CHAPTER 4: Dimensions of Risks & Returns

Investing is a prudent exchange of risk. For example, a guaranteed investment like a Certificate of Deposit (CD) exposes investors to a variety of risks, including 'purchasing power risk,' and 'return shortfall risk.'[1] In buying a CD, an investor exchanges the risk that inflation will erode the value of his principal over the long-term for short term protection against investment volatility. There is no free lunch: to get rid of one sort of risk, one must assume more of some other. Risk management is a balancing act: each investor must decide how to balance risk so that the portfolio has a reasonable expectation of earning the return required to achieve its financial objectives, while remaining within tolerable risk bounds.

There is no free lunch: to get rid of one sort of risk, one must assume more of some other. Risk management is a balancing act: each investor must decide how to balance risk so that the portfolio has a reasonable expectation of earning the return required to achieve its financial objectives, while remaining within tolerable risk bounds.

Consequently, investors need to understand the risks and returns of various investment choices. In many respects, the challenge of portfolio construction is the two fold problem of:

1. Selecting risky assets under conditions of uncertainty [Security Selection] and,
2. Appropriately weighting each investment within the portfolio [Asset Allocation].[2]

As suggested earlier, large segments of the retail investment industry (stockbrokers, financial planners, money managers) utilize a bottom-up approach to the asset selection decision. Their quest is to discover securities that are mispriced (i.e., undervalued), and to form portfolios that are collections of such stocks and bonds which, in their opinion, offer the best opportunities for positive investment returns over the forthcoming period.

Investment industry jargon is confusing. Money managers use many terms to categorize their investment philosophies: momentum, contrarian, market-neutral, sector rotational, and so forth. Previously, we added to the jargon by discussing two approaches to asset allocation: (1) 'top-down' and (2)

[1] The risk of earning a return less than that needed to fund the investor's goals.

[2] When a portfolio includes both taxable and tax-favored accounts, there is the additional dimension of asset location.

'bottom-up.' Historically, mutual funds described themselves as 'aggressive growth,' 'growth,' 'growth and income,' 'balanced,' and 'income.' The investor might ask, "Should I employ a contrarian, bottom-up, aggressive growth approach, or a market-neutral, top-down, growth and income approach?" By the mid-1990s, investors needed a dictionary to guide them through a thicket of labels.

RISK FACTORS

The product produced by an investment portfolio is return. Labels, however, produce no return whatsoever. Furthermore, they often obscure an investor's ability to understand "product ingredients," i.e., the underlying elements of portfolio risk and return. Prior to the 1990s, the emphasis on product labels made a study of investments seem like exploring the biological classification system developed by the famous biologist Carl Linnaeus. During the 1990s, however, academic research focused on certain underlying stock and bond characteristics responsible for "explaining" why portfolios behave differently in various economic environments. The age of theoretical capital market research led to the appearance of a new empirical finance.[3] The empirical research found that certain securities share specific characteristics and exhibit common return patterns. These categories, moreover, perform differently than stocks grouped in other categories. The common, or shared, characteristics of any such category are, in the parlance of modern economists, called 'factors.' Stocks sharing high exposure to common factors are more likely to exhibit relatively high correlation among their returns. The returns to a portfolio of large company stocks, for example, tend to differ from the returns to a portfolio of small company stocks because each group is exposed to differing risk factors. Companies with small capitalization, for example, have greater exposure to bankruptcy risk as the business cycle begins to turn downward. Thus, economists distinguish between 'return-to-small' and 'return-to-large' risk factors. Likewise, there are 'return to value' and 'return to growth' risk factors and, beyond them, 'return to liquidity risk,' 'return to interest rate sensitivity,' 'return to momentum,' and other risk factors. Eventually, the labels 'Value' and 'Growth' became common descriptors for investment styles. Managers often characterize themselves as 'value-oriented managers' or 'growth-oriented managers.' The following section explores this distinction at a greater level of detail.

GROWTH AND VALUE INVESTING STYLES

In general, 'Growth-oriented' investment managers buy the stocks and bonds of companies that:

- Have financial statements with above average sales growth, revenues and profits, return on assets, and return on equity; and,
- Offer solid competitive advantages in the marketplace (i.e., patent protections, well-known brands, ownership of intellectual property, and so forth).

Although the current security prices for these companies may be high, financial analysis may predict continued above average growth in both market share and return on the firm's invested capital. Analysts seek to determine if these firms can sustain their competitive advantages.

The risks associated with growth investing are, however, both obvious and notorious:

- Investors may fall into the trap of overpaying

[3] Although most would agree that the Charles Darwin of finance has yet to make an appearance.

for attractive or 'glamour' companies that produce stellar accounting statements, so that the return to investors is less than expected;[4] or,

- Marketplace shocks may reduce competitive advantages as new technologies leapfrog over existing business systems, as new competitors suddenly announce their entry into the marketplace, as new tax law or regulatory restrictions change the profitability of a business, as new mergers and acquisitions detract from core business activities, and so forth.

Growth stock companies tend to exhibit rapidly increasing earnings and market share. The high prices paid for many technology, computer and communications stocks in the late 1990's represent a highwater mark in the popularity of growth-style investing.

'Value-oriented' investors generally purchase securities when the price of shares approaches the book value listed on the firm's financial statements – i.e., when market value approaches book value. Relative to growth-stock companies, value stock companies tend to be less profitable and exhibit fewer opportunities for future earnings growth. The universe of value investors, however, includes several well-known names such as Benjamin Graham, Warren Buffet, and John Neff. Graham, for example, developed a rigorous formulaic approach to individual stock picking. He advised investors to avoid stocks when their "normalized" price [(current price – average price) ÷ standard deviation of price] to earnings ratio is above 25. Many of Graham's market timing and stock selection formulae, first published in the 1930s, have not stood the test of time. However, several formulas still resonate strongly: "when the price of a stock is less than 1.3 times the tangible book value, it should be a good value for the investor."[5] Graham cautions investors that it is better to pay too little for a company with ugly financials than to pay too much for a company with attractive financials. Although Graham focused more on a method for picking individual stocks as opposed to a method to understand and manage portfolios of assets, nevetheless, his work continues to command respect from financial analysts.

In Benjamin Graham's world, investors fall into two groups: (1) projection investors; and, (2) protection investors. One commentator updates Graham's distinction as follows:

> *Projection investors want to find the next Microsoft Corporation. If they can find 'the next Microsoft,' they do not care how many 3Coms or Quarterdeck Softwares or Ashford.coms they end up with. As long as they get one Microsoft, they will achieve their goals. In contrast, protection investors want to make certain that they do not get wiped out. They are not concerned about being right only once. They want to minimize the number of times and the consequences of being wrong.*[6]

Projection investors want to hit a home run. At the extreme, they are treasure hunters searching for the next glamour stock. The protection investor, by

[4] Investors are sometimes surprised that growth stock returns are low despite significant increases in corporate revenues and profits. One answer to the puzzle lies in the changes in a firm's capital structure needed to finance vigorous growth. These changes may encompass dilution of equity ownership through additional stock offerings, and increase in leverage through expansion of debt financing. Indeed, entire markets may experience the high-growth/low-return phenomenon. For example, Investors in China during the latter part of the 20th century saw lackluster returns to financial assets during a period of extraordinary economic expansion and corporate revenue growth. Good companies do not necessarily produce good stock returns.

[5] Zweig, Jason, "Lessons and Ideas from Benjamin Graham," Equity Analysis Issues, Lessons, and Techniques (AIMR, 2004), pp. 9-17.

[6] Ibid.

contrast, avoids overpaying for hype, trends, fads, and other ephemeral characteristics that may divorce a security's market price from its fundamental value.

In Graham's view, the stock market is not "efficient" with respect to asset pricing – i.e., may not always price securities close to their fundamental value. Graham encourages investors to develop sufficient information to identify a subset of mispriced securities and to invest in them.

