Since the equity is small, the risk is magnified.

FUTURES Contd…

Using Futures Contracts:

Who uses futures, and for what purpose? Traditionally, participants in the futures market have been classified as either ledgers or speculators. Because both groups are important in understanding the role and functioning of futures markets, we will consider each in turn. The distinctions between these two groups apply to financial futures as well as to the more traditional commodity futures.

Hedgers:

Hedgers are parties at risk with a commodity or an asset, which means they are exposed to price changes. They buy or sell futures contracts in order to offset their risk. In other words, hedgers actually deal in the commodity or financial instrument specified in the futures contract. By taking a position opposite to that of one already held, at a price set today, hedgers plan to reduce the risk of adverse price fluctuations—that is, to hedge the risk of unexpected price changes. In effect, this is a form of insurance.

In a sense, the real motivation for all futures trading is to reduce price risk. With futures, risk is reduced by having the gain (loss) in the futures position offset the loss (gain) on the cash position. A hedger is willing to forego some profit potential in exchange for having someone else assume part of the risk.

How to Hedge with Futures:

The key to any hedge is that a futures position is taken opposite to the position in the cash market. That is, the nature of the cash market position determines the hedge futures market. A commodity or financial instrument held (in effect in inventory) represents a long position, because these items could be sold in the cash market. On the other hand, an investor who sells a futures position not owned has created a short position. Since investors can assume two basic positions with futures contracts, long and short, there are two basic hedge positions;

1. **The short (sell) hedge:**

A cash market inventory holder must sell (short) the futures. Investors should think of short hedges as a means of protecting the value of their .portfolios. Since they are holding securities, they are long on the cash position and need to protect themselves against a decline in prices. A short hedge reduces, or possibly eliminates, the risk taken in a long position.

2. **The long (buy) hedge:**

An investor who currently holds no cash inventory (holds no commodities or financial instruments) is, in effect, short on the cash market; therefore, to hedge with futures requires a long position. Someone who is not currently in the cash market but who expects to be in the future and who wants to lock in current prices and yields until cash is available to make the investment can use a long hedge which reduces the risk of a short position.

Hedging is not an automatic process. It requires more than simply taking a position.

Hedgers must make timing decisions as to when to initiate and end the process. As conditions change, hedgers must adjust their hedge strategy.

One aspect of hedging that must be considered is "basis" risk. The basis for financial futures often is defined as the difference between the cash price and the futures price of the item being hedged:

Basis = Cash price - Futures price

The basis must be zero on the maturity date of the contract. In the interim, the basis fluctuates in an unpredictable manner and is not constant during a hedge period. Basis risk, therefore, is the risk hedgers face as a result of unexpected changes in the basis. Although changes in the basis will affect the hedge position during its life, a hedge will reduce risk as long as the variability in the basis is less than the variability in the price of the asset being hedged. At maturity the futures price and the cash price must be equal, resulting in a zero basis.

The significance of basis risk to investors is that risk cannot be entirely eliminated. Hedging a cash position will involve basis risk.

Speculators:

In contrast to hedgers, speculators buy or sell futures contracts in an attempt to earn a return. They are willing to assume the risk of price fluctuations, hoping to profit from them. Unlike hedgers, speculators typically do not transact in the physical commodity or financial instrument underlying the futures contract. In other words, they have no prior market position. Some speculators are professionals who do this for a living; others are amateurs, ranging from the very sophisticated to the novice. Although most speculators are not actually, present at the futures markets, floor traders (or locals) trade for their own accounts as we'll as others and often take very short-term (minutes or hours) positions in attempt to exploit air short-lived market anomalies.

Why speculate in futures .markets? After all one could speculate in the underlying instruments. For example, an investor who believed interest rates were going to decline could buy Treasury bonds directly and avoid the Treasury bond futures market. The potential advantages of speculating in futures markets include:

1. Leverage: The magnification of gains (and losses) can easily be 10 to 1.
2. Ease of transacting: An investor who thinks interest rates will rise will have difficulty selling bonds short, but it is very easy to take a short position in a Treasury bond futures contract.
3. Transaction costs: These are often significantly smaller in futures markets.

By all accounts, an investor's likelihood of success when speculating in futures is not very good. The small investor is up against stiff odds when it comes to speculating with futures contracts. Futures should be used for hedging purposes.

FINANCIAL FUTURES:

This section covers financials futures mostly from a speculator’s perspective. The following two chapters, dealing with the management of equity portfolios and fixed income portfolios, show other uses from the hedger’s point of view. The chapters explain how financials futures can logically be used to improve e a portfolio’s characteristics.

Stock index futures:

As with other futures contracts, a stock index future is a promise to buy or sell the standardized units of a specific index price at a predetermined future date. Table 15-2 lists the characteristics of the S$P 500 stock index futures contract. Unlike most other commodity contracts, there is no actual delivery mechanism at expiration of the contract. Al settlements are in cash. It is not practical to have speculators or hedgers deliver 500 different stock certificates in the appropriate quantities to satisfy the requirements of the contract. The value of the index is known at delivery time, and crediting or debiting accounts with accrued gains or losses is much more convenient.

