PORTFOLIO MANAGEMENT: THEORY & PRACTICE

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SCHULTZ COLLINS LAWSON CHAMBERS, INC.
INVESTMENT COUNSEL

455 MARKET STREET, SUITE 1450
SAN FRANCISCO, CA 94105
(415) 291-3000

www.schultzcollins.com

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PREFACE: OBSTACLES TO PRUDENT INVESTMENT DECISION MAKING

More money is better than less. The paradox of investing is that, although investors generally agree with this statement, the pursuit of more money is not always prudent. This paradox explains, in part, why Schultz Collins Lawson Chambers, Inc. [SCLC} is not a money management firm. Money managers often seek to generate attractive performance results by trying to identify undervalued securities with above average prospects for future growth or income. Money managers market the portfolios formed from these 'mispriced' securities either to the retail public or to wealthy individuals qualifying as "sophisticated investors" under current securities laws. The easiest way for a money manager to claim superior performance is to outperform either their peer group of competitors or a benchmark such as the S&P 500 Stock Index.

While this may sound like a good idea, many investors lack a clear understanding of the functional relationship between their personal and unique investment goals and the index returns that they see on the nightly business report. Is the return of the index sufficient to fund their future consumption and wealth accumulation objectives? Does the risk of an index align with their personal risk tolerance? Is the money manager taking greater risk than the index? Despite, or, perhaps because of the difficulty of interpreting personal goals in terms of risk and return, for many investors the investment problem reduces itself to finding a money manager with a good track record—a manager who can "beat the market." Curiously, however, a money manager's primary goal (the speculative objective of beating the market) is only tangentially related to the investor's objectives—securing a retirement income, accumulating funds to pay college expenses, maintaining wealth sufficient to make gifts or bequests, and so forth. Prudent investment decision making is complex and extends well beyond the single dimension of historical track record.

Prudent investing requires that the risks and returns of the portfolio align with concrete investor objectives rather than with abstract 'beat-the-market' goals. Undoubtedly, portfolios must generate returns sufficient to support the legitimate needs and expectations of their owners; however, such a portfolio is best synchronized to the investor's aspirations rather than designed to outperform a peer group. Investment strategies desiged to maximize expected return may prove to be either financial bonanzas or financial catastrophes. Investment strategies designed to enchance the probability that a critical goal will be successfully met, however, are more prudent and suitable for most investors. Prudent investment decision making begins when the discourse shifts from discussing how to maximize return to determining the risks and returns required to secure an economic future. If you don't need to outperform the S&P 500 to have a secure economic future, why should you take the risks necessary to do so? SCLC helps investors design portfolios to meet their savings and consumption objectives, within the preferences and constraints imposed by their personal circumstances and risk tolerance.

Historically, the professional U.S. money management industry has offered investors a 'treasure hunting' model. Success under the treasure hunting model is a function of the manager's skills in selecting undervalued securities and in timing price movements either between or within capital markets. The treasure hunting model requires correct and highly concentrated bets. For a variety of reasons, however, this ability has proved elusive. Although treasure hunting has produced examples of investment success, it has not served the average investor well:

> ...the industry looks very much like an unconcentrated, highly segmented, service-oriented industry for which perceptions of the qualities of individual firms vary widely over time and across customers. The structure of this industry is not unlike that of hair salons or trendy restaurants...Money managers who can provide a good story about their strategy have a comparative advantage. In fact, the product sold by the professional money managers is not

just good performance but schmoozing, frequent discussion of investment strategies, and other forms of hand holding.[1]

In the following pages, SCLC offers a view of portfolio design and management that is more prudent than traditional treasure hunting. A prudent investment approach begins by identifying the returns required to generate money sufficient to meet the wealth accumulation goals or cash flow liabilities that the portfolio must discharge. Although returns above the risk-free rate require investors to take risk, investment risks must be commensurante with the return objectives. Furthermore, both risk and return must be measurable and consistent with investor needs and risk tolerance. A prudent approach evaluates the evolution of the portfolio not solely in comparative terms (did I do better than a benchmark or a peer group?), but also in terms of progress towards objectives.

OBSTACLES TO PRUDENT DECISION MAKING

Many people have difficulty making effective investment decisions. Investors face significant obstacles:

Complexity - informed financial decisions require insight into abstruse financial, economic, and mathematical relationships; and may require serious introspection to define personal objectives;

Uncertainty - decisions must be made without complete knowledge of future consequences. Good decisions do not guarantee successful outcomes; bad decisions may result in outcomes that succeed by mere chance;

Conflicting Objectives - an investment decision may facilitate progress towards one objective (e.g., generating current income in support of a dependent) while, simultaneously, impeding progress towards an equally important objective (e.g., wealth accumulation);

Lack of Perspective or Multiple Perspectives - issues may be difficult to resolve because differing perspectives on the same data set can lead to different conclusions. An investor who remembers the Great Depression may, upon reviewing stock market returns, reach conclusions entirely different from those of an investor who started accumulating wealth in the 1980's;

Information Overload - investors are deluged by an ever-deepening torrent of financial, economic legal and tax information. Determining which data really matter may be close to impossible.

Successful investors must overcome these obstacles. A general understanding of the fundamental nature of capital markets and investments is a necessary starting point. Recent advances in the scientific understanding of markets make it possible to deal with each of these obstacles systematically.

This document provides an overview of relevant academic developments pertaining to financial economics and portfolio management. We first address some basic investment concepts that investors must consider in formulating any successful investment program. These include investment prudence, market efficiency, risk, diversification, and asset allocation. We then proceed to a more detailed discussion of the mechanics of portfolio construction and wealth management. Topics include:

Characteristics of asset classes that may be included in a portfolio;

Determinants of return:

Designing a suitable portfolio structure;

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[1] Lakonishok, Josef, Shleifer, Andrei & Vishny, Robert W., "The Structure and Performance of the Money Management Industry," Brookings Papers On Economic Activity (Brookings Institution, 1992), pp. 339-391.

Selecting appropriate investment vehicles; and

An overview of alternative asset management approaches.

Often, there are no absolute "right" or "wrong" decisions. Depending on the context of the decision, one course or another may be appropriate. As Independent Investment Counsel, SCLC's primary job is to

1. Help investors make good decisions by informing them about the merits of alternative investment elections;
2. Facilitate the implementation and supervision of a portfolio once investment strategies and tactics have been selected; and,
3. Evaluate the economic consequences of asset management decisions as the portfolio unfolds over time.

This monograph introduces investors to important investment topics and to fundamental concepts in asset management. It is not an introductory textbook in investment analysis; nor, is it a self-help guide on how to pick winning securities. Rather, its purpose is to provide a non-technical understanding of

1. the nature and scope of prudent investment policy *decision making* (good decisions increase the probability of good outcomes);
2. how to evaluate the variety of portfolio management elections that are available to you; and,
3. how to select the portfolio management elections that are best suited to your particular investment objectives.

Investor's sometimes confuse 'making money' or 'generating investment returns' with investment policy—"my 'policy' is to make money." However, a return generating process that does not flow from a carefully considered investment plan often relies on mere luck. Depending on the nature and scope of the investment endeavor, investment policy encompasses the planning steps required to determine:

- Which assets are suitable investments (asset selection and retention policy)?
- How should the investor combine the assets into a portfolio (asset allocation policy)?
- What is the portfolio return required to achieve my investment objectives ('required' return vs. 'desired' return)?
- What is the portfolio's risk (the probability of failing to meet the required return over the applicable planning horizon)?
- Does the portfolio require tax payments (tax management policy)?
- Does the portfolio require periodic adjustments to maintain its strategic asset allocation (rebalancing policy)?
- If the portfolio is funding periodic distributions, how much money can be spent without jeopardizing the investment capital (distribution policy)?
- If the portfolio consists of several taxable and non-taxable accounts, what is the optimal location for the assets (asset location policy)?
- As the portfolio evolves through time, how are investment results evaluated (monitoring and evaluation policy)?

If this process is completed with sufficient care, skill and caution, the investor may begin the return generating process armed with the confidence that investment choices have been well considered prior to their implementation. Although a prudent decision making process cannot guarantee a good result, it

greatly enhances the probability of a successful financial outcome.

SCLC's website (www.schultzcollins.com) is a source for more information, often at a greater level of detail. Previous issues of two publications -- *Investment Quarterly* and *Fiduciary Forum* -- may be found on the website. Additionally, the website contains working papers, reprints of published articles, and links to other helpful information and resources.

For clients of SCLC, there is a special password-protected area that permits access to course notes from Economics 746: Asset Management. This course, taught by Patrick Collins, is part of the University of San Francisco's Masters of Science (combined MBA / Masters in Financial Analysis) curriculum. The lecture notes provide an advanced discussion of many of the topics covered in this document.

CHAPTER ONE: BASIC INVESTMENT CONCEPTS

Certain basic concepts are necessarily incorporated into any investment program, whether or not the investor is aware of their significance:

Investment objectives and the Investment Policy Statement;

The Prudent Investor Rule;

Market efficiency;

Risk;

Diversification;

Asset allocation.

INVESTMENT OBJECTIVES AND THE INVESTMENT POLICY STATEMENT

Every investor has objectives, however loosely defined. When objectives are not clearly and consciously articulated, investors may make decisions that actively frustrate their attainment. It is therefore wise to clarify investment objectives, so as to gain a clear understanding of what the portfolio is intended to accomplish.

It is particularly important to distinguish between desired return and required return. Investors may believe that high rates of expected return are better than lower rates of expected return (the "non–satiation principle" states that more money is always better than less). However, the connection between rates of return and spendable dollars is opaque. Higher rates of return entail greater risk; and, the greater the risk, the greater the uncertainty regarding future dollar wealth. Another way of understanding invesment risk, therefore, is to treat it as the level of uncertainty that critical goals will, in fact, not be reached. This risk is known as "shortfall risk." Good decision making is possible only when the investor knows that the portfolio's expected return is sufficient to the task and that the shortfall risk is within the bounds of prudence.

Compound return, which determines the portfolio's terminal wealth, is approximated, in lognormal distributions,[2] by the equation:A

$$\text{Compound return} = \text{average return} - 1/2(\text{variance of return}).$$

This equation says that dollar wealth is *increasing* with respect to the portfolio's rate of return, but *decreasing* with respect to the variance in the return.[3]

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[2] A lognormal distribution has a bell curve shape.