Graham's statement, however, says little or nothing about the Efficient Market Hypothesis (markets are efficient if the costs of acquiring information offer, on average, no ability to make abnormal profits based on such information). Although the efficient market hypothesis concedes that investors will over react with enthusiasm for some stocks or under react for other stocks, it is impossible to determine ahead of time which way the crowd will react to news about any specific security; and, therefore, it is impossible to develop any predictive system for profitable stock selection because new information constantly enters the marketplace and continually changes investor perceptions.[7]

Projection investors want to hit a home run. At the extreme, they are treasure hunters searching for the next glamour stock. The protection investor, by contrast, avoids overpaying for hype, trends, fads, and other ephemeral characteristics that may divorce a security's market price from its fundamental value.

The projection/protection [growth/value] investor distinction leads to another important observation. The projection investor, seeking the next ticket to fame and fortune, avoids diversification. This is often the case despite the fact that the treasure-hunting investing style cries out for a safety net: "diversification is probably more important for projection investors than they might realize: The odds of missing the next Microsoft are high, and a growth portfolio with only a few stocks has a high likelihood of being wiped out."[8] Interestingly, however, value stock pickers who believe that they have not overpaid for a security (i.e., that they have found good 'value' in the marketplace) may also eschew diversification because they believe that they are less vulnerable to the spectacular crashes of high-flying, high-priced stocks. Warren Buffet preaches the gospel of finding good companies at a good price and holding them long enough to reap the expected rewards. In the Buffet ideology, it does not matter which way the crowd goes from one day to the next so long as the investor is convinced that his valuation remains correct, and the investor has the patience to hold the stock through the ups and downs of the market.[9]

John Neff, the famous portfolio manager of the highly successful Windsor Fund (a fund that picked stocks according to a philosophy that is a comfortable fit with Graham's) was once asked, "How many stocks should a portfolio hold?" Neff replied: "With Windsor, we probably had 60, and the top 10 were about 40

[7] For an instructive discussion of the Efficient Market Hypothesis and the global recession see, Ball, Ray, "The Global Financial Crisis and the Efficient Market Hypothesis: What Have We Learned?" Journal of Applied Corporate Finance (Fall, 2009), pp. 8-16.

[8] Op Cit, Zweig. See, also, Collins, Patrick J., "Diversification: Recent Legal and Academic Perspectives," California Trusts and Estates Quarterly (Summer, 2003). This is available on the Schultz Collins website.

[9] However, in 2007 Buffett remarked: "A very low-cost index is going to beat a majority of the amateur-managed money or professionally managed money." He reiterated this position in the 2013 Report to Berkshire Hathaway shareholders.

percent of our portfolio."[10] Many titans of the money management industry from both the growth and value stock picking camps embrace asset concentration risk as a reasonable investment strategy.[11]

Value/Growth Asset Class Investing vs. Stock Picking

In 1982, Tom Peters and Robert Waterman published a best-selling study of major American companies entitled ***In Search of Excellence***.[12] Among the criteria used to identify excellent companies were six long-term measures of financial superiority:

- Compound growth of assets;
- Compound growth of shareholder equity;
- Average ratio of market value to book value;[13]
- Average return on total invested capital (net income divided by total invested capital);
- Average return on equity; and,
- Average return on sales.

A 1987 study by Michelle Clayman took ***In Search of Excellence*** as its point of departure. She hypothesized that an investor might be able to realize superior returns by holding a portfolio of companies that have demonstrated financial excellence using the book's criteria. She tested the hypothesis by screening the S&P 500 for companies with the best overall accounting ratios. She further screened the S&P 500 for "unexcellent" companies that could act as a control group. Accounting ratio values for the excellent and unexcellent companies for the period prior to the formation of the portfolios are seen in **FIGURE 4-1**.

Clayman tracked results from equally weighted portfolios of excellent and unexcellent companies from 1981 through 1985. As expected, the excellent

EXCELLENT VS. UNEXCELLENT COMPANY RATIOS (1976-1980)

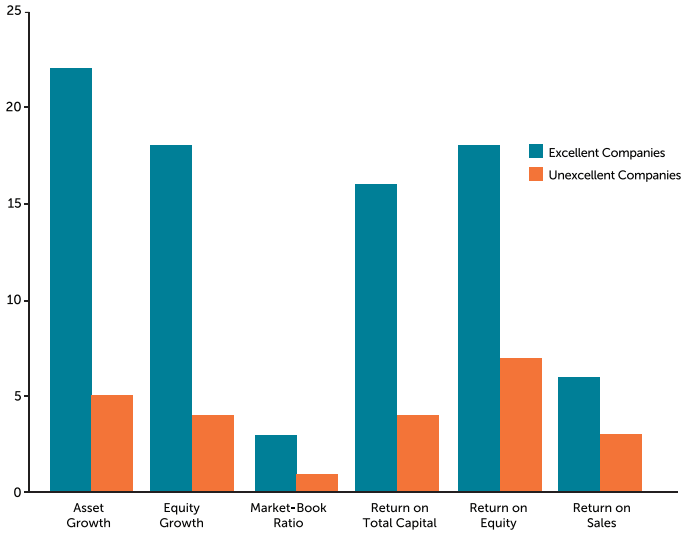

FIGURE 4-1

[10] Neff. John B., "A Conversation with Legendary Value Investor John B. Neff, CFA," Equity Analysis Issues, Lessons, and Techniques (AIMR, 2004), pp. 5-8.

[11] It is interesting to note that there is common ground between Wall Street gurus and the advocates of the efficient market hypothesis (EMH). Both camps can agree that if the investor has no forecasting skill whatsoever, it makes sense to diversify the portfolio completely lest inept stock picks destroy wealth. Conversely, if one has perfect forecasting skill, it makes sense to avoid diversification and buy the single investment that will generate the highest return over the forthcoming period. Any other course of action would simply be a waste of money. Thus the degree of asset concentration risk to which it is reasonable and prudent to expose investment wealth is a function of forecasting skill. But forecasting skill is a measurable talent and is subject to statistical verification. Thus, the degree of prudent diversification rests on a rigorous 'quality control' testing and evaluation system that measures the prevalence and magnitude of forecasting errors within the money management organization. Evaluation of ***internal*** forecasting skill is not the same as evaluation of the money manager's ***external*** track record, although success in one area should manifest in success in the other. EMH proponents point out that it is difficult to demonstrate a degree of forecasting accuracy that justifies picking just a few stocks. For example, if the opportunity set of investments consists of the S&P 500 stocks, what level of demonstrable forecasting accuracy is required to justify exposing wealth to the ups and downs of, say, only 20 stocks? Currently, this is a topic of great interest across the academic, money management, and litigation communities. See, Collins, Patrick J., "Prudence," The Banking Law Journal (January, 2007). This is available on the Schultz Collins website.

[12] Peters, Thomas J. & Waterman, Robert H., In Search of Excellence: Lessons from America's Best-Run Corporations, HarperCollins (New York, New York) 1982. The influence of this book persists today as firms proudly advertise that they are among the "best companies to work for."

[13] The higher the ratio value, the more likely the firm commands a rating of "excellent."

company portfolio outperformed the S&P 500 Index by 1.1% per year over the period. The portfolio of unexcellent companies, however, outperformed the S&P 500 by 12.4% per year.[14] Clayman discovered, for this five-year period, that stocks of good companies were not necessarily good investments.

Initially, many observers argued that Clayman's findings represented a statistical anomaly for the brief period under evaluation. However, Nobel Prize winner William Sharpe, in a well-known study of mutual fund performance,[15] concluded that the returns of U.S. equity mutual funds differ from each other along two key dimensions: "One [dimension] may loosely be termed 'value/growth,' the other 'small/large.'" Eventually, Sharpe's terminology ('growth' and 'value') replaced Clayman's terminology ('excellent' and 'unexcellent').