A speculator might believe the overall stock market is about to advance and therefore decide to buy one S$P stock index future contract. Suppose in early may the S$P 500 index is at 1415.70 and the speculator buys a June S$P 500 future contract at settlement price of 1417.70. The dollars value of the futures contract is set at $250 times the settlement price, so the purchaser of the contract promises to pay 1417.50x$50, or $354,425, at the delivery date. Several weeks later the stock market has advanced, and the future contract now trades at 1420. the speculator might decide to close out the position and take her profit of (1420-1417.70)x$250,or $575.note that only the net gain or loss changes hands; the speculator never actually needs to come up with $354,425.large gains or losses are possible with stock index futures, and the leverage they provide is attractive to many people.

Delivery Procedures:

Suppose someone wants to deliver a 5% bond with 20 years, 11 months remaining in its life, and that the settlement price for the T-bond futures contract on position day is 91-00. By exchange policy, the remaining maturity is rounded down to the nearest quarter, giving 20 years and three quarters. The invoice price is then

	0.9100	Futures settlement price
*	$100,000	Contract size
*	0.8821	Conversion factor
	$80,271.10	Principal due
+	2,083.33	Accrued interest
	$82,354.53	Total due = invoice price

Note the accrued interest calculation. The bond matures in 20 years and 11 months, meaning it is 5 months into the interest rate cycle. Accrued interest on one bond is therefore 5/6 * $25, or 420.83. On $100,000 par, the total is $2,083.33.

At any given time, several dozen bonds are usually eligible for delivery on the T-bond futures contract. Normally one of these bonds will be cheapest to deliver. The cheapest to deliver bond is the deliverable bond preferred by the sellers, because it costs them the least to use.

For technical reasons, the conversion factors make all bonds equally attractive for delivery only one when the bonds under consideration yield 6%. If they yield more or less than this, one bond is going to have the lowest adjusted price, and hence the cheapest to deliver.

An investor who must buy bonds to deliver against a futures contract will want to get these bonds as cheaply as possible.

Foreign Currency Futures:

Foreign currency futures contracts trade at the International Monetary Market of the Chicago Mercantile Exchange. They all call for delivery of the foreign currency in the country of issuance to a bank of the clearing house's choosing.

When a U.S investor buys a foreign security, there are really two relevant purchases. The actual purchase of the security is one of them, but before the security can be bought, the investor must exchange U.S. dollars for the necessary foreign currency. In essence, the investor is buying the foreign currency, and its price can change daily. To the investor, the changing relationships among currencies of interest constitute foreign exchange risk. Modest changes in exchange rates can result in significant dollar differences.

Foreign currency futures were the catalyst that caused the rapid growth in the financial futures market. These products were immediately successful. Most major corporations face at least some foreign exchange risk and quickly discovered the convenience of these futures as a hedging vehicle. Speculators saw a contract easy to understand and use, and therefore, foreign currency futures were of interest to both hedgers and speculators. Their success led the exchanges to spawn similar products to hedge other types of financial risk.
Hedging With Stock-Index Futures:

Common stock investors hedge with financial futures for the same reasons that fixed-income investors use them. Investors, whether individuals or institutions, may hold a substantial stock portfolio that is subject to the risk of the overall market; that is, systematic risk. A futures contract enables the investor to transfer part or all of the risk to those willing to assume it. Stock-index futures have opened up new, and relatively inexpensive, opportunities for investors to manage market risk through hedging.

Investors can use financial futures on stock market indexes to hedge against an overall market decline. That is, investors can hedge against systematic or market risk by selling the appropriate number of contracts against a stock portfolio. In effect, stock-index futures contracts give an investor the opportunity to protect his or her portfolio against market fluctuations.

To hedge market risk, investors must be able to take a position in the hedging asset (in this case, stock-index future) such that profits or losses on the hedging asset offset changes in the value of the stock portfolio. Stock-index futures permit this action, because changes in the futures prices themselves generally are highly correlated with changes in the value of the stock portfolios that are caused by market wide events. The more diversified the portfolio, and therefore the lower the nonsystematic risk, the greater the correlation between the futures contract and the stock positions.

Index Arbitrage and Program Trading:

A force of considerable magnitude hit Wall Street in the 1980s. It is called program trading, and it has captured much attention and generated considerable controversy. It leads to headlines attributing market plunges at least in part to program trading, as happened on October 19,1987, when the DJIA fell over 500 points. Because program trading typically involves positions in both stocks and stock-index futures contracts, we consider the topic within the general discussion of hedging.

The terms program trading and index arbitrage often are used together. In general terms, index arbitrage refers to attempts to exploit the differences between the prices of the stock-

index futures and the prices of the index of stocks underlying the futures contract. For example, if the S&P 500 futures price is too high relative to the S&P 500 Index, investors could short the futures contract and buy the stocks in the index. In theory, arbitrageurs should be able to build a hedged portfolio that earns arbitrage profits equaling the difference between the two positions. If the price of the S&P 500 futures is deemed too low, investors could purchase the futures and short the stocks, again exploiting the differences between the two prices.

If investors are to be able to take advantage of discrepancies between the futures price and the underlying stock-index price, they must be able to act quickly. Program trading involves the use of computer-generated orders to coordinate buy and sell orders for entire portfolios based on arbitrage opportunities. The arbitrage occurs between portfolios of common stocks, on the one hand, and index futures and options on the other. Large institutional investors seek to exploit, differences between the two sides. Specifically, when stock-index futures prices rise substantially above the current value of the stock-index itself (e.g., the S&P 500), they sell the futures and buy the underlying stocks, typically in "baskets" of several million dollars. Because the futures price and the stock-index value must be equal when the futures contract expires, these investors are seeking to "capture the premium" between the two,-thereby earning an arbitrage profit. That is, they seek high risk-free returns by arbitraging the difference between the cash value of the underlying securities and the prices of the futures contracts on these securities. In effect, they have a hedged position and should profit regardless of what happens to stock prices.