[3]Investors spend *dollars* not *rates of return*. It is possible to construct a portfolio with a high expected rate of return that produces a paltry amount of spendable dollars. This result is another investment paradox; and, is a reason for establishing sound investment policy prior to buying or selling securities. As Yogi Berra remarked: "If you don't know where you are going, you may end up somewhere else."

Mitigating variance—or, as it is usually expressed, standard deviation of returns[4]—therefore makes the wealth-building process more likely to succeed. In fact, an investor can often generate more long-term spendable wealth by employing risk control strategies desiged to mitigate variance than by simply chasing higher expected returns.

It is apparent that mere labels and slogans [e.g., "growth," "double-digit return," "safety," "low risk," "balanced," "all-weather portfolio," "disciplined investing process"] are too subjective and ill-defined for prudent portfolio design. It is folly to Implement the portfolio process without understanding both the compound return required for savings and consumption objectives, and the likelihood of falling short of portfolio objectives. In a nutshell, the portfolio's expected return must align with the required return at a risk level that allows for a good night's sleep. The prudent investor seeks not just expected return, but overall welfare. Furthermore, the prudent investor monitors progress towards the goal (and makes appropriate adaptations as the future unfolds) rather than trusting in blind luck.

Investors should document investment objectives in a written Investment Policy Statement [IPS]. An IPS is the document that avoids ill-defined and subjective investment labels by operationalizing the key aspects of portfolio design and implementation. The IPS takes verbal expressions of economic objectives ("safe," "aggressive," etc.), translates them into quantifiable measures, and outlines the strategies that will promote their successful attainment. An IPS separates the "amateur" investor from the "professional" investor. It expresses the investment objectives unique to each investor, defines the strategy through which important economic goals will be attained, and puts forth a system through which progress may be monitored and measured. In this sense, investment policy comprises the set of guidelines and procedures that direct the long-term management of a (portfolio's) assets.[5]

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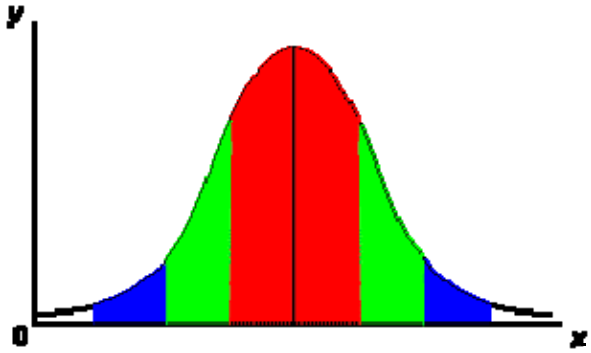
[4]The statistical definition of variance is the dispersion of the return generating density function about its mean. Standard deviation is the square root of variance. The standard deviation statistic that tells you how tightly all the various examples are clustered around the arithmetic mean in a series. The standard deviation of a series of asset returns is a common measure of the volatility, or risk of the asset. When the data set are tightly bunched together, and the bell-shaped curve is steep, the standard deviation is small. When the examples are spread apart, and the bell curve is relatively flat, that indicates a relatively large standard deviation. All else equal, there is greater uncertainty regarding the final outcome.



One standard deviation away from the mean in either direction on the horizontal axis (the red area on the above graph) accounts for roughly 68 percent of the samples in the set. Two standard deviations away from the mean (the red and green areas) account for roughly 95 percent of the total sample set. Three standard deviations (the red, green and blue areas) account for about 99 percent of the data points.

[5] Bailey, Jeffrey V., "Investment Policy: The Missing Link," Pension Fund Investment Management, ed. Frank J. Fabozzi (Probus Publishing Co., 1990) p.13.

An IPS can ensure that a portfolio does not seek contradictory objectives from the outset. More important in practice, however, and with a greater beneficial effect on long term returns, adherence to the procedures set forth in a Policy Statement deters hasty, ill-considered reactions to market volatility.

> The principal reason for articulating long-term investment policy explicitly and in writing is to…protect the portfolio from ad hoc revisions of sound long-term policy, and to…hold to long-term policy when short-term exigencies are most distressing and the policy is most in doubt. History teaches that both investment managers and clients need help if they are to hold successfully to the discipline of long-term commitments. This means restraining themselves from reacting inappropriately to disconcerting short-term data and keeping themselves from taking those unwise actions that seem so "obvious" and urgent to optimists at market highs and to pessimists at market lows. The best shield for long-term policies against the outrageous attacks of acute short-term data and distress are knowledge and understanding committed to writing. All too often, investment policy is both vague and implicit, left to be "resolved" only in haste, when unusually distressing market conditions are putting the pressure on and when it is all too easy to make the wrong decision at the wrong time for the wrong reasons."[6]

INVESTMENT PRUDENCE

Whether or not investors define their investment objectives and procedures in a written Investment Policy Statement, they enhance their chances for achieving a successful outcome if they adopt a prudent investment approach. But what, exactly, constitutes prudence?

Trustees and fiduciaries have long been legally required "to make such investments and only such investments as a prudent man would make of his own property."[7] For fiduciary investors, state statutes or federal pension law govern the approaches that are acceptable and defensible. Fiduciary law is dynamic, as courts interpret legal requirements, and legislatures define and refine the trust investment process. Increasingly, trust law relies on developments in the academic community to ensure that individuals responsible for investing funds for others follow a sound decision making process.

Prior law restricted trustees' investment flexibility through the imposition of "legal lists" of approved investments, or through implicit endorsement of investments used by most other trustees ("safety in numbers"). This approach meant that trustees could find safety from liability primarily in extremely low risk, low return investments. Too often, however, the perverse result was that, after inflation and taxes, trust estates depreciated in value. To correct this problem, trust law was restated in the 1990s. Many state legislatures have enacted trust law based on new Prudent Investor Standards promulgated by the Third Restatement of the Law (Trusts).[8]

For example, the California Uniform Prudent Investor Act, which became effective on January 1, 1996, represents the state's explicit endorsement of many of the concepts underlying Modern Portfolio Theory. The investment principles embodied in the Act apply to any investor concerned with prudent wealth management:

> In evaluating the prudence of any individual investment, the investment must be considered as a component of the overall trust portfolio, rather than in isolation;
>
> The tradeoff between risk and return should be the fiduciary's principal consideration;

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[6] Ellis, Charles D., Investment Policy. Business One Irwin Homewood, Illinois (1985), pp. 53-54.

[7] *Restatement of the Law, Second, of Trusts,* §227 (1959)

[8] *Restatement of the Law, Third, of Trusts - Prudent Investor Rule* (1992)
Uniform Prudent Investor Act National Conference of Commissioners on Uniform State Laws
Chicago October 1994. Adopted by the State of California July 5, 1995

> No investment is deemed imprudent per se; consequently, the trustee may invest in any instrument that would play an appropriate role in achieving the trust's objectives, provided that it meets the requirements of prudent investing;
>
> Fiduciaries must diversify the trust's investments unless it is prudent not to do so;
>
> Trustees may delegate responsibilities for investment management to appropriately selected qualified third parties;
>
> The fiduciary must balance the need for current income with protection of purchasing power;
>
> A prudently managed portfolio avoids unjustified expenses.

The updated and revised Prudent Investor Rule frees trustees from the straitjacket of low risk / low return investments, and gives them broad latitude to invest in essentially any asset. The price they pay for this liberty is adherence to standards of prudence that require use of appropriate care, skill and caution in the design, implementation and management of portfolios. A prudent asset management process considers diversification, asset allocation, risk management and cost control to be critical components of investment success for any modern portfolio. A prudent investment management process contemplates something more than looking for the investment or investment manager with the best track record. SCLC believes that portfolio design and asset management deserve the same level of care, skill and caution required by prudent fiduciaries investing money for the benefit of others.

MARKET EFFICIENCY

In a seminal work published in 1970, Eugene Fama argued that the U.S. stock market is efficient, in the sense that the current price of every security fully reflects all available information that could have possible bearing on its market valuation.[9] Information includes all knowledge of past price movements and all publicly available information such as that found in corporate financial statements, government and industry reports, management announcements, etc. This information cannot help anyone develop a trading strategy (after accounting for research and transaction costs) that generates abnormal or excess profits because the security's current price already reflects all known information. The rate of such incorporation has accelerated in recent years through widespread use of computer and communications technologies.[10]

David Friedman[11] draws a useful analogy between the investor confronting an efficient market and a commuter deciding whether to change lanes:

> When traffic gets heavy, your lane is always the slow one. You switch. A few minutes later, the battered blue pickup that was just behind you in the lane you left is in front of you. To understand why it is so difficult to follow a successful strategy of lane changing, consider that other people are also looking for a faster lane – and cars moving into a fast lane slow it down, just as people moving into a short line in the supermarket lengthen it. In equilibrium, all lanes are equally slow.

Similarly, as each datum of new information becomes known to the markets, the first few traders to obtain it, correctly gauge its effect on prices, and execute trades accordingly. In the terms of the traffic analogy, they gain a slight advantage in speed over other commuters by being the first few drivers to move into the faster lane. As the datum spreads – almost instantaneously – through the population of traders, the advantage of trading diminishes rapidly. It disappears altogether when prices fully reflect the new datum. By that point,

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[9] Fama, Eugene, "Efficient Capital Markets: A Review of Theory and Empirical Work," Journal of Finance (May, 1970), pp. 383-417.

[10] Froot, Kenneth A. and Perold, Andre F., "New Trading Practices and Short-Run Market Efficiency," Working Paper #3498. National Bureau of Economic Research. Cambridge, MA (1990).

[11] Friedman, David, Hidden Order, Harper Collins Business, 1996, NY, NY.

however, trades based on that (no longer novel) datum are still working their way through broker/dealer back offices, en route to the trading floor. When these tardy trades are executed, they generate relative decrements to return, just as the last cohort of drivers to change lanes find their prior lane outpacing them.

For individual investors, the same phenomenon plays out time and time again. When a fund manager begins to accumulate a good track record, a hoard of investors rushing to chase returns rapidly dilutes his future success. Cash flows into the fund rise dramatically, and the manager must work harder to apply market insights over a broader range of buys and sells. Furthermore, if the manager truly possesses skill, he or she will raise fees to reflect the fact that skillful managers are both highly valued and in short supply. At the end of the day the manager, rather than the investor, captures the economic rents associated with investment skill. In short, the market-beating investor must discover the skillful manager before there is enough data to confirm the exisence of his skill. Given that it may be harder to pick a good manager than a good stock, this is a neat trick. There are now more mutual funds than stocks listed on the New York Stock Exhange!