The portfolio of unexcellent companies, however, outperformed the S&P 500 by 12.4% per year.[14]

Sharpe published his study only a few months after a separate and independent historical review of U.S. stock returns by Nobel Prize winner Eugene Fama and Kenneth French.[16] Fama and French concluded that the primary determinants of U.S. stock returns were subsumed in three identifiable factors:

1. The sensitivity of the stock to systematic market risk ("beta," in the lexicon of financial economics);
2. A value/growth factor; and,
3. A large company/small company factor.

The Fama/French study documents the relative superiority of returns of unexcellent companies during the period July 1963 through December 1990 for both U.S. large company stocks and U.S. small company stocks. Additionally, in 1993, Sharpe published research into the stock markets of major Asian and European nations (over the period January 1981 through June 1992). The study demonstrates that the relative superiority of unexcellent firms was a worldwide phenomenon.[17] As noted, Sharpe calls stocks of unexcellent companies 'Value Stocks,' while those of excellent companies he calls 'Growth Stocks'. These are now the standard terms for the two investment styles. In a nutshell, growth style investors seek to buy the securities of companies with substantial growth prospects in the hope that superior corporate performance will provide high returns over the long run. Value style investors seek to buy securities that can be purchased for prices that are low relative to the estimated underlying values of the issuers.[18]

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[14] Clayman, Michelle, "In Search of Excellence: The Investor's Viewpoint," Financial Analysts Journal (May-June, 1987), pp. 54-63.

[15] Sharpe, William F., "Asset allocation: Management Style and Performance Measurement," The Journal of Portfolio Management (Winter, 1992), pp. 7-19.

[16] Fama, Eugene F., & French, Kenneth R., "The Cross-Section of Expected Stock Returns," Journal of Finance (June, 1992). pp. 427-465.

[17] Capaul. C., Rowley, I, & Sharpe, W. F., "International Value and Growth Stock Returns," Financial Analysts Journal (January/February, 1993), pp. 27-36.

[18] Ibid., p.27. A monograph by New York University professor Aswath Damodaran, a noted expert in the subject of business valuation, considers the question of how strong corporate management and superior past earnings growth affects the prospects for future stock price increases: "... the earnings announcements of firms are judged against expectations and the earnings surprise is what drives prices ... Stocks that report the biggest increases in economic value added should not necessarily earn high returns for their stockholders." Interestingly, Damodaran extends Clayman's research in a study that ranks all stocks rated by Standard and Poor's according to quality ratings based on quantitative financial measures and qualitative evaluations of corporate management. During the period under evaluation the lowest rated stocks had the highest returns and the highest rated stocks generated the lowest returns. However, beware of simplistic stock-picking formulae: forming portfolios based on the ***Fortune*** magazine's list of fifty most admired companies (1983 through 1995) resulted in substantial outperformance compared to portfolios of the least admired companies. Damodaran, Aswath, "In search of Excellence! Are Good Companies Good Investments," (New York University website, 2005), p. 136.

In the early 1990s, some money managers exploited the academic findings by forming broadly diversified portfolios that divided the marketplace into value and growth stock asset classes. Traditionally, investors built portfolios using only three building blocks (stocks, bonds, and cash). The expansion of asset classes along value/growth, and large/small market capitalization dimensions suddenly increased the number of building blocks for investors. Portfolios now could incorporate allocations to large and small stocks, growth and value stocks, foreign and domestic stocks, and so forth. Each asset class represented return-generating factors (style factors, capitalization factors, etc.) in the marketplace. Depending on their investment objectives, risk tolerance and planning horizons, by the mid-1990s investors sought to customize portfolios by loading either for or against these factors. Single factor portfolios (owning some combination of stocks and bonds) became multifactor portfolios.[19]

The Historical Evidence: Is Value a Strong Law of Asset Pricing?

Things became confusing as academic research continued to explore the value phenomenon. What, for example, is a value stock? Some argue that high dividend paying stocks are value stocks because the payment of cash to investors constrains corporate growth by inhibiting the firm's ability to fund future projects. Others argue that highly regulated companies such as utilities are value companies because of regulatory constraints on their ability to set rates in the marketplace. Still others argue that many non-dividend paying companies are value stocks because their low share prices indicate the need to conserve cash to meet current obligations (i.e., the firms have high bankruptcy risk).

It appeared, however, that the return advantage of value stocks was substantial. For example, a comparison of the Growth, Value, and S&P 500 Stock indexes (maintained by the Center for Research in Securities Prices) reveals the following results, through 2006, for an initial investment of $1,000 (See **FIGURE 4-2**).

[19] The most famous of the single factor market models is the Capital Asset Pricing Model (CAPM) developed independently by William Sharpe and others in the 1960s [Sharpe, William F., "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk," Journal of Finance (September, 1964), pp. 425-442]. The CAPM measures the relationship between the rewards that an investor might reasonably expect in terms of the risk that the investor assumes. In equilibrium, the following equation describes the expected return on any security:

Expected Return of Security A = (Price of Time) + (Price of Risk)(Amount of Risk) where:

- The Price of Time is the minimum return required to compensate the investor for investing rather than consuming [this is the T-Bill or 'risk-free rate' which also incorporates the expected rate of inflation];
- The Price of Risk is the return offered in the marketplace that is in excess of the risk-free rate [this is the 'risk premium']; and,
- The Amount of Risk is the volatility of the stock relative to the volatility of the market as a whole [this is the stock's 'Beta'].

The CAPM uses the stock market as a single 'factor' to determine the amount of risk, and, hence, the amount of expected return for any investment. Thus, Sharpe's model is also known as a 'single-factor asset-pricing model.' A stock earns more than the risk-free rate only because it takes on some additional amount of stock market risk. Another way of saying this is to state that market risk [beta], under the CAPM, is the only priced risk factor – the single factor that will generate an expected reward over and above the risk-free rate. If you don't take market risk, all you can expect to earn is the risk-free rate.

Although CAPM's central hypotheses [return is a function of a single risk factor which, in turn, can be proxied by the stock market] may seem counterintuitive, Sharpe also developed an analytically derived CAPM based on rigorous mathematics. He asked what the consequences for asset pricing might be if the expected rewards for individual stocks were not "calibrated" or risk-adjusted to the rewards offered by the market in general. The mathematics lead to a theory of arbitrage that assures that asset prices adjust according to the predictions of CAPM. If General Motors offers a better reward-to-risk ratio than the market in general, then investors will sell their positions in the general stock market (lowering market prices) to buy shares of GM (raising the price of GM). This process will continue until such time that the two are in equilibrium with respect to both their prices and their risks. This process happens quickly (people do not want either to leave money on the table or to remain in inferior investments) with the result that, for the most part, the risk-adjusted price of any investment is rapidly calibrated to the risks and rewards of the general market. Under the somewhat restrictive assumptions of CAPM, there is little possibility of finding a mispriced security; or, in Benjamin Graham's words, a stock that offers a superior investment value.

