**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 has 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 ex-pensive 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 investmentportfolios 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.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *po* = | *D*0(*I* +*g*) | = | *D*1 |  |
| *k* −*g* | *k* −*g* |  |
|  |  |  |

In this equation, Do is the current dividend; D1 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=D0 (I+G) +GPO*

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* = | *D*1 | +*g* = | 0.5($1.10) | +0.15 =17% |  |  |
| *p*0 |  |  |  |
|  | $ 27.50 | |  |  |  |

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%.

|  |  |  |
| --- | --- | --- |
| P0 = D1 | | = 0.5 ($1.08) = $10.80 |
| k – | g | 0.18 - 0.13 |
|  |  |  |

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 P0 in the following equation.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Po* = | *D*1 | | + | *D*2 |  | *D*2(1.*g*) /(*k* −*g*) |  |
|  | |  |  |  |  |
|  | (1 | +*k*) |  | (1 +*k*)2 |  | (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 everyone 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.

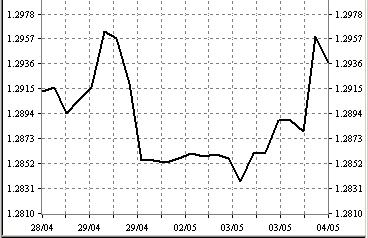
An interesting side note to this example occurs if the investment reaches a maximum value following a series of five heads and five tails. Once an investment reaches its maximum possible value, why would anyone buy it? Logically it can only decline from its peak value. Thus, a interesting interplay takes 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:***

High High



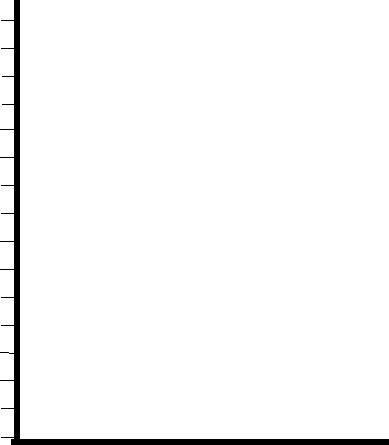
Close Open

|  |  |
| --- | --- |
| Open | Close |
| Low | Low |
| Standard | Standard |
| Bar Chart | Bar Chart |

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***



X

X

X X O

X X O

X O O

X O O

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.***

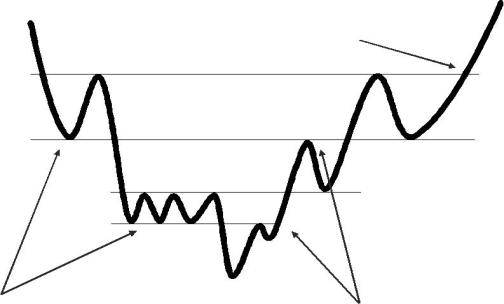
***Candlestick Chart***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Japanese | | | | Japanese | | | |
| Candlestick | | | | 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:**



Support Resistance

**A support level** is a subjective assessment of the price level below which the stock seemsdisinclined 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.***