Normally, program traders and other speculators "unwind" their positions during the last trading; hour of the day the futures expire. At this time, the futures premium goes to zero, because, as noted, the futures price at expiration must equal the stock-index value.

The headlines about program trading often reflect the results of rapid selling by the program traders. For whatever reason, traders' decide-to sells the futures. As the price falls, stock prices also fall. When 'the futures price drops below the price of the stock index, tremendous selling orders can be unleashed. These volume sell orders in stocks drive the futures prices even lower.

FUTURES Contd…

Financial Futures:

Financial futures are futures contracts on equity indexes, fixed-income securities, and currencies. They give investors greater opportunity to fine tune the risk-return characteristics of their portfolios. In recent years, this flexibility has become increasingly important as interest rates have become much more volatile and as investors have sought new techniques to reduce the risk of equity positions. The drastic changes that have occurred in the financial markets in the last 15 to 20 years could be said to have generated a genuine need for new financial instruments that allow market participants to deal with these changes.

The procedures for trading financial futures are the same as those for any other commodity with few exceptions. At maturity; stock-index futures settle in cash, because it would be impossible or impractical to deliver all the stocks in a particular index. Unlike traditional futures, contracts, stock-index futures typically have no daily price limits (although they can be imposed).

We will divide the subsequent discussion of financial futures into the two major categories of contracts, interest rate futures and, stock-index futures. Hedging and speculative activities within each category are discussed separately.

Interest Rate Futures:

Bond prices are highly volatile, and investors are exposed to adverse price movements, financial futures, in effect, allow bondholders and others who are affected by volatile interest rates to transfer the risk. One of the primary reasons for the growth in financial futures is that portfolio managers and investors are trying to protect themselves against adverse movements-in interest rates. An investor concerned with protecting the value of, fixed-income securities must consider the possible impact of interest rates on the value of these securities.

Today's investors have the opportunity to consider several different interest rate futures contracts that are traded on various exchanges. The Chicago Mercantile Exchange trades contracts on Treasury bills and the one-month LIBOR rate as well as euro dollars. The Chicago Board of Trade (CBT) specializes in longer-maturity instruments, including Treasury notes (of various maturities, such as two-year and five-year) and Treasury bonds (of different contract sizes).

Short Hedges:

Since so much common stock is "held by investors, the short hedge is the natural type of contract for most investors. Investors who hold stock portfolios hedge market risk by selling stock-index futures, which means they assume a short position.

A short hedge can be implemented by selling a forward maturity of the contract. The purpose of this hedge is to offset (in total or in part) any losses on the stock portfolio with gains on the futures-position. To implement this defensive strategy, an investor would sell one or more index futures contracts. Ideally, the value of these contracts would equal the value of the stock portfolio. If the market falls, leading to a loss on the cash (the stock

portfolio) position, stock-index futures prices wilt also fall, leading to a profit for sellers of futures.

Long Hedges:

The long hedger, while awaiting funds to invest, generally wishes to reduce the risk of having to pay more for an -equity position when prices rise. Potential users of a long hedge include the following:

1. Institutions with a regular cash flow who use long hedges to improve the timing of their positions.
2. Institutions switching large positions who wish to hedge during the time it takes to complete the process, (This could also be a short hedge.)

OPTIONS

Uses of Derivatives:

1. **Risk Management:**

Instead of wheat, imagine that your crop is equity securities: You want their value to grow and generate capital gains. Your focus is more on investor demand than on supply. When the country goes on the stock-buying binge, prices go up. When people get cold feet and retreat from the market, prices go down. This market risk phenomenon is generally analogous to the farmer's price risk. Similarly, someone holding bonds faces a potential for a paper loss should interest rates unexpectedly. Derivative assets, especially interest rate futures, can be used to reduce the interest rate risk.

2. **Risk Transfer:**

Derivatives are much more convenient (and less expensive) to use than security purchases or sales each time the portfolio manger decides to alter market exposure. Futures and options provide a means for risk to be transferred from one person to some other market participant who, for a price is willing to bear it.

3. **Financial Leverage:**

Derivatives may provide financial leverage, which is one of the primary reasons some speculators use them. As an example, an investor may feel that Ionics, Inc. (ION, NYSE), a manufacturer of water treatment products, is an excellent take over candidate. If that investor bought 100 shares of this stock at $29, the cost would be $2,900. As an alternative the investor could speculate on takeover rumors using a single stock option selling for perhaps $300. With this position, the investor would benefit from a sharp increase in the stock price, but would have only a modest amount of money at risk. The worst that could happen is that the investor would lose all $300. On the other hand, an investor who bought the stock could lose much more than that if the stock plummeted.

4. **Income Generation:**

Some people use derivatives as a means of generating additional income from their investment portfolio. Options are widely used for this purpose in the portfolios of endowment funds, pension funds, and individual portfolios.

5. **Financial Engineering:**

Just as the chemist mixes compounds in the laboratory to produce something with known characteristics, a financial engineer can mix financial assets in such a way that portfolio has special characteristics. Derivative assets are the basic building blocks the engineer uses. Some of the recent financial disasters involving derivatives occurred because the product mix was the potentially volatile. Nitroglycerin can be use to treat heart disease, but masked men of the Wild west also used it to blow up trains. Slight variations in the composition of portfolio can result in drastically different characteristics.