GROWTH OF $1,000 INVESTED IN LARGE COMPANY GROWTH STOCKS VS. LARGE COMPANY VALUE STOCKS (1973-2006)

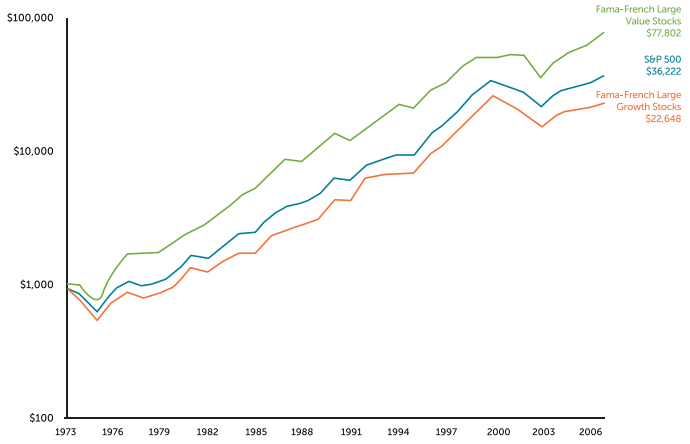

FIGURE 4-2

GROWTH VS. VALUE (1973 – 2006)

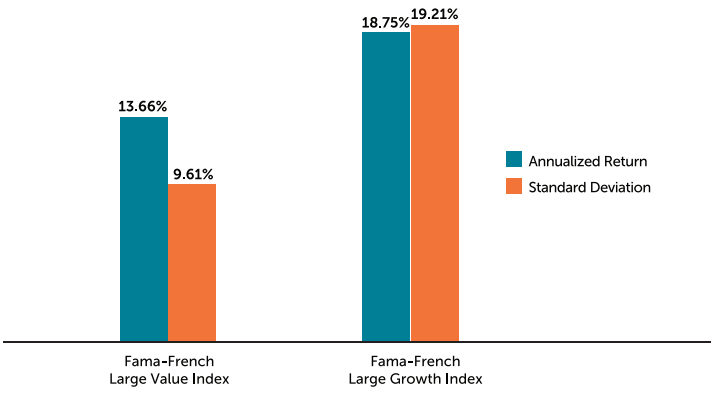

FIGURE 4-3

Capital market theory suggests that reward is closely related to risk. Although researchers noted the higher return to value, they struggled to explain why diversified portfolios of value stocks do not manifest higher risk (that is, standard deviations). Empirical performance results suggest the possibility that portfolios with 'value' tilts offer a "free lunch" to investors – more return with less risk. The attractiveness of a tilt toward value style investing as a portfolio risk-control mechanism seems pronounced (See **FIGURE 4-3**).

During this period, value style investing in large U.S. company stocks earned a higher return at a lower level of risk than growth style investing. On average, stocks of firms with good earnings growth prospects yielded poorer returns to investors than stocks of firms with distressed earnings. Investors discovered that a good looking financial statement does not automatically translate into attractive returns to shareholders. A popular theory to explain this phenomenon is a cost of capital argument:

> *Companies experiencing earnings distress have higher average stock returns than companies with good earnings prospects, suggesting that the market demands compensation for this risk factor … companies with poor earnings prospects pay higher costs of capital than companies with good earnings prospects. When they borrow money at a bank, they pay higher interest rates. When they issue stock, they receive less money. Since they receive less money from a stock issue, their expected returns are higher. The fastest-growing stock returns are likely to come from investing in slow-growing companies.*[20]

The academic community split among several theories:

1. Value investing is a strong law of asset pricing. The return to value stocks is explainable either by a cost of capital argument or by a priced risk factor argument. The priced risk factor

[20] Booth, David B., "Growth Stocks: Earnings Growth vs. Stock Returns," (May, 1994), Dimensional Fund Advisors, Inc., pp. 1-2.

argument claims that value stocks are risky but that the risk (as measured by historical standard deviation) has not yet manifested itself in the marketplace. Skeptics began to refer to the "metaphysical risk" dimensions of value investing.[21]

2. The returns to value style investing represent 'agency risk.'[22] Decision makers for large pension plans, endowments and other institutional investors must report to boards of directors and must justify their investment decisions. The prices of value stocks are relatively depressed because institutional decision makers are more comfortable holding a blue-chip stock portfolio of "good companies" despite the fact that value stocks may have higher expected returns. This reluctance to hold value stocks means that the price of such stocks adjusts downward to reflect the demand-to-hold schedule – that is, value stocks become a relative bargain.
3. The return to value stocks is not a strong law of asset pricing. Rather than representing a priced risk factor, the value phenomenon represents either a striking form of data mining (in which case the return to value should not be expected to continue)[23] or proof that the markets are not efficient (in which case the return to value is a pricing anomaly that could be exploited by investors for their benefit).

Empirically, if we proxy the growth segment of the U.S. stock market by the Fama-French Large Growth Index and the value segment by the Fama-French Large Value Index, the comparative performance of value vs. growth during the period 1964 through 2015 is as follows: U.S. large value stocks outperformed U.S. large growth stocks by an annual compounded return of 1.78% from 1964 through 2015. In 32 out of 52 of those years, U.S. large value stocks generated a higher rate of return than U.S. large growth stocks.

More recent academic research treats the value/

[21] Gulen, Huseyin, Xing, Yuhang and Zhang, Lu, "Value versus Growth: Time-Varying Expected Stock Returns," Financial Management, 2011 provide strong evidence that the value premium is the result of a priced risk factor. Generally, value stocks significantly underperform growth stocks in periods just prior to the onset of recessions. Interestingly, during the midst of a recession, the expected return from value stocks is high due to their sensitivity to macro-economic conditions. The authors note that the value premium – the amount by which the cross section of value stocks outperforms the cross section of growth stocks – differs significantly across economic regimes; and, they speculate that the periods in which the value premium turns negative may be harbingers of trouble in the general economy. Recession risk is not "metaphysical;" rather, it manifests itself prior to the onset of recessions because value stock companies lack the financial flexibility to adapt to a less favorable economic climate.

[22] Lakonishok, J., Shleifer, A., & Vishny, R. "Contrarian Investment, Extrapolation, and Risk," Journal of Finance (December, 1994). Ludovic Phalippou "Where Is the Value Premium?" Financial Analysts Journal (March/April. 2008) argues that the value premium resides in the subset of securities neglected by institutional investors; and, therefore, "…the value premium … has less empirical and theoretical relevance than is often granted to it." Li, Yan, Ng, David T. and Swaminathan, Bhaskaran, "Predicting Time-Varying Value Premium Using the Implied Cost of Capital," SSRN (2014), note that the expected value premium remains a statistically and economically significant predictor after controlling for other variables of interest. They suggest that the value premium is the result of both a priced risk component and a component due to market mispricing. This conclusion echoes that of George Athanassakos ("The Performance, Pervasiveness and Determinants of Value Premium in Different U.S. Exchanges: 1986-2006, Journal of Investment Management, 2011).

[23] Knez, P.J. & Ready, M.J., "On the Robustness of Size and Book-to-Market in Cross-Sectional Regressions," Journal of Finance (1997), pp. 1355-1382, suggest that the statistical significance of the value premium depends on the one percent of extreme observations. Loughran, T., "Book-to-Market across Firm Size, Exchange, and Seasonality," Journal of Financial and Quantitative Analysis (September, 1997), pp. 249-268 argues that the value premium is limited to small cap stocks and is primarily an artifact of tax loss-harvesting strategies (the January effect). See also, Black, Fischer, "Beta and Return," Journal of Portfolio Management," (Fall, 1993), pp. 8-18. By contrast, Dhatt, M., Kim, Y. & Mukherji, S., "The Value Premium for Small-Capitalization Stocks," Financial Analysts Journal (September/October. 1999) test stock returns over the period July 1979 through June 1997. They contend that the value premium is pervasive throughout the entire year (i.e., it is not an artifact of a 'January effect'), and that it is both statistically and economically significant. Additionally, after controlling for small, thinly traded stocks, their tests indicate no substantial diminution in the value premium. These studies highlight the continuing academic controversies surrounding value style investing.

growth debate as part of a general examination of portfolio 'factor analysis.' Factor analysis asks:

1. Which factors are true determinants of return;
2. What is the expected compensation for exposing portfolio wealth to the factors (e.g., what is the expected premium for assuming value stock risk); and,
3. What is the optimal degree of exposure to the relevant factors (that is, what is a prudent asset allocation)?

Having identified priced factors and having forecasted their expected reward, investors can determine the extent to which they wish to tilt their portfolio to capture the expected rewards or to limit overall portfolio risk.