The implications of Fama's argument are profound. If the market prices assets efficiently and rationally, then there are neither hidden nuggets of undervalued stocks, nor overvalued securities ripe for a fall, and futile attempts to beat the market are a waste of the investor's time and money.

Because the decision to buy just one stock is also a decision to forgo the investment opportunities of all other stocks, the price of each security implicitly reflects the prices of all other securities, and of all available information about them. That is, each security's price includes information about:

- its own expected return;
- the expected returns available from all other securities; and,
- the degree of uncertainty (risk) surrounding each security's return forecast.

Thus each individual security's price discounts for the unique risk/return factors of all securities. Consequently, securities prices are net of risks unique to any specific investment, and are discounted for differential expected returns to different securites.

In an efficient market, all assets have the same risk-adjusted returns (the discount rate for more risky investments is higher than the discount rate for less risky investments). If a security offered a risk/reward tradeoff more attractive than that offered by the market as a whole, profit maximizing investors would, according to the theory, sell their positions in the market (thus lowering the market price) to buy positions in the more attractive security (thus bidding up its price). This adjustment is made quickly and continues until the risk/reward equilibrium among all securities is restored. In the language of economists: an efficient market offers no projects with the expectation of positive net present value. The upshot of this line of argument is that, on average, the current market price of any security should be close to its economically justified price. It is difficult to beat the market simply because it is difficult to identify mispriced securities.

Although elegant and mathematically compelling, the Efficient Market Hypothesis remains controversial. Many portfolio managers claim that they have the skill to form portfolios with expected excess profit—i.e., returns higher than commensurate with the risks they take. However, earning a high return by assuming great risk is not a sign of skill anymore than earning a low return by investing in conservative investments signifies a lack of skill. The problem is that, whlile in any period there are managers who beat the market, their ranks are not at all stable. Professional managers may be correct in thinking they can beat the market today, but this claim is difficult to prove; and, is it not easy to identify which managers will outperform during future periods. A prudent choice requires a careful statistical analysis encompassing much more than a naïve examination of the realized sequence of investment returns ("track record"). If the realized sequence of returns is the product of luck, placing wealth in the hands of such a manager is not prudent and may lead to unpleasant consequences.

The key question, then, is whether to try to beat the market. Many investors seek to solve "intertemporal cash flow timing problems."[12] Borrowers use financial instruments like mortgages to move money from the future to the present; savers (buyers of financial assets) move money from the present into the future. A retirement accumulation portfolio, for example, is appropriate for individuals with current surplus labor income wishing to support future retirement consumption from financial asset income. The purchase of a Certificate of Deposit provides future interest earnings, the purchase of a stock provides the expectation of future dividends, the purchase of commercial real estate provides the expectation of future lease income, and so forth. Investors will sell the assets when they choose to bring the future income streams back into the present (redeem the money previously moved forward in time).

A critical decision point for all investors is how they seek to solve their intertemporal cash flow problems. If investors have no special insights or trading skills, or are unable to find profitable opportunities to exploit, then they will tend to use investment strategies that generate market-based returns. If investors have private information or unique skills that lead to a credible expectation that they can earn a higher-than-market return, they will forgo purchasing diversified, market-based financial instruments in favor of establishing more concentrated investment positions. However, generating excess returns may require great levels of skill (skills must not be merely better than average; but require the investor to be better than other competing professionals also seeking to beat the market).[13]

Thus the decision to employ an active management investment strategy[14] is warrented when the investor is confident either that he or she has a skill set sufficient to identify and profitably exploit investment opportunities; or, has identified managers with the requisite skills. The Prudent Investor Rule for trustees provides guidelines appropriate for individual investor portfolios:

> Active strategies, however, entail investigation and analysis expenses and tend to increase general transaction costs, including capital gains taxation. Additional risks also may result from the difficult judgments that may be involved and from the possible acceptance of a relatively high degree of diversifiable risk. These considerations are relevant to the trustee initially in deciding whether, to what extent, and in what manner to undertake an active investment strategy and then in the process of implementing any such decisions.
>
> If the extra costs and risks of an investment program are substantial, these added costs and risks must be justified by realistically evaluated return expectations. Accordingly, a decision to proceed with such a program involves judgments by the trustee that: (a) gains from the course of action in question can reasonably be expected to compensate for its additional costs and risks; (b) the course of action to be undertaken is reasonable in terms of its economic rationale and its role within the trust portfolio; and (c) there is a credible basis for concluding that the trustee—or the manager of a particular activity—possesses or has access to the competence necessary to carry out the program.[15]

Given the academic presumption of market efficiency, hiring a manager to beat the market is prudent only if careful analysis documents consistent and persistent investment skill. A credible analysis, however, requires a sophisticated set of statistical tools with which to evaluate an historical track record.

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[12] Harris, Larry, Trading & Exchanges: Market Microstructure for Practitioners (Oxford University Press, 2003), p. 178.
[13] Ibid., pp. 475-476.
[14] A passive investment management strategy consists of tracking the market without attempting to anticipate its evolution; active management, by contrast, is the attempt to perform better than the market primarily through security selection or market timing.
[15] Restatement of the Law, Third, of Trusts - Prudent Investor Rule (1990), Comment h (Prudent investment: theories and strategies).

There is a risk/return tradeoff implicit in choosing any investment management strategy. Active investment management may provide additional funds at the cost of assuming a higher risk of failing to achieve the portfolio's *required* return. [16] On the other hand, passive management secures market-based returns in broadly diversified portfolios (thus avoiding risky bets); but may limit the investor's ability to earn excess returns. The investor should develop a considered opinion about market efficiency, and should document the asset management approach in the Investment Policy Statement. When making the choice between passive and active investment management it is vital to determine if your investment goal can be defined as an attempt to solve an "intertemporal cash flow problem" or as an attempt to "beat the market." Although the attempt to beat the market involves a speculative dimension that may or may not be justified in terms of the underlying investment objectives, it is nevertheless inappropriate to rule out such a strategy as imprudent. Indeed, if the returns of a benchmark index such as the S&P 500 bear little relation to the investor's personal economic objectives, then a passive investment in such an index may be every bit as imprudent as hiring an active manager based primarily on the manager's historical track record.

RISK

Securities pose two basic types of risk:

> Systematic risk (sometimes called market risk), "…due to common factors facing all firms in the economy and/or industry: the business cycle, interest rates, inflation, and so on."[17]; and,
>
> Unsystematic risk (also known as unique risk), the risk unique to each firm, such as the possibility of labor strife, litigation, product obsolescence, raw material scarcity, and management ineptitude.

The global capital market, consisting of all the world's capital allocated among all available investments, and considered as a single aggregate portfolio, is devoid of unsystematic risk. It is not uniquely risky to make any particular investment if one has made all available investments, weighing each against all the others. This is to say, a portfolio consisting exclusively of U.S. stocks and bonds carries the economic risks of unwise domestic fiscal and monetary policies. A global portfolio, however, mitigates such risks.

An investor must be compensated for bearing risk. But, considered as a single investment, the global capital market has diversified away all unsystematic risk, and thus demands no compensation for it. Thus, the global capital market sets prices without any expectation of bearing unsystematic risk. Under classic capital market theory, individual investors paying full market prices cannot expect to be rewarded for bearing unsystematic risk by owning only selected portions of the market. Because the future pattern of returns of a given security is unpredictable, those returns are distributed stochastically across the whole population of investors. Tomorrow's price for, e.g., GM stock may reward an investor who owns nothing else, or those who own none (i.e., everything but GM). The risk of owning nothing but GM, on the other hand, is borne completely by the owner. Unsystematic risk is, therefore, ultimately defined as "uncompensated risk." The more effectively a portfolio is diversified, the less uncompensated risk it bears.

The fully diversified individual investor choosing to invest globally has an *unconditional* expectation of reward as measured by the expected return ("price of risk") offered by risky investments multiplied by the amount of risk taken by investor [expected reward = (price of risk)(amount of risk)]. Investors placing money with active managers, however, have only a *conditional* expectation of reward. Their expectation is conditioned, of course, on the likelihood that they have, in fact, identified a truly skilled manager.

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[16] In the 2004 Chairman's letter to shareholders of Berkshire Hathaway, Warren Buffett observes: "Over the last 35 years, American business has delivered terrific results. It should therefore have been easy for investors to earn juicy returns: All they had to do was piggyback Corporate America in a diversified, low-expense way. An index fund that they never touched would have done the job. Instead, many investors have had experiences ranging from mediocre to disastrous."

[17] White, Gerald, Sondhi, Ashwinpaul., and Fried, Dov, The Analysis And Use Of Financial Statements. John Wiley & Sons New York (1994), p. 294.

Two conclusions flow from these observations, both of which are embedded in the Prudent Investor Rule:

> The riskiness of any particular investment cannot be judged in isolation, but only in terms of its effect on the portfolio (indeed, the American Law Institute cautions trustees that there are no "safe" investments because even short-term U.S. Treasury securities involve certain types of risk); and,
>
> "Failure to diversify on a reasonable basis in order to reduce uncompensated risk is ordinarily a violation of both the duty of caution and the duties of care and skill…. Diversification is fundamental to the management of risk and is therefore a pervasive consideration in prudent investment management. So far as is practical, the duty to diversify ordinarily applies even within a portion of a trust portfolio…."[18]

Beyond the academic and legal discussions of investment risk, however, lies the more fundamental concept of risk from the investor's perspective. Without taking risk, the investor can expect to earn only the risk-free rate of return, defined as the return on short-term default-free securiries like a FDIC-insured certificate of deposit or a U.S. T-Bill. Unfortunately, the risk-free return is usually insufficient to keep pace with inflation after paying taxes. In other words, the real, after-tax risk-free rate of return has historically been close to 0%. Prudent portfolio management is a not a process of avoiding risk altogether (this would also mean avoiding return), or of ignoring risk (this is required for strategies designed to maximize return). Prudence requires that risk be measured and managed.