What's next?

It is unlikely that we have seen the last of innovation in the derivative assets markets. Many brilliant minds are searching for a better mousetrap in the areas of risk management and income generation. As with much of scientific discovery, what is commonplace today would have been a marvel just a few years ago. One thing that is certain is that these products are the permanent features of the financial landscape. An informed investment professional needs a basic understanding of their uses and potential risks.

The Origin of an Option:

Two parties are necessary to trade; if someone buys an option, someone else has to sell it. Unlike more familiar securities such as shares of stock, there is no set number of put or call options. In fact, the number in existence changes every day. Options can be destroyed. This unusual fact is crucial to understanding the options market.

The first someone makes in a particular is called an opening transaction. When the option is subsequently closed out with a second trade (or with expiration of the option), this latter trade is called a closing transaction. Purchases and sales can be either type of transaction.

Buying something as an opening transaction is perhaps easier to understand than selling something as an opening transaction. Returning to the football ticket example, the university created the tickets and sold them; this was an opening transaction for the university. When an option is sold as an opening transaction, it is called writing an option.

No matter what the owner of an option does, the writer of the option keeps the option premium. The university keeps the $ 24 you paid for the two tickets whether you go the game or not.

Options have an important characteristic called fungibility, meaning that, for a given company, all options of the same type with the same expiration and striking prince are identical. Just as a $1 bill is equivalent to any other $ bill, a Microsoft APR 90 call written today is equivalent to a Microsoft APR 90 call written last month. Fungibility is particularly important to the option writer. An investor who writes an option receives premium for doing so. If market conditions changes a week later, the investor can buy an identical option and close out the position. The investor pays for the option purchased, which may be more or less than the amount received when the investor wrote the option. The important point is that the option need not be repurchased from the specific person to whom it was sold, because the options are fungible.

THE OPTIONS MARKET:

Options:

Which represent claims on an underlying common stock, are created by investors and sold to other investors? The corporation whose common stock underlies these claims has no direct interest in the transaction, being in no way responsible for the creating, terminating, or executing put and call contracts.

Contracts giving the owner the Tight to buy or sell the underlying asset

Call:

An option to buy a stock at a sated price within a specified period of months

A call option gives the holder the right to buy (or "call away") 100 shares of a particular common stock at a specified price any time prior to a specified expiration date. Investors purchase calls if they expect the stock price to rise, because (lie price of the call and the common stock will move together. Therefore, calls permit investors to speculate on a rise in the price of the underlying common stock without buying the stock itself.

Put:

An option to sell a stock at a stated price within a specified period of months

A put option gives the buyer the right to sell (or "put away") 100 shares of a particular common stock at a specified price prior to a specified expiration date. If exercised, the shares are sold by the owner (buyer) of the put contract to a writer (seller) of this contract who has been designated to take delivery of the shares and pay the specified price. Investors purchase puts if they expect the stock price to foil, because the value of the put will rise as the stock price declines. Therefore, puts allow investors to speculate on * decline in the stock price without selling the common stock short.

Why Options Market?

An investor can always purchase shares of common stock if he or she is bullish about the company's prospects or sell short if bearish. Why then should we create these indirect claims on a stock as an alternative way to invest? Several reasons have been advanced, in-cluding the following:

1. Puts and call expand the opportunity set available to investors, making available risk-return combinations that would otherwise be impossible or that improve the-risk-return characteristics of a portfolio. For example, an investor can; sell the stock short and buy a call, thereby decreasing the risk on the short sale for the life of the call.
2. In the case of calls, an investor can control (for a short period) a claim on the underlying common stock for a much smaller investment than required to buy the stock itself. In the case of puts, an investor can duplicate a short sate without a margin account and at a modest cost in relation to the value of the stock. The buyer's maximum loss is known in advance. If an option expires worthless, the most the buyer can lose is the cost (price) of the option.
3. Options provide leverage magnified percentage gains in relation to buying the stock; furthermore, options can provide greater leverage than fully margined, stock transactions.
4. Using options on a market index such as the Standard & Poor's 500 Composite Index (S&P 500), an investor can participate in market movements with a, single trading decision.

Understanding Options:

To understand puts and calls, one must understand the terminology used in connection with them. Our discussion here applies specifically to options on the organized exchanges as reported daily in such sources as The Wall Street Journal.[4] Important options terms include the following:

1. **Exercise (strike) price:**

The exercise (strike) price is the per-share price at which the common stock may be purchased (in the case of a call) or sold to a writer (in the case of a put). Most stocks in the options market have options available at several different exercise prices, thereby providing investors with a Choice. For stocks with prices greater than $25, the strike price changes in increments of $5, whereas for those under $25, the increment is $2.50. As the stock price changes, options with new exercise prices are added.

2. **Expiration date:**

The expiration date is the last date at which an option can be exercised. All puts and calls are designated by the month of expiration. The options exchanges currently offer sequential options and-other shorter term patterns. The expiration dates for options contracts vary from stock to stock but do not exceed nine months.

3. **Option premium:**

The option premium is the price paid by. the option buyer to the writer (seller) of the option whether put or call. The premium is stated on a per-share basis for options on organized exchanges; and since the standard contract is for 100 snares, a $3 premium represents $300, a $15 premium represents $1500, and so forth. Information on options premiums can be found on The Wall Street Journal's "Listed Options Quotation" page. The most active contracts for the day are reported along, with some individual equity options. Information about index options is also available on this page.