Modern factor analysis follows three broad areas of research:

1. The factors that determine portfolio returns are "fundamental" attributes of individual firms – market, industry or accounting characterisics;
2. The factors that determine asset prices are identifiable macro economic forces such as inflation, growth in the gross national product, interest rates, energy costs, unemployment, etc.; or,
3. The factors are not able to be specified (are, i.e., unobservable factors that are implicit to the matrix of time series returns). However, once a matrix decomposition quantifies the unobservable factors, they may be "re-translated" into known factors through advanced statistical techniques.

The crux of the matter centers on whether the value premium represents a priced risk factor. If the answer is in the affirmative, this constitutes a strong rationale for including a value tilt in the portfolio. If the answer is in the negative, the justification for including a value tilt rests primarily on the probability, based on empirical observations only, of a successful investment outcome.

The lack of consistency in the value premium suggests that investors cannot consider it to be a strong law of asset pricing. The more recent comments of Fama and French indicate that they consider that their research is primarily helpful as a tool for describing a set of investment opportunities richer than heretofore described under the more classical asset pricing models. While there is much evidence indicating that incorporating a value tilt in the portfolio enhances the probability for future investment success, such an outcome is not guaranteed.[24]

The Small Company/Large Company Dimension

As discussed earlier, cumulative returns for small company stocks tend, over longer planning horizons, to exceed returns for large company stocks. Academic studies suggest that company size (defined as a firm's market capitalization – the number of outstanding shares multiplied by the price per share) – remains an important determinant of return even after controlling for other variables such as earnings yield and earnings growth.[25] For example, over the period 1973 through 2015, a $1,000 investment in small company stocks grew to $153,086 versus $55,207 for a comparable investment in large company stocks.

FIGURE 4-4 illustrates that, over the long-term, investments in small company stocks have earned a

[24] For further information, please see "Update on the Value Premium". See also the yearly update on risk factors located in the "Risk-Return Continuum". These are available on the Schultz Collins website.

[25] Basu, Sanjoy, "The Relationship between Earnings Yield, Market Value and Return for NYSE Common Stocks: Further Evidence," Journal of Financial Economics (1983), pp. 129-156.

comparatively high return.[26] Nevertheless, the fact that the two lines cross each other in the early 1970's and draw close to each other during the mid to late 1980's indicates small stocks underperform large stocks over relatively long periods.[27] Consider **FIGURE 4-5**, which illustrates the period 1984 through 1990. S&P 500 (large company) returns were consistently better than the returns of the 9-10 decile (all stocks with capitalization falling within the range defined by the smallest 20% of stocks on the New York Stock Exchange).

During this period each dollar invested in small company stock[28] grew to $1.20, versus $2.60 for each dollar invested in the S&P 500. Underperformance was both substantial and persistent, with returns for large company stocks beating small company returns in six out of seven years. This suggests the possibility that the small stock premium (the difference in performance between small cap and large cap stocks) may be a spurious artifact of data mining[29] (or, may be confounded with other factors). However, close examination reveals that small stocks do not move in tandem with large stocks. Therefore, the benefits of including small stocks in a portfolio may not flow primarily from an expectation of capturing returns from a priced risk factor, but rather from the ability to reduce the risk (variance) of the aggregate portfolio.

Some recent research has questioned the existence of a small company premium. Several studies suggest that the superiority of small stock returns is a myth. The best performing period for small compa-

GROWTH OF $1,000 INVESTED IN U.S. LARGE COMPANY STOCKS VS. U.S. SMALL COMPANY STOCKS (1973-2015)

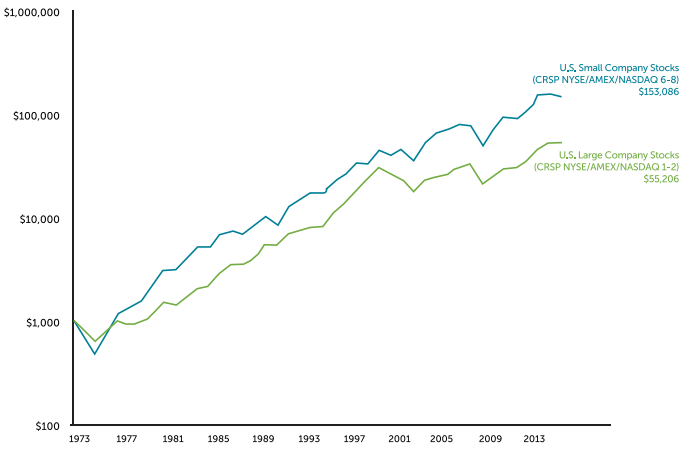

FIGURE 4-4

LARGE VS. SMALL (1984-1990)

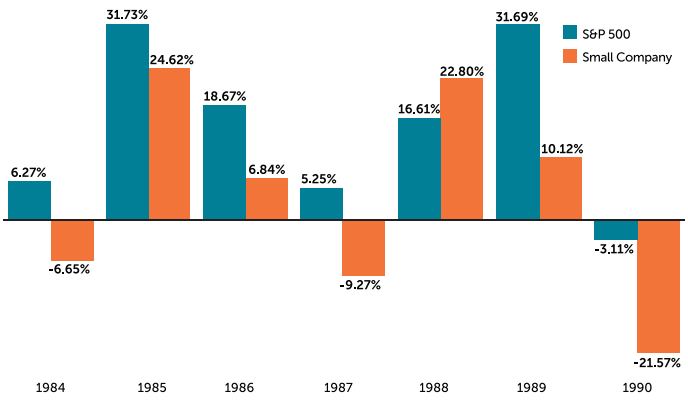

FIGURE 4-5

[26] See, also, Reinganum, Marc R., "Portfolio strategies based on market capitalization," The Journal of Portfolio Management (Winter, 1983), P. 32: "One dollar invested in the small firm portfolio at the end of 1962 would have mushroomed in value to more than $46 at the end of 1980. On the other hand, $1 invested in the large firm portfolio at the end of 1962 grew in value to slightly more than $4 at the end of 1980." Reinganum attributed the higher returns to small cap stocks to their greater risk: "Over the 18 years of this study, the odds for a small versus large firm doubling in value were about 10 to 1. On the down side, however, a small firm was almost twice as likely as a large one to experience a one-year return of –25% or less" p. 36. This study was an important precursor to the multifactor models developed in the mid1990s which considered the small cap factor to represent a priced risk.

[27] The vertical axis is a logarithmic scale. The log scale enables the investor to determine the comparative advantage or disadvantage of small v. large by looking at the slope of the growth line over any sub-period from 1973 through 2013. The return series evidencing the higher slope value for the period delivered the higher rate of return.

[28] Small Company stock is all publicly traded securities with market capitalization equal to the bottom two deciles (20%) of New York Stock Exchange stocks where decile ranking is based on firm size.

[29] Black, Fischer, "Estimating Expected Return," Financial Analysts Journal (1993), pp. 36-38.

ny stocks (relative to large company stocks) was 1975 through 1983, when the small stock premium (performance of the smallest 10% of New York Stock Exchange companies minus performance of the largest 10% of New York Stock Exchange companies) is a huge 21% per year compounded advantage. Some argue that if this period is eliminated from the historical return sequence, the small company premium disappears. The premium was negative from 1984 through 2003.[30] If the small company stock premium is uncertain, it nevertheless, appears that adding small company stocks to the portfolio produces a diversification benefit.

The Three Factor Model: Empirical Results

The Fama/French research suggests that investors have the opportunity to capture stock returns from at least three risk factors:

1. The market risk factor – exposure to the risk of stocks as opposed to risk-free T-Bills;
2. The size risk factor – exposure to small company stock risk as opposed to large company stock risk; and,
3. The value risk factor – exposure to value style investing as opposed to growth style investing.