Unfortunately, such measurement and management remains an especially difficult task. Most investors conceptualize risk in terms of fuzzy labels: "low risk tolerance," "safe," "average risk tolerance," "moderate," "aggressive." These Ambiguous characterizations, however, must be converted operationally to explicit and readily understandable quantitative measures. Often, risk measures may be expressed in terms of volatility: "the annual standard deviation of the portfolio must not be greater than x;" in terms of probabilities: "the probability of a loss over a specified period should not exceed y%; in dollar terms: "the likelihood of a decine in value equal or greater than $$$ should not be more than z%; or, in terms of failure rates or confidence intervals: "the portfolio has an x% confidence interval with respect to achieving this economic goal." Other quantitative measures (range, shortfall probability, tracking error v. comparable benchmark, etc.) may also have useful applications. [19] No matter how you express the concept of investment risk, however, the fundamental point remains: "if portfolio managers are not managing portfolio risk, they are not managing portfolios."[20]

DIVERSIFICATION

Harry Markowitz, investigating the question of how to invest under conditions of uncertainty, completed the seminal work on portfolio diversification in the early 1950s. There is more to diversification, he noted, than simply buying many different investments. Intelligent diversification takes into account the contribution of each investment to the risk and return characteristics of the entire portfolio. According to Markowitz, to assess that contribution, the investor must consider the following factors:

> The <u>expected return</u> of the asset. This refers to the statistically most probable (mean expected) rate of return. The return expectation can be a forecasted return, it may be based on the asset's return history;

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[18] *Restatement of the Law, Third, of Trusts (Prudent Investor Rule),* Chapter 7 pp. 18, 23 and 25.

[19] Investors may be faced with many risk variables including inflation risk, longevity risk, tax and regulatory risk, labor income interruption/termination risk, etc.

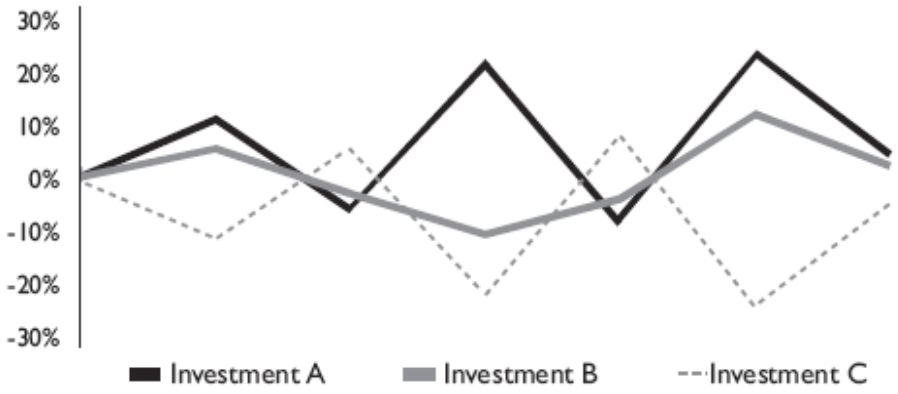
[20] Sykes Wilford, D., "Risk Measurement versus Risk Management," <u>Improving the Investment Process through Risk Management</u>, (Association for Investment Management and Research, 2003), p. 17.

The standard deviation of the asset. This refers to either the forecasted or the historical variability of the asset's returns. The higher the standard deviation, the greater the probable variance of any one period's return from the expected return. For example, an asset with an expected return of 10% and a standard deviation of 12 would be expected to generate actual returns of between -2% and +22% about 68% of the time, and between -14% and +34% about 95% of the time [± two standard deviations];

The correlation of the asset's returns to returns of other assets within the portfolio. The correlation coefficient measures how similarly the returns of any two assets behave under similar economic conditions. A correlation coefficient of perfect unity indicates that they will move in tandem, and that no risk reduction benefits can be achieved by their combination. Conversely, A correlation coefficient close to zero, or negative, indicates that the return patterns are not closely linked, and thus that a combination of such investments may significantly reduce overall portfolio risk. The value of the correlation statistic is an average taken over many periods and, for any single period, the actual co-movement of asset returns may differ from the average.

Figure 1.1 depicts returns from three investments. A and B exhibit perfect negative correlation: B's pattern of returns is the exact inverse of A's. A and C, on the other hand, exhibit positive correlation: they both tend to move in the same direction, to varying degrees, under similar economic circumstances.[21]

Figure 1.1: Investment Correlation



The long-term historical correlation of several asset classes may be seen in **Figure 1.2.**

[21] Technically, negative correlation indicates that when asset A's return is above its mean, asset B's return tends to be below its mean. Thus, in the same period, both investments might exhibit positive returns but remain negatively correlated. Negative correlation does not mean that when asset A increases in value, B decreases in value. Such a portfolio would go nowhere fast!

Figure 1.2: Correlation Matrix for Returns from Investment Categories
1973 through 2006

	# of Months Data	S&P 500 Stocks	US Large Value Stocks	US Small Stocks	US Small Value Stocks	MSCI EAFE Int'l Stocks	Int'l Small Stokcs	MSCI Emerging Markets	NAREIT Real Estate Incex	Citigroup World Bond Index
S&P 500 Stocks	397	1.00	0.85	0.81	0.75	0.55	0.40	0.59	0.52	-0.03
US Large Value Stocks*	397	0.85	1.00	0.76	0.84	0.48	0.37	0.51	0.59	-0.08
US Small Stocks**	397	0.81	0.76	1.00	0.92	0.50	0.45	0.65	0.63	-0.08
US Small Value Stocks***	397	0.75	0.84	0.92	1.00	0.48	0.44	0.61	0.66	-0.11
MSCI EAFE Int'l Stocks	397	0.55	0.48	0.50	0.48	1.00	0.85	0.58	0.36	0.43
Int'l Small Stocks****	397	0.40	0.37	0.45	0.44	0.85	1.00	0.54	0.31	0.40
MSCI Emerging Markets	228	0.59	0.51	0.65	0.61	0.58	0.54	1.00	0.32	0.00
NAREIT Real Estate Index	397	0.52	0.59	0.63	0.66	0.36	0.31	0.32	1.00	0.02
Citigroup World Bond Index	264	-0.03	-0.08	-0.08	-0.11	0.43	0.40	0.00	0.02	1.00

* Fama French Large Value
** CRSP 6-8 Decile
*** Fama French Small Value
**** DFA International Small Index

When investments are evaluated in isolation, their risk and return characteristics provide little information about the effect they will have on a given portfolio.[22] The correlation structure of the securities to be included in the portfolio is a key determinant of long-term investment success—yet, it often remains invisible to the average investor; or ignored in the chase to catch high returns.

Comprehensive diversification makes the measurement and control of overall portfolio risk possible. A portfolio concentrated in a few securities is exposed to so much unsystematic risk that it is difficult to reach reliable judgments regarding the range of expected future returns. Consider the example of emerging markets during the period 1988 through 2006. As maybe seen in Figure 1.3, emerging markets were extraordinarily volatile over the period: [23]

[22] Gibson, Roger C., Asset Allocation: Balancing Financial Risk (Business One Irwin, 1990), p. 118.
[23] International Finance Corporation Data reported by Ibbotson Associates (Chicago, Ill.).

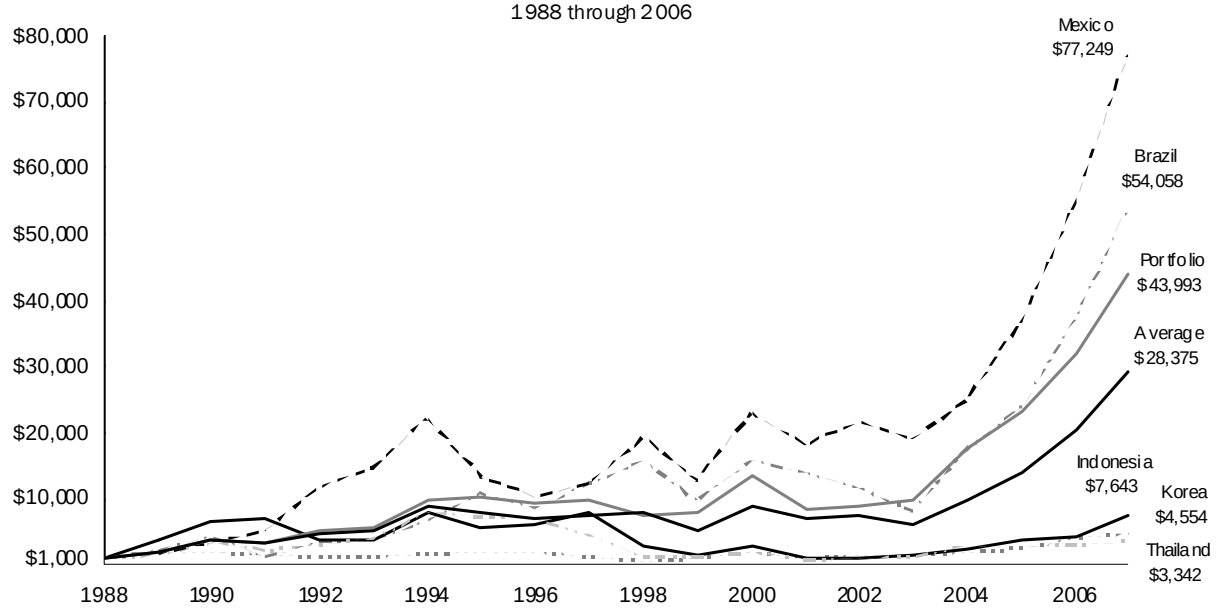
Figure 1.3: Emerging Country Returns
1988 through 2006

	Brazil	Korea	Mexico	Indonesia	Thailand	Portfolio
1988	129.9%	96.8%	66.3%	258.1%	47.5%	119.7%
1989	81.1%	1.4%	91.7%	81.9%	114.2%	74.1%
1990	-68.4%	-27.1%	63.1%	5.9%	-27.4%	-10.8%
1991	161.8%	-15.5%	125.2%	-44.0%	23.9%	50.3%
1992	9.6%	1.1%	25.6%	-0.6%	34.3%	14.0%
1993	73.0%	31.5%	49.2%	106.1%	105.0%	73.0%
1994	63.4%	23.8%	-39.9%	-26.2%	-9.2%	2.4%
1995	-19.3%	-3.1%	-21.3%	8.9%	-3.8%	-7.7%
1996	42.5%	-38.2%	18.6%	27.9%	-36.8%	2.8%
1997	27.4%	-66.6%	54.0%	-67.4%	-73.4%	-25.2%
1998	-39.3%	140.6%	-33.6%	-44.8%	10.9%	6.8%
1999	66.2%	92.0%	80.4%	92.7%	47.7%	75.8%
2000	-11.3%	-49.5%	-20.9%	-62.2%	-56.2%	-40.0%
2001	-17.0%	48.7%	19.4%	-8.5%	5.3%	9.6%
2002	-30.6%	8.6%	-12.8%	42.8%	27.5%	7.1%
2003	114.5%	35.8%	32.0%	78.2%	144.7%	81.1%
2004	36.8%	23.0%	48.0%	52.2%	-1.0%	31.8%
2005	56.9%	58.5%	49.0%	15.9%	9.2%	37.9%
2006	45.9%	12.8%	41.7%	74.7%	13.9%	37.8%
1988-2006	23.4%	8.3%	25.7%	11.3%	6.6%	22.0%

The average annualized return for these eight countries was 15%. On the other hand, an investor who followed a strategy of investing an equal percentage of a portfolio in each of these markets, rebalancing at the end of each year to restore that initial allocation, would have experienced a compounded annual return of 22%. The return premium due to the diversification (asset allocation policy) and risk control (rebalancing policy) was, therefore, 7%.