The options page of The Wall Street Journal, as well as other sources, also carries the information for long-term options known as long-term equity anticipation securities (LEAPS), which were introduced in 1990. These long-term options, available on roughly 450 stocks and several indexes, trade on four U.S. exchanges. All LEAPS options for stocks expire in January, and for indexes, December. Maturities extend out to about two and one-half years.

LEAPS are typically more expensive than short-term options, but with a longer maturity, they may cost less per share when calculated on a daily basis. Like short-term options, they can be used to hedge-or speculate.
Standardized Options Characteristics:

Features:

All options have standardized expiration dates. For most options, it falls on the Saturday following the third Friday designated months. Individual investors typically view the third Friday of the month as the expiration date, because exchanges are closed to public trading on Saturday.

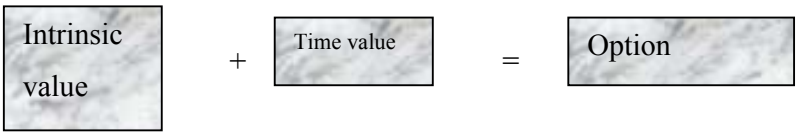
Striking prices are established at multiples of 2 ½ or $5 depending on the current stock price. Stocks priced at $25 or below have the low multiple, while higher period stocks have the $5 multiple. Shifts in the price of a stock result in the creation of new striking prices. As a matter of policy there is always at least one striking price above and at least below the current stock price.

Both puts and calls are based on 100 shares of the underlying security. As investor who buys a call option on the stock of particular company is purchasing the right to buy 100 shares of stick. It is not possible to buy or sell odd lots of options.

The Premium:

The premium has two components: intrinsic value and time value. For a call option, intrinsic value equals stock price minus striking price; for a put, intrinsic value equals striking price minus stock price. In some respects, determining intrinsic value is the first step in valuing an option. By convention, intrinsic value cannot be less than zero. Time value is equal to the option premium minus the intrinsic value.

If an option has no intrinsic value, it is out-of-the-money, if it does have intrinsic value, it is in-the-money. In special when an option's striking price is exactly equal to the price of underlying security, the option is at-the-money.



How Options Work:

AS noted, a standard call' (put) contract gives the buyer the right to purchase (sell) 100 shares of a particular stock at a specified exercise price any time before the expiration date. Both puts and calls are created by sellers who write a particular contract. Sellers (writers) ate investors, either individuals or institutions, who seek to profit from their beliefs about the underlying stock's likely price performance, just as the buyer does.

The buyer and the seller have opposite expectations about the likely performance of the underlying stock, and therefore the performance of the option.

1. The call writer expects the price of the stock to remain roughly steady or perhaps move down.
2. The call buyer expects the price of the stock to move upward relatively soon.
3. The put writer expects the price of the stock to remain roughly steady or perhaps move up.
4. The put buyer expects the price of the stock to move down relatively soon.

THE MECHANICS OF TRADING:

The Options Exchanges:

Five option exchanges constitute the secondary market: the Chicago Board Options Exchange (CBOE), the American, the Philadelphia, the Pacific, and the newer International Securities Exchange (1SE) in New York. Traditionally, the first four exchanges controlled the trading of U.S. options, each handling different options and competing very little. The ISE began trading in May 2000, and now has a substantial share of U.S. trading volume in options. This all-electronic market is extremely efficient, and has forced the other four exchanges to handle all options. This competition has led to lower costs and narrower spreads for customers, and quicker access to the market.

The options markets provide liquidity to investors, which is a very important requirement for successful trading. Investors know that they can instruct their broker to buy or sell whenever they desire at a price set by the forces of supply and demand. These exchanges have made puts and call a success by standardizing the exercise date and exercise price of contracts.

The Clearing Corporation:

The options clearing corporation (OCC) performs a number of important functions that contribute to the success of the secondary market for options. H functions as an intermediary between the brokers representing the buyers and the writers. That is, once the brokers representing the buyer and the seller negotiate the price on the floor of the exchange, they no longer deal with each other but with the OCC.

Through their brokers, call writers contract with the OCC itself to deliver shares of the particular stock, and buyers of calls actually receive the right to purchase the shares from the 0CC Thus, the OCC becomes the buyer for every seller and the seller for every buyer, guaranteeing that all contract obligations will be met. This prevents the problems that could occur as buyers attempted to force writers to honor their obligations. The net position of the OCC is zero, because the number of contracts purchased must equal the number sold.

Investors wishing to exercise their options inform their brokers, who in turn inform the OCC of the exercise. The OCC randomly selects a broker on whom it holds the same written contract, and the broker randomly selects a customer who has written these options to honor the contract. Writers chosen, in this manner are said to be assigned an obligation or to have received an assignment notice. Once assigned, the writer cannot execute an offsetting transaction to eliminate the obligation; .that is, a call writer who receives an assignment must sell the underlying securities, and a put writer must purchase them.

One of the great advantages of a clearinghouse is that transactors in this market can easily cancel their positions prior to assignment. Since the OCC maintains all the positions for both buyers and sellers, it can cancel out the obligations of both call and put writers wishing to terminate their position. With regard to puts and calls, margin refers to the collateral than option writers provide their brokers to erasure fulfillment of the contract in case of exercise. Options cannot be purchased on margin. Buyers must pay 100 percent of the purchase price.