Investors owning the aggregate U.S. stock market from 1964 through 2015, as proxied by the S&P 500, earned a return in excess of 30-Day T-Bills of 4.72% per year. However, the extra reward (stock market risk premium) was never precisely realized in any single year. Rather, the investor earned the reward by tolerating significant year-to-year volatility. **FIGURE 4-6** depicts the year by year differential returns (stock market returns minus T-Bill returns) during the period.

There is considerable debate concerning the extent to which investors can expect a significant equity risk premium in the future. The Equity Risk Premium [ERP] is the "expected additional return for making a risky investment rather than a safe one."[31] During the administration of President George W. Bush, forecasts of the equity risk premium became an important variable in formulating public policy due to the proposals to privatize Social Security. During this period, estimates of the ERP ranged from approximately negative one percent through positive nine percent, depending on the length of the projection horizon. Advocates of creating private Social Security accounts assume a continued positive equity risk premium sufficient to generate substantial cost advantages to Social Security participants. An analysis by the Office of the Chief Actuary of the Social Security Administration produced a geometric ERP assumption of 4.7% (slightly in excess of the 4.45% compounded ERP from 1964 through 2004). However, the Social Security Administration invited a review of their projections from three prominent economists. John Y. Campbell of Harvard produced a forward ERP in the 1.5% to 2.5% per year

[30] Dimson, Elroy, Marsh, Paul, and Staunton, Mike, "Low-Cap and Low-Rated Companies," Journal of Portfolio Management (Summer, 2004), pp. 133-143. The authors of this study contend that the reversal of the size premium extends to most European stock markets during this period. Robert Arnott's study [Arnott, Robert D., "Disentangling Size and Value," Financial Analysts Journal (September/October, 2005), pp. 12-15] points out that the size factor is determined by market capitalization; but, because market capitalization is the product of sales, earnings or other accounting factors multiplied by valuation measures like price to sales or price to earnings, the size and value effects are intertwined. For example, a large company is large either because it has many employees, large sales, valuable assets, etc., or because it is a small company with a lofty valuation ratio. Typical measures of the size and value effects use a capitalization scale. Arnott, however, employs an economic scale that measures a firm's size relative to its sales, cash flow, dividends, and book value as a current percentage of the total economy. Arnott concludes: "When we separate the size effect from the value-versus-growth effect, we find that size as measured by market capitalization is far less powerful than is generally believed. And reciprocally, the value effect – because some of its efficacy has been siphoned off by the mislabeled size effect – is far more powerful and more consistent than is generally believed." More recent research by Fama and French ("Size, value, and momentum in international stock returns," Journal of Financial Economics," 2012) suggests that the value premium is primarily found in small cap stocks. The small stock premium is found to be statistically insignificant in all global regions over the period November 1990 through March 2011.

[31] Brealey, Richard A. & Myers, Stewart G., Principles of Corporate Finance, 6th Edition (Irwin McGraw-Hill, 2000), p. 1071.

THE MARKET PREMIUM

The S&P 500 outperformed a risk-free investment (30-Day U.S. T-Bill) by 4.72% per year from 1964 through 2015. In 36 of 52 of those years, an investment in the U.S. stock market generated a higher rate of return than an investment in 30-Day U.S. T-Bills.

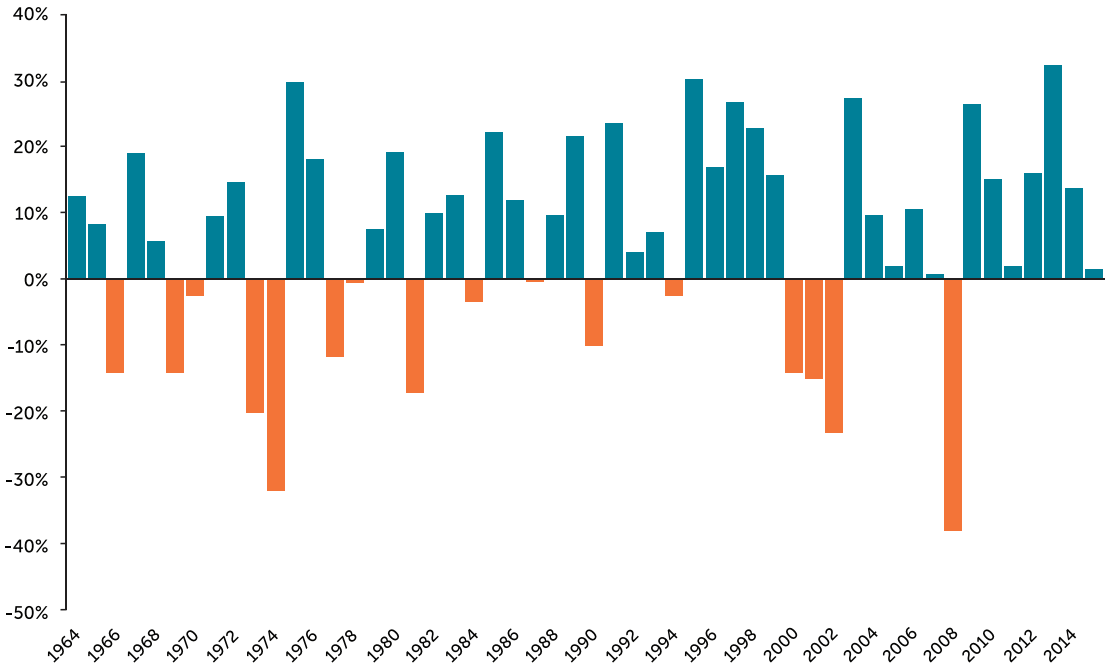

FIGURE 4-6

range; Nobel Prize economist Peter Diamond of MIT and John Shoven of Stanford both estimated a future compound ERP in the 3% to 3.5% range.[32] These estimates are of great interest because they call into question the so-called superiority of equity investments over fixed income investment. Given the variance in the year to year ERP evidenced in Figure 4-6, and given the low estimates of the ERP on a go forward basis, the investor should not be surprised to discover there may be long periods in which equity no longer outperforms bonds. Under no circumstances should any individual investment or any investment strategy or approach be considered a sure thing.[33]

From 1964 through 2015, stocks of small capitalization companies returned 3.36% per year more than stocks of large capitalization companies. In 34 of the 52 years in this period, small company U.S. stocks outperformed large company U.S. stocks. **FIGURE 4-7** depicts the yearly 'size-factor' premium (return of small stocks minus return of large stocks).

However, like the market-based equity risk premi-

[32] Derrig, Richard A. & Orr, Elisha D., "Equity Risk Premium: Expectations Great and Small," North American Actuarial Journal (January, 2004).

[33] Erb, Claude, "The Incredible Shrinking 'Realized' Equity Risk Premium," SSRN Working Paper (2014) available at the Social Science Research Network (http://www.ssrn.com) documents that the realized equity risk premium, when measured as the difference between 10-year return on the S&P 500 minus the return on Intermediate-term U.S. Treasuries, has been on the decline since 1925. Extrapolating a naive projected trend from historical data, the data indicate an expected equity risk premium of zero by 2025. Erb, however, is quick to point out that the decline in the equity risk premium might be due to a variety of historical factors that are unlikely to repeat. Erb estimates the current realized equity risk premium at about 5%.

THE SIZE PREMIUM

Small company U.S. stocks outperformed large company U.S. stocks by 3.06% per year from 1964 through 2015. In 34 of 52 of those years, small company U.S. stocks generated a higher rate of return than large company U.S. stocks.