The effect of the diversification strategy may be seen in Figure 1.4:

Figure 1.4: Growth of $1,000 in Emerging Markets
1988 through 2006



The risk posed by a diversified portfolio is less than the weighted average risk of its individual assets. An effectively diversified portfolio contains assets that respond differently to new information. Their patterns of returns tend to offset or neutralize each other. The expected return to a portfolio, on the other hand, is the weighted average of the returns expected for each of its indiviudal assets.[24] The reduction in risk due to diversification does not result in a reduction in return. Effective portfolio diversification thus provides investors with rewards commensurate with a level of risk higher than they actually bear: "This is a major reason why diversification is valued and why the prudence of a trustee's investment is to be judged by its role in the trust portfolio rather than in isolation."[25]

Comprehensive diversification makes possible the measurement and control of overall portfolio risk. A portfolio concentrated in a few securities is exposed to so much unsystematic risk that reaching reliable judgments regarding the range of expected future returns is difficult. In Figure 1.4, the Indonesian market was down 44% in 1991, when the global trend in emerging markets generally was up (+50.3%). Indonesia in 1991 was not representative of emerging markets. Likewise, for any grouping of securities that are somewhat similar, and for any period, none of them are necessarily strongly correlated with the others, or with the group as a whole. By examining the behavior of any one of them, the investor can discern little about the behavior of all of them put together.

When, on the other hand, a portfolio owns enough securities to allow for statistically significant sampling, the investor can reach reliable judgments about risk and return. The amalgamation of the whole array of emerging markets results in what is effectively a virtual security, with its own risk and return characteristics, different from those of any of its components. The same is true for comprehensively diversified holdings of any other type of security, such as domestic small company stock or municipal bonds. This is why investors are interested in the published indices (e.g., the S&P 500, the Lehman Brothers Corporate & Government Bond Index, etc.) which reflect comprehensive diversification across a class of securities, or asset class. The behavior of these indices provides a point of reference, or benchmark, for the performance of securities of the same type.

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[24] Farrell, James L., Portfolio Management: Theory and Application (Irwin McGraw-Hill, 1997), p. 22.
[25] Restatement of the Law, Third, of Trusts (Prudent Investor Rule), The American Law Institute (1992), p. 26.

A virtual security is likewise created when diversified holdings across different asset classes are amalgamated into a portfolio. The risk and return characteristics of the portfolio, derived from those of its component asset classes, differ therefrom. However, it is difficult to calculate these portfolio characteristics. In practice, such calculations require specialized software.[26] Unless the investor performs such calculations, however, the overall character of the portfolio, and particularly the risk it poses, remains hidden. Yet these hidden data are the most important insights an investor can obtain. Without knowledge of overall portfolio risk and return, the investor is effectively blind with respect to the consequences of any particular investment decision.

ASSET ALLOCATION

The American Law Institute's explanation of the Prudent Investor Rule points out that, "asset allocation decisions are a fundamental aspect of an investment strategy and a starting point in formulating a plan of diversification."[27] The portfolio's asset allocation describes its percentage distribution among different kinds of investments or asset classes.[28] Asset allocation may be an important determinate of portfolio's expected long-term rate of return and the degree of risk assumed to achieve it.

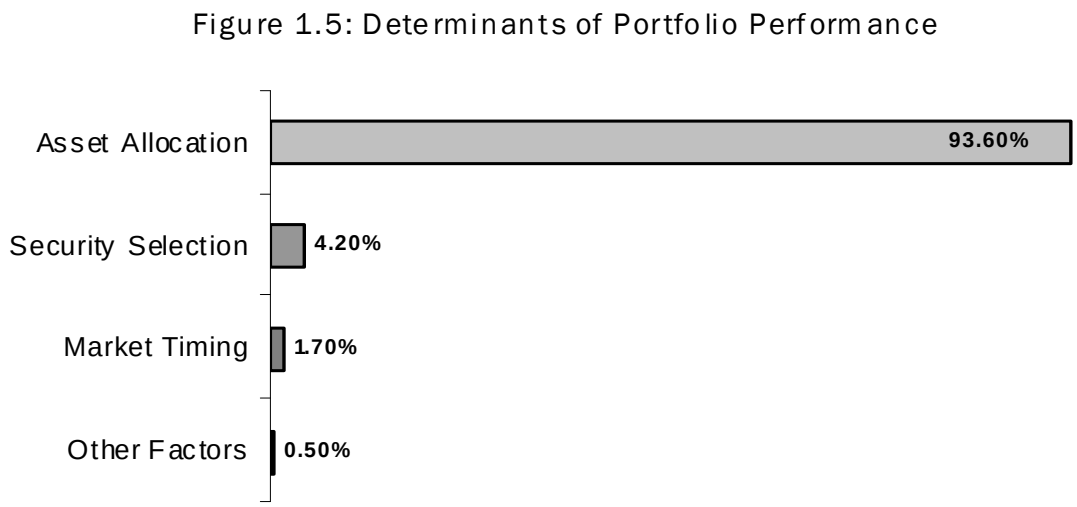
The importance of the asset allocation decision on long-term investment results is a subject of some current controversy. Conventional wisdom, based on a 1991 study, suggests that the asset allocation decision is the primary determinant of return variance for portfolios with long-term planning horizons, as is shown in Figure 1.5.

[26] For independent trials, the variance of a sum (i.e., a portfolio) equals the sum of the variances (i.e., the individual components). However, because of the correlation structure of securities within the portfolio, the variance of a sum equals both the sum of the variance and the sum of all cross-product (or 'covariance") terms. In a two asset portfolio, there are two individual asset variance terms plus two covariance terms; in a four asset portfolio there are four individual asset variance terms plus twelve covariance terms; in a ten asset portfolio there are ten individual asset variance terms plus ninety covariance terms; in a hundred asset portfolio there are one hundred individual asset variance terms plus nine hundred and ninety covariance terms. In the limit, as the number of assets grows large, the proportional risk of any individual asset moves asymptotically towards zero—only systematic or market risk remains. Labels like "safe assets" or "growth assets" become meaningless because investments cannot be evaluated in isolation but only from within the portfolio context.

[27] Restatement (Third) of The Law Trusts: Prudent Investor Rule The American Law Institute (1992)., p.25.

[28] One commentary suggests that "each asset class should include relatively homogeneous investments, and the asset classes should be mutually exclusive. For the purposes of risk control, an included asset class should not have extremely high expected correlations with other asset classes (or combinations of other asset classes). From a similar perspective, it is also desirable that the asset classes together make up a preponderance of world investable wealth." The authors point out the use of asset classes within the strategic asset allocation context: "Distinct (and well-differentiated) groups of assets should have distinct exposures to factors and/or exposures to different factors. These observations suggest a key economic role of strategic asset allocation: A strategic asset allocation specifies the investor's desired exposures to systematic risk". Sharpe, William F., Chen, Peng, Pinto, Jerald E. & McLeavey, Dennis W., "Asset Allocation," Managing Investment Portfolios, (John Wiley & Sons, 2007), pp. 230-320.

Figure 1.5



From a short-term perspective, these findings are counterintuitive, since over the short run, stock selection and transaction timing have a significant impact on returns. But focusing on the short term can be detrimental for investors with longer planning horizons. In fact, the study cited above found that market-timing activities actually *subtracted* returns from portfolios over planning horizons longer than ten years. The study, which examines large pension plans, concludes that asset allocation explains 90% of the variation in return over time of the average pension plan.[29] However, the study is controversial because an averaging function is also *ipso facto* a smoothing function. Therefore the study does not focus on the time series of returns for individual retirement plan portfolios, nor does it explain the reasons why individual portfolio returns differ from each other.

By contrast, some recent theoretical studies suggest that, even over long planning horizons, security selection should dominate asset allocation decisions with respect to its affect on portfolio performance. For example, a 2003 study of international investment decision making outlined five factors that could explain investment returns: (1) asset allocation, (2) country allocation, (3) global industry sector allocation, (4) country-specific industry sector allocation, and (5) security selection. The authors isolated each factor and simulated 10,000 portfolios (60% stock/40% fixed income asset allocation) using data based solely on the single factor from 1987 through 2001. Portfolios based on the security selection factor had the greatest range of returns; portfolios based on the asset allocation factor had the smallest dispersion of returns. Therefore, the authors conclude that security selection has the greatest potential for influencing long-term investment returns.[30]

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[29] Brinson, Gary P., Singer, Brian D., and Beebower, Gilbert L., "Determinants of Portfolio Performance," Financial Analysts Journal May-June, 1991)

[30] Kritzman, Mark & Page, Sebastien, "The Hierarchy of Investment Choice," Journal of Portfolio Management (Summer, 2003), pp. 11-23.

Other recent studies come to a different conclusion. For example, a 2000 study of the affect of asset allocation on investment performance points out that the importance of asset allocation depends on the investment issue under consideration.[31] Specifically, the investor might be interested in knowing:

1. What percentage of a portfolio's ups and downs (variability in return) is explained, over time, by its asset allocation choices? or,
2. How much of the performance difference between two distinct portfolios can, over time, be explained by differences in their asset allocation? or,
3. How much of a specific portfolio's actual returns can, over time, be explained by its asset allocation?