OVERVIEW OF LECTURES

DEFINTION OF INVESTING:

An economist says when people earn a dollar; they do one of two things with it: they either consume it or save it. A person consumes a dollar by spending it on something like a car, clothing, or food. People also consume some of their money involuntarily because they must pay tax; a person saves a dollar by somehow putting it aside for consumption at a later time. (Referred to Handout # 1)

Investing is risky but saving is not.

INVESTMENT ALTERNATIVES:

Assets:

Assets are things that people own. The two kinds of assets are financial assets and real assets. The distinction between these terms is easiest to see from an accounting viewpoint.
A financial asset carries a corresponding liability somewhere. If an investor buys shares of stock, they are an asset to the investor but show up on the right side of the corporation's balance sheet. A financial asset, therefore, is on the left-hand side of the owner's balance sheet and the right-hand side of the issuer's balance sheet.

A real asset does not have a corresponding liability associated with it, although one might be created to finance the real asset.
Financial assets have a corresponding liability but real assets do not.

Categories of Stock:

Although all common shares represent an ownership interest in the company, the investment characteristics of these shares differ widely. Some share are stable, some are volatile. Some pay dividends, some don't. Some are speculations about events years in the future, other are investments in current results; investors often place stock into a particular group according to its investment characteristics. (Referred to Handout # 4)

Types of Orders:

When investors place orders to buy or sell securities, they expect their instructions to be precisely understood by the people involved in processing the order. A number of standard packets of instructions are used in the brokerage business to aid in this process. (Referred to Handout # 4)

TYPES OF ACCOUNTS:

People who buy or sell stock through a brokerage firm have an individual account in which they make their trades. While a single account number is associated with each investor, these accounts have important subsidiary accounts. Two such accounts are cash account and margin account. (Referred to Handout # 5)

Fundamental Analysis:

Fundamental analyst at the company level involves analyzing basic financial variables in order to estimate the company's intrinsic value. These variables include sales, profit margins, depreciation, the tax rate, sources of financing, asset utilization, and other factors. Additional analysis could involve the firm's competitive position in its industry, labor relations, technological changes, management, foreign competition, and so on. The end result of fundamental analysis at the company level is a good understanding of the company's financial variables and an assessment of the estimated value and potential of the company.

Investors could use the dividend discount model to value common stocks; alternatively, for a short-run estimate of intrinsic value, the earnings multiplier model could be used. Intrinsic (estimated) value is the product of the estimated earnings per share (EPS) for next year and the expected multiplier or P/E ratio,

Stocks estimated value = V_0 -/Estimated EPS X expected P/E ratio

The Balance Sheet:

The balance sheet shows the portfolio of assets for a corporation, as well as its liabilities and owner's equity, at one point in time. The amounts at which items are carried on the balance sheet are dictated by accounting conventions. Cash is the actual dollar amount, whereas marketable securities could be at cost or market value. Stockholders equity and the fixed assets are on a book value basis.

It is important for investors to analyze a company's balance sheet, carefully. Investors wish to know which companies are undergoing true growth, as opposed to companies that are pumping up their performance by using a lot of debt they may be unable to service.

Income Statement:

This statement is used more frequently by investors, not only to assess current management performance but also as a guide to the company's future profitability. The income statement represents flows for a particular period, usually one year.

The key item for investors on the income statement is the after-tax net Income, which, divided by the number of common shares outstanding, produces earnings per share. Earnings from continuing operations typically are used to judge the company's success and are almost always the earnings reported in the financial press. Nonrecurring earnings, such as net extraordinary items that arise from unusual and infrequently occurring transactions, ate separated from income from continuing operations.

The Cash-Flow Statement:

The third financial statement of a company is die cash flow statement, which incorporates elements of the balance sheet and income statement as well as other items. It is designed, to track the how of cash through the firm. It consists of three parts:

1. Cash from operating activities
2. Cash from investing activities
3. Cash from financing activities

The cash-flow statement can help investors examine the quality of the earnings. For example, if inventories are rising more quickly than sales, as happened in late 2000 and early 2001 for several companies, this can be a real sign pf trouble—demand may be softening. If a company is cutting back on its capital expenditures, this could signal problems down the road. If accounts receivable are rising at a rate greater than sales are increasing, a company may be having trouble collecting money owed to it. If accounts payable are rising too quickly, a company may be conserving cash by delaying payments to suppliers, a potential sign of trouble for the company.

Ratio Analysis:

Financial ratio analysis is a fascinating topic to study because it can teach us so much about accounts and businesses. When we use ratio analysis we can work out how profitable a business is, we can tell if it has enough money to pay its bills and we can even tell whether its shareholders should be happy.

Ratio analysis can also help us to check whether a business is doing better this year than it was last year; and it can tell us if our business is doing better or worse than other businesses doing and selling the same things.
In addition to ratio analysis being part of an accounting and business studies syllabus, it is a very useful thing to know anyway.

The overall layout of this section is as follows: We will begin by asking the question, what do we want ratio analysis to tell us? Then, what will we try to do with it? This is the most important question. The answer to that question then means we need to make a list of all of the ratios we might use: we will list them and give the formula for each of them.

Once we have discovered all of the ratios that we can use we need to know how to use them, who might use them and what for and how will it help them to answer the question we asked at the beginning?