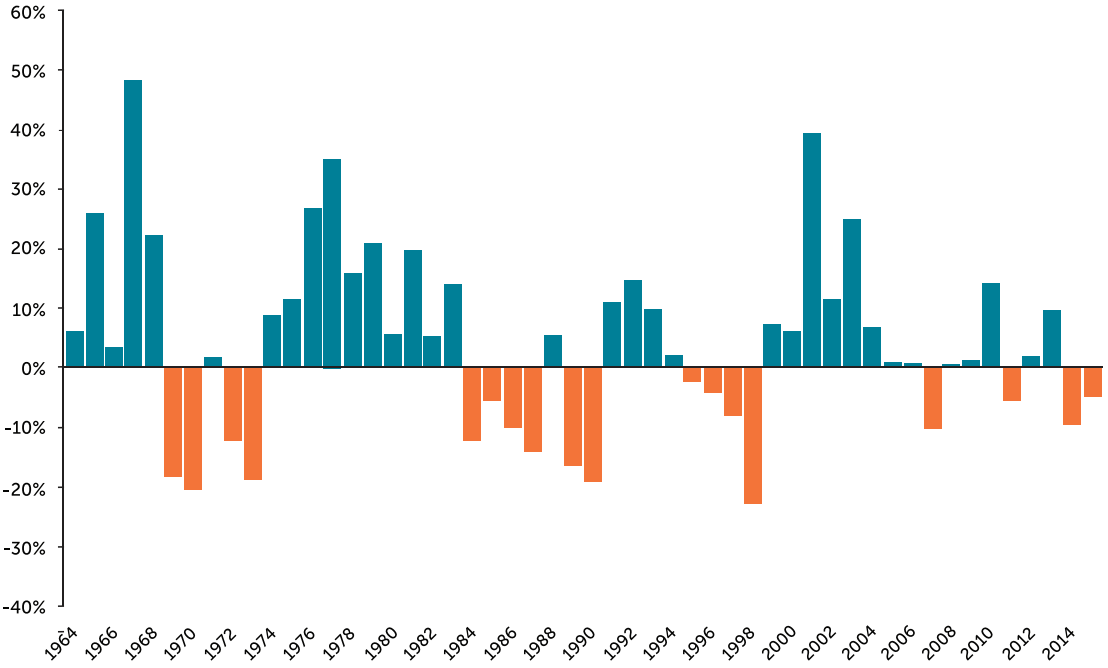

FIGURE 4-7

um, the expected return for investing in small capitalization stocks is not a sure thing. In 2007, as the global recession was about to begin, the small stock premium was a negative 5.71%.

Over a comparable period, the average premium to the value-style investor (value stock returns – growth stock returns) was 1.78% per year (**SEE FIGURE 4-8**). Although the return to value was greater in 32 years in the period under evaluation, the years in which value stocks outperformed growth stocks are not identical to years in which small stocks outperfomed large stocks. Thus, combining small and value factors in the portfolio may enhance diversification.[34]

Although subject to the criticism that it is not grounded in economic theory because it uses stock attributes to explain stock returns,[35] the Fama/French three factor model has, in the main, provided an attractive reference point for discussing multifactor portfolio construction.[36] Current academic research into the factors driving stock returns remains active. Factor research includes:

- Macro-economic factors such as interest rates, credit default premiums, inflation and

[34] The "return-to-value" in 2007 was a negative 20.53%.

[35] See, for example, Burmeister, Edwin, Roll, Richard & Ross, Stephen, "Using Macroeconomic Factors to Control Portfolio Risk," Working Paper (March 9, 2003): ...there is no rigorous theory to tell us how traditional accounting variables should be related to an appropriate measure of risk for computing the risk-return tradeoff. Even if historical empirical relationships can be uncovered, without the foundation of a rigorous theory one must be concerned that any historical correlation might be spurious and subject to sudden and material change" pp. 1-2.

[36] A more detailed discussion of factor models is found in the paper entitled "Multifactor Asset Pricing Models and the Rationale for Investing in Value Stocks." This is available on the Schultz Collins website.

THE VALUE PREMIUM

U.S. large value stocks outperformed U.S. large growth stocks by an annual compounded return of 1.78% per year from 1964 through 2015. In 32 of 52 of those years, U.S. large value stocks generated a higher rate of return than U.S. large growth stocks.

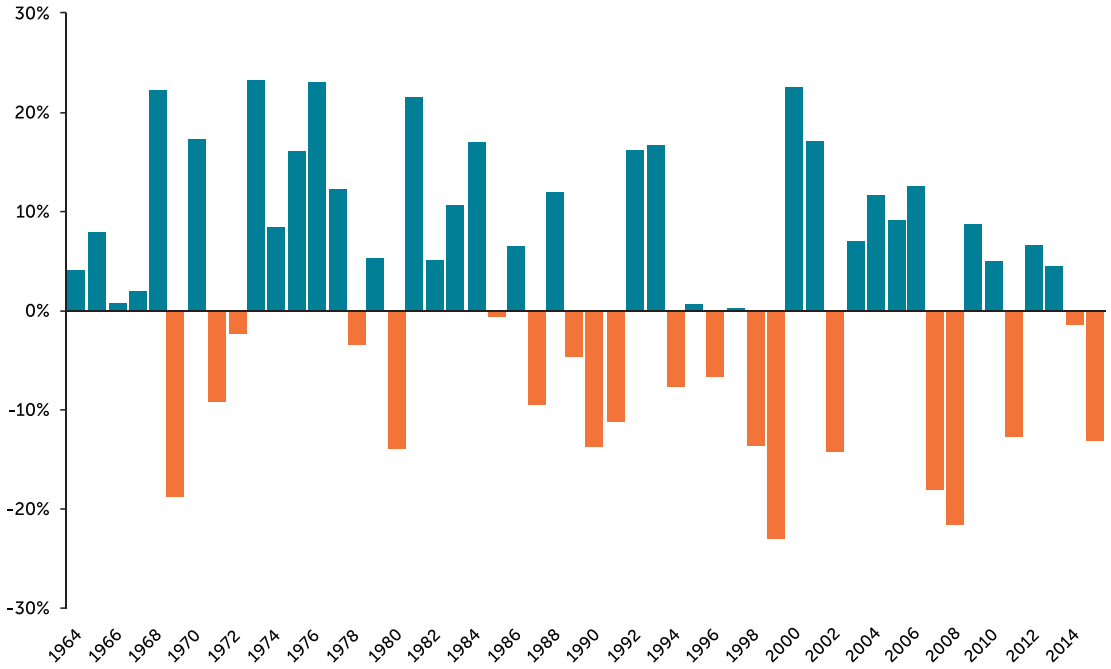

FIGURE 4-8

real business activity;

- Fundamental factors such as size, value, industry, price/earnings relationships;
- Technical factors such as the ability of a firm's past returns to predict its future returns (a "momentum factor");
- The market factor as expressed either in equal weighted or capitalization weighted extensions of the traditional single factor Capital Asset Pricing Model; and,
- Statistical factors: mathematical factorizations of returns into (sometimes unobservable) statistical constructs (i.e., linear algebra techniques such as principal components analysis).

Finally, there is an ongoing research effort to relate financial markets with the real economy. To date, macro-economic models remain generally unsuccessful in explaining the price dynamics of financial assets such as stocks and bonds. Often, the models must assume unrealistic values for interest rates, investor risk aversion, or other critical parameters if they are to calibrate successfully with historically realized financial returns. This is an important piece of information to remember next time you see an economist or money manager on TV predicting future stock prices from current economic data (e.g., growth rate in industrial production, GNP, etc.).[37] Recent findings regarding the role of labor income, proprietary (business-owner) wealth, estab-

[37] Cochrane, John H., "Financial Markets and the Real Economy," Working Paper, University of Chicago (September 21, 2005), provides a good review of the literature. Silver, Nate, The Signal and The Noise, Penguin Press (New York, 2012), p.33, reports: "In December 2007, economists in the ***Wall Street Journal*** forecasting panel predicted only a 38 percent likelihood of a recession over the next year. This was remarkable because, the data would later reveal, the economy was ***already in recession*** at the time."

lished consumption (standard of living) levels, and other non-market variables or non-traditional factors may be of special importance for portfolio design purposes.