These are very different questions and require separate methods of analysis. The authors decompose the monthly returns of balanced mutual funds over a ten-year period into a 'policy' return (the return attributable to the fund's asset allocation, and an 'active' return (the remaining return or: {total actual return – policy return}). The study confirms that approximately 90% of the variability in the returns of the average (median) fund can be explained by its asset allocation decisions. When funds are compared to each other, however, the conclusions differ. If two funds select the same asset allocation and each invests in the same cross-section of passively managed indexes, 100% of the variability of returns across time of each fund would be attributable to asset allocation policy.[32] In fact, however, the mutual funds under evaluation differed with respect to both their asset allocations and their security selection, market timing, fees and other factors. The study concludes that, on average, asset allocation decisions account for about 40% of the variation of returns across funds.

Finally, the authors test for the percentage of individual fund returns[33] that, over time, can be explained by asset allocation. This is the ratio of policy return divided by total actual return. A hypothetical fund with a consistent asset allocation policy implemented by a purely passively investment strategy will, by definition have a ratio equal to one. Funds exhibiting ratios greater than one will have subtracted value through active management decisions (actual total returns in the demoninator fail to equal the policy returns in the numerator); funds exhibiting ratios less than one will have added value through market timing (decisions to change asset allocation to exploit forecasted market developments) or security selection. The distribution of ratio values is very interesing. The median result (50th percentile) was 1.00—on average, actively managed mutual funds neither added nor subtracted value during the period under evaluation.[34] The best actively managed funds (5th percentile) exhibit ratios of 0.82; however, the worst performing funds exhibit ratios of 1.32. But greater dispersion of results is simply another expression for investment risk and uncertainty.

The authors derive two conclusions from these results:

1. Because the active managers, as a group, cannot achieve a return greater than the return of the market (the average performance before costs of all investors must equal the performance of the market), asset allocation policy explains, on average, approximately 100 percent of the returns of mutual funds.

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[31] Ibbotson, Roger G., & Kaplan, Paul D., "Does Asset Allocation Policy Explain 40, 90, ore 100 Percent of Performance?" Financial Analysis Journal (January/February, 2000), pp. 26-33.

[32] Likewise, if two funds had the same asset allocation policy but each invested in a separate set of securities, asset allocation would explain 0% of the return differences over time.

[33] As opposed to the percentage of the variability of return.

[34] Results are pre-tax. For taxable investors actively managed funds may trigger substantial income tax liabilities because of their higher level of turnover. It is interesting to note that the inability to add value is also a test of the efficient market hypothesis. In this case, markets are considered efficient if the profits derived from active management are unable to overcome extra costs and risks. Forecasts generate, on average, zero net profit. The distribution in this study is skewed towards the downside indicating that finding superior investment managers is a difficult task.

2. If the investor has the ability to select superior managers before committing funds, there is a possibility of earning market-beating returns. This entails not only a close examination of risk-adjusted historical results, but also the assumption that such results will persist into the future.

The implications for investment policy are clear:

Over longer planning periods, the asset allocation decision is an important factor in determining returns;

The choice of active management may be prudent; however, the investor should be aware that the attempt to beat the market is, itself, a significant contributor to portfolio risk; and

Long-term policy should be designed to insulate the portfolio, cushioning the impact of business and market cycles, and forestalling ill-considered decisions based on short-term factors. Abandoning policy increases portfolio risk by subjecting assets to the vagaries of transitory economic conditions.

In the treasure hunting model, the money manager may concentrate on purchase and sale of indivdual securities (stocks & bonds). By contast, the prudence model emphasizes asset class investing rather than security selection and timing of buy/sell transactions.[35] Asset classes may represent the broad cross section of all (or most) securities within a capital market. A commonly used vehicle for such investments is index funds, although there are many investment product variations on this theme.

An asset class is a building block of a portfolio. An asset class:

- Consists of securities that exhibit common statistical, economic or accounting characteristics.
- Is expected to exhibit differing risk/reward responses to changes in economic conditions.
- May be generally categorized into two 'macro' groupings; fixed income (bonds), and equity (stocks).

U.S. EQUITIES

Historically, returns from U.S. stocks have far outpaced those from investment grade U.S. corporate and government debt. For example, one dollar invested in common stocks (as represented by the Standard & Poor's 500 stock index) at the beginning of 1926 would have been worth $2,533.20 (assuming dividend reinvestment) by the end of 2004. The same dollar invested in long term U.S. Government Bonds would have been worth just $65.70. If invested in U.S. Treasury Bills (30-day), the dollar would have grown to only $17.90. Inflation over this period required an increase to $10.60 simply to maintain purchasing power. The greatest return on investment over this period was produced by small stocks[36] which increased the value of each 1926 dollar to $13,641.20 by the end of 2004.[37]

[35] Under certain conditions, it may be prudent to eschew broad-scope diversification. This is, however, a complex issue \ beyond the scope of an introductory essay on portfolio management. Interested readers may find further information in the working paper: "Prudence" which is currently posted on the firm's website at schultzcollins.com.
[36] As measured by the 9th and 10th deciles of the Center for Research in Securities Prices [CRSP] database.
[37] Ibbotson Associates, (Chicago, 2005).

The fact that equity investments have outperformed fixed income investments over long time horizons is demonstrated empirically in the following table:

Figure 2.1: Nominal Annualized Returns
1926 through 2006

Time Period	# of Years	S&P 500	U.S. Long Term Government Bonds	Inflation (CPI)
1926-2006	81	10.42%	5.42%	3.03%
1957-2006	50	10.62%	6.77%	4.06%
1967-2006	40	10.98%	7.77%	4.64%
1977-2006	30	12.47%	8.97%	4.23%
1987-2006	20	11.80%	8.61%	3.06%
1997-2006	10	8.42%	7.83%	2.44%
2002-2006	5	6.19%	7.19%	2.69%

The historical advantgage of equities is even better domonstrated when returns are adjusted for inflation.

Figure 2.2: Inflation Adjusted Annualized Returns
1926 through 2006

Time Period	# of Years	S&P 500	U.S. Long Term Government Bonds	Inflation (CPI)
1926-2006	81	7.17%	2.31%	3.03%
1957-2006	50	6.31%	2.61%	4.06%
1967-2006	40	6.06%	3.00%	4.64%
1977-2006	30	7.90%	4.55%	4.23%
1987-2006	20	8.48%	5.39%	3.06%
1997-2006	10	5.84%	5.27%	2.44%
2002-2007	5	3.41%	4.38%	2.69%

Equities have consistently and significantly outperformed inflation over extended holding periods.[38]

[38] The reason for the magnitude of U.S. stocks outperformance of U.S. bonds, however, remains controversial. Economic theory suggests that historical excess reward (stock return – risk free rate = equity risk premium) received by owners of U.S. stocks is abnormally high when adjusted for risk; or, abnormally high when compared to the rewards to holding stock achieved by investors in foreign capital markets. Economists refer to this controversy as the 'Equity Risk Premium Puzzle.' The reader is cautioned that the empirical fact of equity outperformance is by no means a guarantee that it will continue to outperform fixed income in the future. Mark Rubinstein, for example, asks: "how long must an investor be prepared to wait before the probability becomes high that an all-stock portfolio will outperform an all-bond portfolio?" Rubinstein develops the following theorem: Assume that all available assets collectively follow a stationary random walk in continuous time (with finite variance). Let X and Y be the values after elapsed time t > 0 from following two strategies (with equal initial total investment), each being the result of continuously rebalancing a portfolio to maintain constant proportions in the available assets. Then:

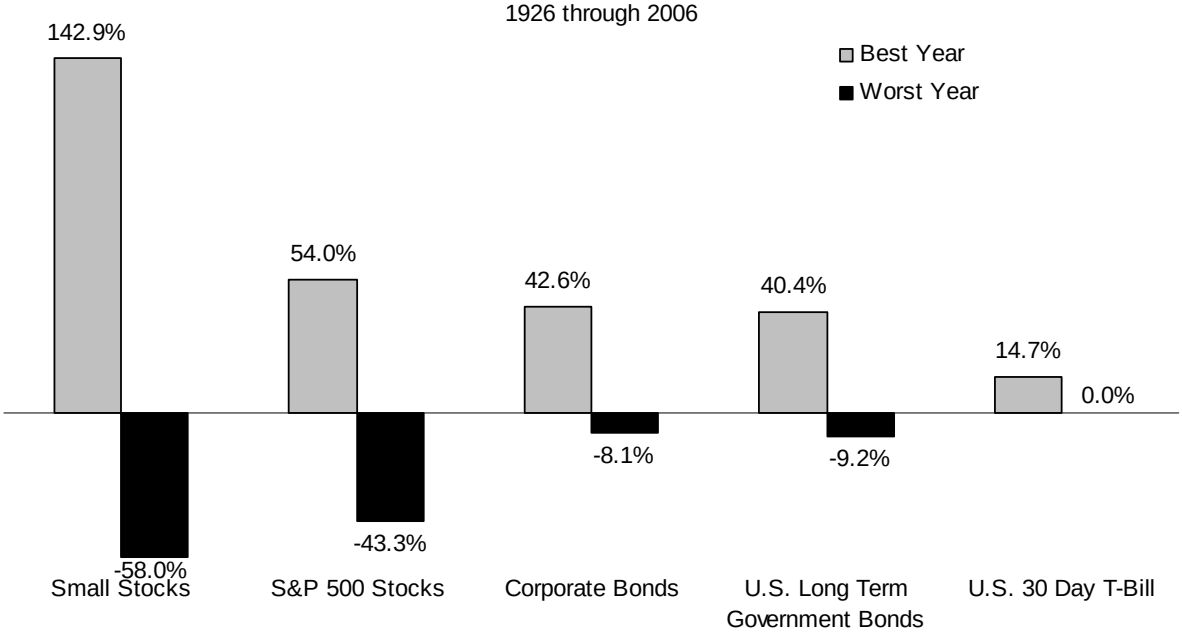
$$\text{Probability } (X > Y) = N\left\{\frac{(\mu_X - \mu_Y)\sqrt{t}}{[\sigma_X^2 - 2\rho\sigma_X\sigma_Y + \sigma_Y^2]^{1/2}}\right\}$$

where N is a joint standard lognormal probability distribution, μ_{Xt} is the expected value of log (X), μ_{Yt} is the expected value of log (Y), $\sigma_X\sqrt{t}$ is the standard deviation of log (x), $\sigma_Y\sqrt{t}$ is the standard deviation of log (Y), and ρ is the correlation between log (X) and log (Y).
Assuming, based on a reasonable sample of historical data, that stocks offer a 2.5% return premium over bonds, with the standard deviation of stocks equal to 18% and the standard deviation of bonds equal to 10% with a correlation of 0.4, in order to be 95% confident that an all stock portfolio will outperform an all bond portfolio requires a planning horizon of 123 years. Rubinstein, Mark "Continuously Rebalanced Investment Strategies," Journal of Portfolio Management (Fall, 1991).