At this stage we will have an overall picture of what ratio analysis is, who uses it and the ratios they need to be able to use it. All that's left to do then is to use the ratios; and we will do that step- by-step, one by one.

By the end of this section we will have used every ratio several times and we will be experts at using and understanding what they tell us. (Referred to Handout # 12)

Types of Charts:

Three principal types of charts are used by the technical analyst: line charts. Bar charts and point and figure charts. A forth type, the candlestick chart, has recently gained favor and may eventually become common. (Referred to Handout # 7)

Investing Indirectly:

Indirect investing in this discussion usually refers to the buying and selling of the shares of investment companies' that, in turn, hold portfolios of securities. Most of our attention is focused on investment-companies, arid mutual funds in particular, because of their importance to investors. However, we will conclude the chapter with a discussion of Exchange-Traded Funds (ETFs), which represent a bridge between direct and indirect

investing. Investors buy ETFs like any other stock, but many ETFs can be compared to index mutual funds. (Referred to Handout # 20)

Closed-End Investment Companies:

One of the two types of managed investment companies, the closed-end investment company, usually sells no additional shares of its own stock after the initial public offering. Therefore, their capitalizations are fixed, unless a new public offering is made.
The shares of a closed-end fund trade in the secondary markets (e.g., on the-exchanges) exactly like any other stock.[10] To buy and sell, investors use their brokers, paying (receiving) the current price at which the shares are selling plus (less) broker age commissions.

Open-End Investment Companies (Mutual Funds):

Open-end investment companies, the most familiar type of managed company are popularly referred to as mutual funds and continue to sell shares to investors after the initial sale of shares that starts the fund. The capitalization of an .open-end investment company is continually changing—that is, it is open-ended—as new investors buy additional shares and some existing shareholders cash in .by selling their shares back to the company.

Mutual funds typically are purchased either:

1. Directly from a fund company, using mail or telephone, or at the company's office locations.
2. Indirectly from a sales agent, including securities firms, banks, life insurance companies, and financial planners.

Mutual funds may be affiliated with an underwriter, -which usually has an exclusive right to distribute shares to investors: Most underwriters distribute shares through broker/dealer firms.

Mutual funds are either corporations or business trusts typically formed by an investment advisory firm that selects the/board of trustees (directors) for the company. The trustees, in turn, hire a separate management company, normally the investment advisory firm, to manage the fund. The management company is contracted by the investment company to perform necessary research and to manage the portfolio, as well as to handle the administrative chores, for which it receives a fee.

The Passive Strategy:

A natural outcome of a belief in efficient markets is to employ some type of passive strategy in owning and managing common stocks. If the market is highly efficient, impounding information into prices quickly and on balance accurately, no active strategy should be able to outperform the market on a risk-adjusted basis. The efficient market hypothesis (EMH) has implications for fundamental analysis and technical analysis, both of which are active strategies for selecting common stocks. (Referred to Handout # 22)

Buy-And-Hold Strategy:

A buy-and-hold strategy means exactly that an investor buys stocks and basically holds them until some future time in order to meet some objective. The emphasis is on avoiding

transaction costs, additional search costs, and so forth. The investor believes that such a strategy will, over some period, of time, produce results as good as alternatives that require active management whereby some securities are deemed not satisfactory; sold, and replaced with other securities. These alternatives incur transaction costs and involve inevitable mistakes. (Referred to Handout # 22)

The Active Strategy:

Most of the techniques discussed in this text involve an active approach to investing. In the area of common stocks, the use of valuation models to value and select stocks indicates that investors are analyzing and valuing stocks in an attempt to improve their performance relative to some benchmark such as a market index. They assume or expect the benefits to be greater than the costs. (Referred to Handout # 22)

Degrees of Informational Efficiency:

1. **Weak form Efficiency:**

The least restrictive form of the EMH is weak form efficiency, which states that future stock prices cannot be predicted by analyzing price from the past. In other words, charts are of no use in predicting future prices. (Referred to Handout # 23)

2. **Semi-strong Form:**

The weak form of the EMH states that security prices fully reflect any information contained in the past series of stock prices. Semi-strong form efficiency takes the information set s step further and includes all publicly available information. The semi-strong form of the EMH states that security prices fully reflect all relevant publicly available information. (Referred to Handout # 23)

3. **Strong Form Efficiency:**

The most extreme version of the EMH is strong form efficiency. This version states that security prices fully reflect all public and private information. In other words, even corporate insiders cannot make abnormal profits by exploiting their private; inside information about their company. Inside information is formally called material, nonpublic information. (Referred to Handout # 23)

Bond Ratings:

Bond Ratings are letters of the alphabet assigned to bonds by rating agencies to express the relative probability of default.
Corporate bonds, unlike Treasury securities, carry the risk of default by the issuer. Three rating agencies, Standard & Poor's (S&P) Corporation, Moody's Investors Service Inc., and Fitch Inc. provide investors with bond ratings; that is, current opinions on the relative quality of most large corporate-and municipal bonds, as well as commercial paper. As independent organizations with no vested interest in the issuers, they can render objective judgments on the relative merits of their securities. By carefully analyzing the issues in great detail, the rating firms, in effect, perform the credit analysis for the investor. '
Standard & Poor's bond ratings consist of letters ranging from AAA, AA, A, BBB, and so on, to D. Plus or minus signs can be used to provide more detailed standings within a given category.