The emerging picture suggests that the Fama/French factor model remains a useful structure for explaining the cross section of stock returns. The list of fundamental factors (market, small & value) has been extended to include momentum factors, as well as "bond" factors such as the default premium and the term-to-maturity premium.[38] It appears that at some still poorly understood level, the factors are strongly interrelated and may reflect true, but perhaps unobservable, determinants of expected returns. Thus, portfolio combinations of capitalization weighted and momentum-driven investments, like the S&P 500 Index, with investments that reflect differing risk characteristics (correlation) such as value, small, and foreign investments appear to provide attractive opportunities for investors.

Factor Loading and Unsystematic Risk

It is pertinent at this point to refer back to the earlier discussion of systematic and unsystematic risk, and to consider whether loading a portfolio for, e.g., the value effect, constitutes an increase in exposure to unsystematic – that is, uncompensated – risk. The same question would seem to apply to any deviation from the asset allocation of the current global market. That is, if the asset allocation of global markets has, by definition, eliminated unsystematic risk, should not every investor mimic that allocation, and reject a strategy that employs loading for or against any particular risk factor?

The answer would be yes, if every investor had the same risk tolerance and faced an identical set of economic incentives and objectives. The asset allocation set by world markets represents the most rational tradeoff of risk and reward only for investors with average risk aversion (the average we speak of here is the average risk tolerance of all the world's investors). To the extent that an investor is more or less tolerant of risk than the average investor, risk loading decisions will differ from those of the global capital markets.[39]

Furthermore, the asset allocation set by world markets nets against each other all the differing economic environments faced by each of the world's investors. Japanese investors, for example, are rewarded differently for holding U.S. Treasury securities than are U.S. investors. For Americans, Treasury Bills are a risk-free investment; not so for the Japanese, who must bear currency risk if they own U.S. securities. Similarly, different investors have different time horizons, face different tax and regulatory environments, and hold different illiquid investments (e.g., family real estate, privately owned businesses, etc.).

One of the critical decisions that an investor must make is whether or not to buy the world market index. In such a case, the investor may decide not to seek customized financial advice. As one commentator put it: "To rationalize anything but the market portfolio, you have to be different from the average investor

[38] Fama and French developed a five-factor model ["Common risk factors in the returns on stocks and bonds," Journal of Financial Economics (1993), pp. 3-56] that includes a factor for bond market maturity premium and default risk premium.

[39] See, for example, Fama, Eugene F. & French, Kenneth R., "Disagreement, Tastes, and Asset Prices," Journal of Financial Economics (March, 2007), pp. 667-689. The authors argue that equilibrium asset pricing models generate prescriptive rules for portfolio construction (e.g., build a portfolio that replicates the world capital market) only in the special case where both informed and uninformed investors hold the set of maximally efficient assets (i.e., all uninformed investors hold fully indexed portfolios). Problems arise if there are no informed investors or if uninformed investors hold poorly designed portfolios. "When the market share of the informed is small, the bad information of the misinformed can have a big effect on asset prices." In classical economic theory, the market assures that asset prices reflect true (justified) value through the mechanism of arbitrage. In practice, however, this means that informed investors must overweight their asset holdings to compensate for the underweighting of the misinformed. But such an overweighting is not a riskless arbitrage; and, therefore, the market is probably mostly efficient rather than maximally efficient. If active managers have superior information, they help to make the market more efficient. This forms a basis for justifying active management but still leaves open the problem of identifying the active managers with superior skill – that is, which managers will win in the future.

in some identifiable way."[40] For each investor, personal preferences and financial positions are integrated in what economists call the investor's utility function. Each investor's utility function is, obviously, unique.[41] Through the process of trading, these unique utility functions are netted against each other and subsumed by the global capital markets. But the set of global utility functions (if they may be so called) differs from that of any individual. That difference makes it just as easy to argue convincingly that no investor should mimic the asset allocation defined by world markets, as that every investor should.[42]

It may, therefore, be rational and prudent to load for such factors as 'value' and 'size,' despite the fact that such loadings may not be consistent with their loading by world markets. The degree to which such loading represents an increase in exposure to unsystematic risk depends, in large part, on how the loading is affected. To invest ten percent of a portfolio in a single small foreign firm is to assume a high degree of uncompensated risk. On the other hand, a ten percent allocation to broadly diversified funds investing in hundreds of such firms is a different matter.

High standard deviations of a factor's returns (based, for example, on 'mimicking portfolios' designed to replicate the time series of factor returns) suggest that the factor under evaluation:

1. Is priced in the marketplace;
2. Has explanatory value with respect to the return generating process; and,
3. Represents systematic (compensated) as opposed to unsystematic (uncompensated) risk to the investor.

Factors deemed important in explaining stock returns are useful in constructing portfolios. Factor models imply that stocks with different factor sensitivities will have different average returns. Thus, investors using a multi-factor approach are, in essence, simply making decisions regarding the risk/return tradeoffs available in the marketplace.[43]

As the cost of information continues to drop, new investment products enable investors to load for risk factors without assuming undue unsystematic risk. Comprehensive diversification across an asset class enables investors to mitigate the unsystematic risk entailed in factor loading; and, to increase exposure to the specific systematic risk factor(s) they wish to target.

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[40] Cochrane, John H., "Portfolio advice for a multifactor world," Economic Perspectives Federal Reserve Bank of Chicago (3rd Quarter, 1999), p. 73.

[41] Chapter Seven offers a detailed discussion of utility and investor risk aversion. It lays the groundwork for deciding how best to design and implement a portfolio that reflects an investor's risk tolerance.

[42] This point is made, in 2005, by Harry Markowitz: "... if the universe consists of, say 10,000 securities, then if all securities are to be demanded by someone, this universal efficient frontier must contain at least 10,000 segments. If investors have sufficiently diverse risk tolerances, they will choose portfolios on different segments. Some will prefer portfolios on one or another of the typically less diversified high-risk/high-return segments. Others will select portfolios on one or another of the typically more diversified lower-risk segments. The market is an average, weighted by investor wealth, of portfolios selected from these diverse segments. Although it is mathematically possible for this average to accidentally fall on the efficient frontier, such an outcome is extremely unlikely." Markowitz, Harry, "Market Efficiency: A Theoretical Distinction and So What?" Financial Analysts Journal (September/October, 2005), p. 27. However, William Sharpe argues that investors should purchase the global market portfolio; but, they should dynamically alter it to reflect changes in asset values. For example, the value of the aggregate U.S. or world stock market changes constantly relative to the aggregate value of the aggregate U.S. or world bond market. When the ratio of aggregate stock market value increases relative to aggregate bond market, the consensus investor opinion reflects optimism regarding future stock returns. When the ratio decreases, the reverse is true. For a 60-40 stock-to-bond portfolio, maintaining a constant percentage weighting during a period when stock-bond dollar values are 50-50 means that the investor's portfolio is more risky than the general market. An Adaptive Asset Allocation approach recommends changing the portfolio's asset weighting over time to reflect changes in market values even if there has been no change in the investor's risk/return preferences. This approach is not commonly used because of the difficulty in obtaining information regarding current dollar values of aggregate world market indexes. See, Sharpe, William F., "Adaptive Asset Allocation Policies," Financial Analysts Journal (May/June, 2012), pp. 45-59.

[43] Focardi, Sergio M. & Fabozzi, Frank J., The Mathematics of Financial Modeling & Investment Management (Wiley Finance, 2004), p. 539. More recent discussions of asset allocation often suggest that portfolio weightings should reflect sensitivity to multiple underlying risk factors. See, for example, Bhansali, Vineer, Davis, Josh, Rennison, Graham, Hsu, Jason and Li, Feifei, "The Risk in Risk Parity: A Factor-Based Analysis of Asset-Based Risk Parity," The Journal of Investing (Fall, 2012), pp. 102-110.