Volatility and Return

Given a long-term planning horizon, equity returns are generally higher than fixed income returns. In the short run, however, equity returns are more volatile. Equity investors must be compensated for bearing this increased risk. The following graph highlights the ranges of annual returns for five major asset classes over the 81-year period from 1926 through 2006.[39] All returns are nominal – that is, they have not been adjusted for inflation.

Figure 2.3: Best and Worst Annual Returns
1926 through 2006



The widest range of returns (i.e., the most volatile asset classes) both come from equities, with small company stock returns hitting a high of +142.9% in 1933 and a low of –58.0% in 1937. The S&P 500 has a narrower range of historical returns. Its best month was also in 1933, when it advanced by +54.0%, while its return was –43.3% in 1931.

Generally, fixed-income investments are less volatile. Returns from corporate bonds ranged from +42.6% (1982) to –8.01% (1969); Government Bonds have experienced returns between +40.4% (1982) and -9.2% (1967). U.S. Treasury Bills have never had a nominal loss greater than a small fraction of 1%, although they have often lagged inflation. Although Treasury Bills sometimes provide good short-term inflation protection, their long-term inflation adjusted track record is poor. Their best ten-year period was 1981 through 1990, during which time they produced an annualized return of 3.3% above inflation. Over the sixty years between 1934 and 1993, their average annualized return lagged 0.14% below inflation.[40]

[39] Ibbotson Associates, Op. Cit.
[40] Ibbotson Associates, Op. Cit.

Therefore, when a portfolio with a long-term planning horizon requires returns above inflation, historical data indicate that a significant portion of assets should be invested in U.S. equities.[41]

U.S. FIXED INCOME

In general, fixed income returns tend to be less variable than equity returns, and therefore, have lower expected long-term returns. Much of the return variability in bonds and other fixed income investments is attributable to maturity risk. The greater the period to maturity, the greater the risk to the investor. As interest rates and issuer credit ratings change over time, the market value (that is, the net present value) of maturity proceeds, plus interim coupon payments, fluctuates. The fundamental bond pricing theorm states that increases in interest rates or reductions in issuer credit rating cause the market value of the bond to decrease, and vice versa. The magnitude of the price change is directly related to the time remaining until maturity, and may be calculated using technical measures of price sensitivity known as duration and convexity.[42] Prices fluctuate for all types of bonds, irrespective of whether they are issued by a corporation or are backed by the U.S. Government. Indeed, when the Federal Reserve Bank raised interest rates to combat inflation during the 1980's, long-term U.S. Treasuries suffered a substanital decrease in value.[43]

Although bonds may exhibit considerable price variability, returns from U.S. long-term fixed income assets have generally not matched returns from U.S. equity. This fact suggests that an optimal combination of short term fixed income assets and equities will yield a return superior to a long-term bond portfolio. For example, during the period 1973 through 2006 the increased returns from holding longer maturity bonds was not compensated in proportion to their increased risk. The data suggest that the optimal maturity weighting for a fixed income portfolio is five years or less:[44]

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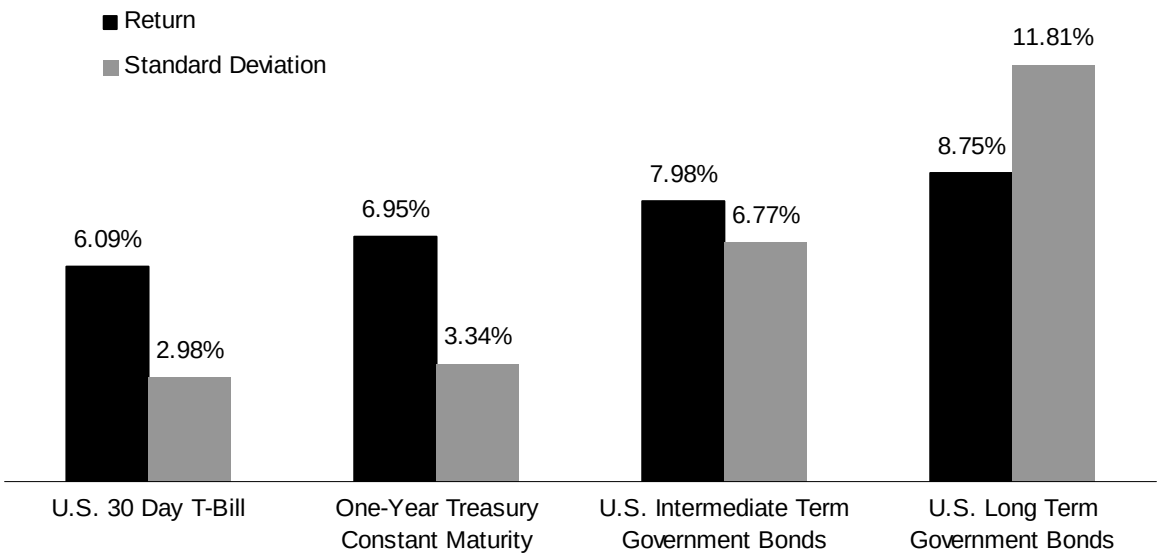
[41] The reader should keep in mind that long-term averages are calculated for paper indexes lacking fees, trading costs and other expenses. Additionally, results apply only the in absence of interim cash flows. Design and management of portfolios subject to cash flows (e.g., retirement income distributions) is very different from design and management of portfolios seeking to generate a high amount of terminal wealth. The former are consumption-oriented portfolios, the latter are wealth-accumulation oriented. Thus, for example, the asset allocation decision to load for equities under a distributional regime may be counterproductive if high inflation increases the need for high distributions during a time when inflationary pressures decrease stock prices. Although long-term equity returns have, on average, outpaced inflation, the investor must live with *actual* results not *average* results. This introductory essay, in the main, does not discuss portfolio design or asset allocation decisions in the face of liabilities.

[42] Duration and convexity are the first and second derivatives, respectively, of the ratio of price change to yield change.

[43] Jones, Charles P. Investments: Analysis And Management. John Wiley & Sons, New York (1994), pp. 182-186.

[44] This discussion assumes that the investor wishes to focus on the objective of enhancing reward per unit of risk over the applicable planning horizon. Investors faced with consumption liabilities, however, may wish to include long-term bonds not for their reward-to-risk characteristics but rather for their ability to hedge against future economic states that might be detrimental to a smooth consumption path. In cases where the asset management objective requires the investor to hedge long-term liabilities, the "safe" asset may be a long-term bond; the "risky" asset may be a short term bond.

Figure 2.4: Fixed Income Maturity and the Risk/Reward Tradeoff
1973 through 2006



Additional academic data strongly support the position that analysts are unable to forecast interest rate changes consistently. Lengthening bond maturities to take advantage of forecasted interest rate declines, therefore, will yield uncertain results at the cost of certain transaction expenses. Comprehensive analysis of bond price changes relative to forecasted predictions indicates that, like equities, bonds fully reflect all available information. This analysis also indicates that it is "hard to be able to consistently forecast interest rates with greater accuracy than a no-change model."[45]

Why Own Any Bonds?

In reviewing historical returns from bonds and equities, an investor may conclude that the lower expected returns of bonds should disqualify them as an asset class, and that the portfolio should consist solely of higher-return equities. Often, an investor's stated primary objective is to maximize investment return. The primary purpose of a multi-asset class portfolio, however, is not to maximize return (leveraged derivatives are far more effective for generating extremely high returns), nor to eliminate risk. Rather, multiple asset class portfolios are intended to enhance the ratio of reward to risk, so that the investor has the expectation (not the guarantee) of adequate reward for each unit of risk assumed. As R. Charles Tschampion, Director of the GM pension plan, writes:

[45] Sharpe, William, and Alexander, Gordon, Investments Prentice Hall, Englewood Cliffs, New Jersey (1990), p 380. For a recent discussion of the difficulties of accurate macroeconomic forecasting, see Cohen, Abby Joseph, "Aristotle on Investment Decision Making," Financial Analysts Journal (July/August, 2005).

> Two maxims are important in portfolio management. The first is: Investment management is not an art, and it is not a science; it is an engineering endeavor. The second is: Risk can be managed but return cannot.[46]

It is safe to say that most investors do not think about enhancing ratios when they invest. They think about increasing returns. Although many investors want to maximize returns, most would find the necessary steps to be intolerably risky. Thus the primary reasons for including U.S. fixed income investments in the portfolio are to:

> Control portfolio risk by achieving returns that approximate the inflation rate, with relatively low levels of variance; and,
>
> Provide portfolio diversification by generating a different pattern of return from that of equities.[47]

INTERNATIONAL EQUITY

If stock market returns in every country moved in perfect lock step, and generated equal results, there would be no advantage to owning foreign stocks. However, the lack of perfect correlation between returns of different foreign stock markets indicates that there may be potential advantages to including foreign stocks in a portfolio. During the 1980s and early 1990s, studies of international stock diversification (from the perspective of an American investor) were almost unanimous in their recommendation to hold foreign equity within the portfolio. The primary reasons for the recommendation to diversify internationally were:

1. High returns on foreign stocks; and,
2. Low correlation between US and foreign stock market returns.

One study, for example, highlighted the less than perfect correlation between stock markets of developed nations to the U.S. stock market (perfect correlation = 1.00) for the period February 1986 through March 1991:[48]

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[46] Tschampion, R. C., "Financial Risk Management in Global Portfolios," Investing Worldwide VI (AIMR, 1995), p. 67.