The first four categories, AAA through BBB, represent investment-grade securities. AAA securities are judged to have very strong, capacity to meet all obligations, whereas BBB securities are considered to have adequate capacity. Typically, institutional investors must confine themselves to bonds in these four categories. Other things being equal, bond ratings and bond coupon rates are inversely related.

Bonds rated BB, B, CCC, and CC is regarded as speculative, securities in terms of the issuer's ability to meet its contractual obligations. These securities early significant uncertainties, although they are not without positive factors. Bonds rated C are, currently not paying interest, and bonds rated D are in default.

TYPES OF RISK:

Thus far, our discussion has concerned the total risk of an asset, which is one important consideration in investment analysis. However, modern investment analysis categorizes the traditional sources of risk identified previously as .causing variability in returns into two general types: those that are pervasive in nature, such as market risk or interest rate risk, and those that are specific to a particular security issue, such as business or financial risk. Therefore, we must consider these two categories of total risk.

Dividing total risk into its two components, a general (market) component and a specific (issuer) component, we have systematic risk and nonsystematic risk, which are additive: (Referred to Handout # 32)

Total risk = General risk + Specific risk
= Market risk + Issuer risk
= Systematic risk + Nonsystematic risk

SOURCES OF RISK:

What makes a financial asset risky? Traditionally, investors have talked about several sources of total risk, such as interest rate risk and market risk, which are explained below, because these terms are used so widely, Following this discussion, we will define the modern portfolio sources of risk, which will be used later when we discuss portfolio and capital market theory. (Referred to Handout # 32)

Random Diversification:

Random or naive diversification refers to the act of randomly diversifying without regard to relevant investment characteristics such as expected return and industry classification. An investor simply selects a relatively large number of securities randomly—the proverbial "throwing a dart at the Wall Street Journal page showing stock quotes. For simplicity, we assume equal dollar amounts are invested in each stock. (Referred to Handout # 34)

Markowitz Portfolio Theory:

Before Markowitz, investors dealt loosely with the concepts of return and risk. Investors have known intuitively for many years that it is smart to diversify; that is, not to "put all of your eggs in one basket? Markowitz however, was the first .to develop the concept of portfolio diversification in a formal way— he quantified the concept of diversification. He showed quantitatively why and how portfolio diversification works to reduce the risk of a portfolio to an investor. (Referred to Handout # 34)

Efficient Portfolios:

Markowitz's Approach to portfolio selection is that an investor should evaluate portfolios on the basis of their expected returns and risk as measured by the standard deviation. He was the first to derive the concept of an efficient portfolio, defined as one that, has the smallest portfolio risk for a given level of expected return or the largest expected return for a given level of risk. Rational investors will seek ethcient portfolios, because these portfolios are optimized on the two dimensions of most importance to investors, expected return and risk. (Referred to Handout # 35)

Capital Market Theory:

Capital market theory is a positive theory in that it hypothesis how investors do behave rather than, how investors should behave, as, in the case of Modem Portfolio Theory (MPT). It is reasonable "to view capital market" theory; as an extension of portfolio theory, but it is important to understand that MPT is not based on the validity, or lack thereof, of capital market theory. (Referred to Handout # 36)

The Market Portfolio:

Portfolio M is called the market portfolio of risky securities. It is the highest point of tangency between RF and the efficient frontier and is the optimal risky portfolio. All investors would want to be on the optimal line RF-M-L, and, unless they invested 100 percent of their wealth in the risk-free asset, they would own portfolio M with some portion of their investable wealth or they would invest their own wealth plus borrowed funds in portfolio M. This portfolio is the optimal portfolio of risky assets. (Referred to Handout # 36)

Arbitrage Pricing Theory:

An equilibrium theory of expected returns for securities involving few assumptions about investor preferences

(Referred to Handout # 37)

Performance Measurement:

The portfolio management process is designed to facilitate making investment decisions in an organized, systematic manner. Clearly, it is important to evaluate the effectiveness, of the overall decision-making process. The measurement of portfolio performance allows investors to determine the success of the portfolio management process and of the portfolio manager. It is a key part of monitoring the investment strategy that was based on investor objectives, constraints and preferences. (Referred to Handout # 38)

Derivatives:

Derivative assets get their name from the fact that their value derives from some other asset. A coupon for a free Big Mac is not inherently valuable; the paper on which it is printed is virtually worthless. We all agree that the coupon is valuable for what it represents: the chance to get a $ 2.50 sandwich for nothing. The coupon is a simple derivative asset. (Referred to Handout # 40)

The Futures Market:

A futures contract is a promise; the person who initially sells the contract promises to deliver a quantity of a standardize commodity to a designated delivery point during a certain month called a delivery month. The other party to the trade promises to pay a predetermined price for the goods upon delivery. The person who promises to buy is said to be long; the person who promises to deliver is short.

Understanding Futures Markets:
(Referred to Handout # 41)

Market Participants:

Two types of participants are required in order for a futures market to be successful: hedgers and speculators. Without hedgers the market would not exist, and no economic function would be performed by speculators. (Referred to Handout # 41)

Uses of Derivatives:
(Referred to Handout # 44)

Options:

Which represent claims on an underlying common stock, are created by investors and sold to other investors? The corporation whose common stock underlies these claims has no direct interest in the transaction, being in no way responsible for the creating, terminating, or executing put and call contracts.

Contracts giving the owner the right to buy or sell the underlying asset
(Referred to Handout # 44)