[47] Nobel Prize winner Paul Samuelson neatly summarizes a second line of argument against defaulting to a 100% equity position: "factual happenstance is not arithmetical necessity." Samuelson, Paul A., "The Long-Term Case for Equities and how it can be oversold," The Journal of Portfolio Management (Fall, 1994), pp. 15-24. Briefly, Samuelson argues that if stocks must always beat bonds in the long run, then the investor must believe:

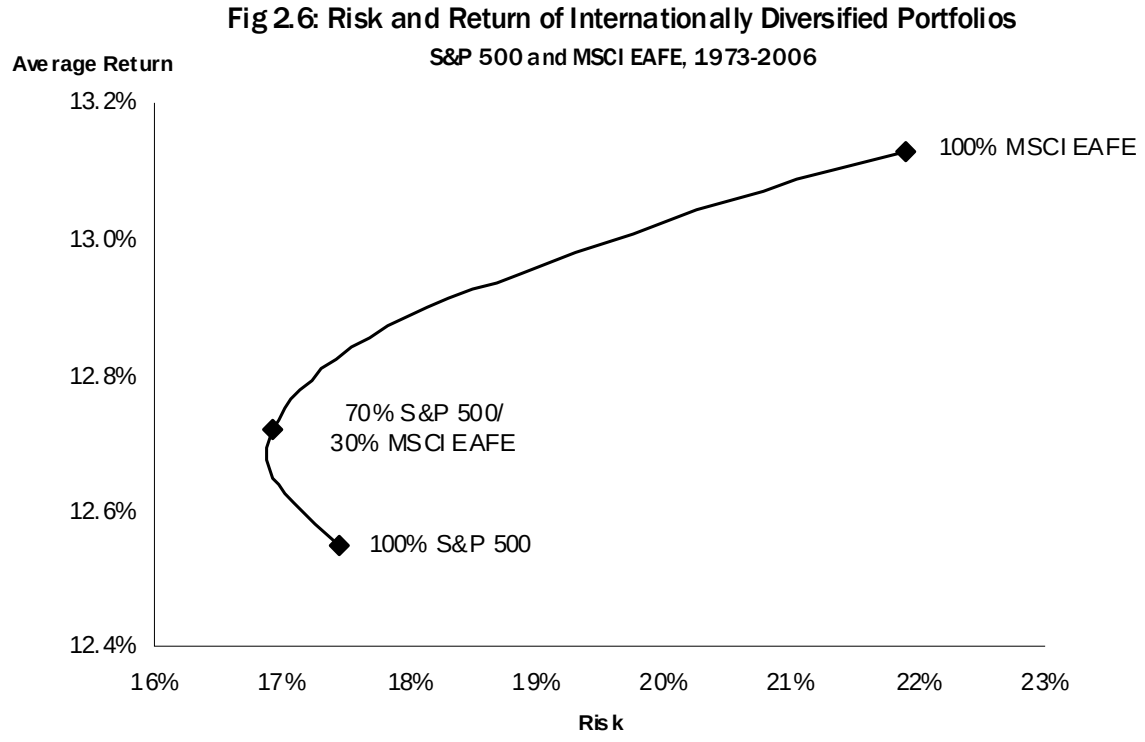
1. Long-term bonds will disappear. This result would, however, violate capital market pricing theory, which advises holding the entire range of assets according to their market weightings because, in equilibrium, expected returns (prices) are set so that each asset in the market clears. Because bonds are a part of the capital market, on a risk-adjusted basis, prices should bring demand for and supply of this asset class into alignment with all other competing assets.
2. No price/earnings ratio will ever be "too high," so that equities in the future could never be said to have expected returns that are lower than bonds. But even if historical financial data has been generated by a stationary or stable probability process, it still does not follow that random draws from the process will create such a preponderance of superior future outcomes that you would always opt for a 100% equity position. In Samuelson's words: "The urn from which future draws gets taken is altered endogenously by one-way movements of market levels."

[48] Divecha, A. B., Drach, J., & Stefek, D., "Emerging Markets: A Quantitative Perspective," The Journal of Portfolio Management (Fall, 1992), p. 48.

Figure 2.5: Correlatlion of U.S. and Foreign Equity Returns: 2/86 – 3/91

Country	Correlation to U.S. Stocks	Country	Correlation to U.S. Stocks
Australia	0.49	Japan	0.25
Austria	0.14	Netherlands	0.69
Canada	0.82	Norway	0.55
Denmark	0.30	New Zealand	0.39
Finland	0.42	South Africa	0.24
France	0.48	Spain	0.49
Germany	0.39	Sweden	0.46
Ireland	0.47	Switzerland	0.61
Italy	0.34	United Kingdom	0.67

Investing in foreign stocks enabled a portfolio to realize equity returns while significantly lowering risk. In terms of the allocation between U.S. stocks (proxied by the S&P 500) and international stocks (proxied by the Morgan Stanley EAFE--Europe, Australia, Far East Markets--Index) shown in the following graph, a 70% S&P 500 / 30% EAFE blend provided the optimal risk/reward combination over the period 1973 through 2006:



Further studies, however, cautioned that the correlation statistic is not constant; and, that correlation often increases during periods of worldwide market volatility.[49] Correlation between return series of various nations is a function of the timing of national business cycles. In normal periods, national business cycles are not well synchronized and, therefore, international diversification contributes greatly to the portfolio. In times of global economic stress, however, correlation may become more positive and the risk-reduction benefit may diminish.

Despite the fact that early reseach papers acknowledge that global equity diversification is not a fail-safe risk control mechanism, they provide at least two other reasons for including international equity:

1. Foreign goods represent a significant portion of U.S. citizen's consumption basket. Therefore exposure to foreign investments helps protect the portfolio's purchasing power; and,
2. U.S. inflation is driven by domestic political decisions as well as by economic forces. Exposure to foreign assets acts as a hedge against unwise U.S. fiscal policy.[50]

By the mid 1990s, however, the combination of lower foreign stock returns, increasing globalization of international trade and business, and increasing correlation of domestic and international returns, caused many to question whether holding international equity could provide the expectation of significant future diversification benefits.[51] Although the average value of the correlation statistic between the S&P 500 and the EAFE index (Index of large company foreign stocks) is approximately 55% over the period 1973 through 2006, beginning in the mid 90s the correlation statistic moved sharply upwards (i.e. became more positive). Although the following chart illustrates the recent increase in correlation, it also indicates that the correlation statistic exhibits a wide range of historical values.[52] Although the trend line imposed upon the data has an upwards slope, there is no assurance that the current value of the correlation statistic will continue to remain high.

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[49] Erb, C. B., Harvey, C. R., & Viskanta, T. E., "Forecasting International Equity Correlations," Financial Analysts Journal (December, 1994), pp. 32-45.

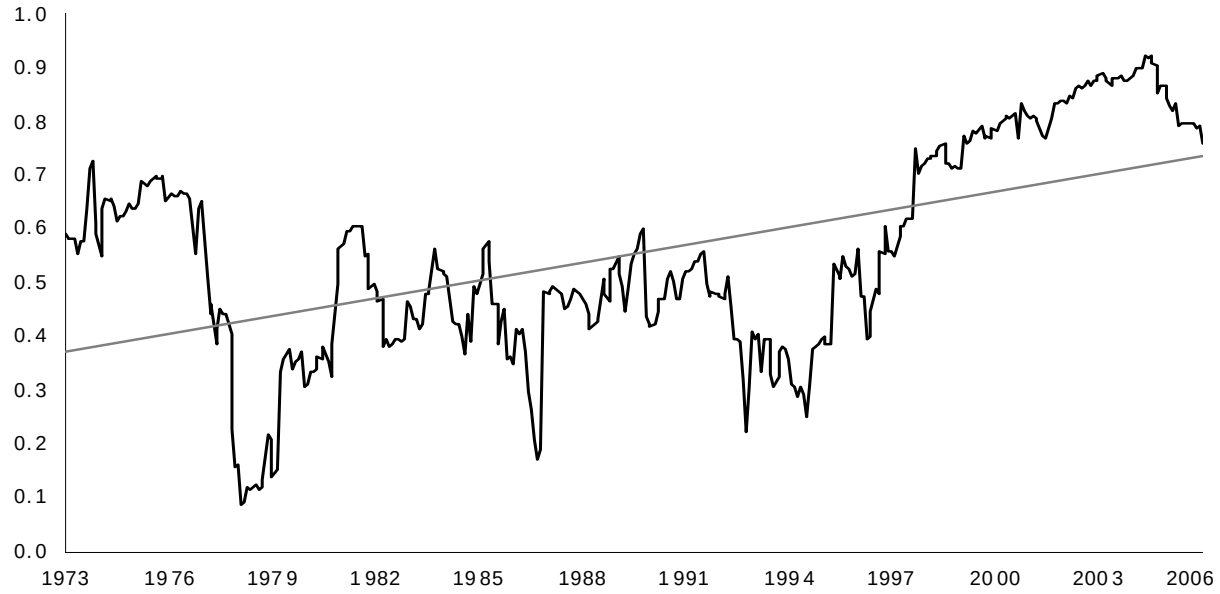
[50] Odier, P., & Solnik, B., "Lessons for International Asset Allocation," Financial Analysts Journal (April, 1993), pp. 63-76.

[51] See, for example, Sinquefield, R., "Where are the Gains from International Diversification?" Financial Analysts Journal (1996), pp. 8-14.

[52] In 1948 the correlation between an index of foreign stocks (created by Global Financial Data using EAFE index construction principles without rebalancing) and the US market as represented by the CRSP 1-10 index of the total US stock market was –0.30.

Fig 2.7: Three Year Rolling Average Correlation

S&P 500 / MSCI EAFE, 1971 through 2006



Projections of the future value of the correlation statistic are controversial. Some argue that it should remain higher than its historical average because of Europe's economic integration and the reduction in currency fluctuations brought about by the introduction of a common monetary unit (the Euro). Others point to increasing globalization or the increasing importance of sector as opposed to country influence on stock returns.[53] Others point out that the strongly positive recent correlation values are a result of events unlikely to repeat in the future. These include the collapse of the Russian ruble, the Asian banking crisis and the worldwide collapse of stock prices in technology, internet, and communications sectors. These studies argue that the correlation statistic tends to revert towards its long-term average following periods of substantial deviation.[54]

A detailed examination of returns indicates that, over time, the US market has not systematically dominated foreign alternatives.

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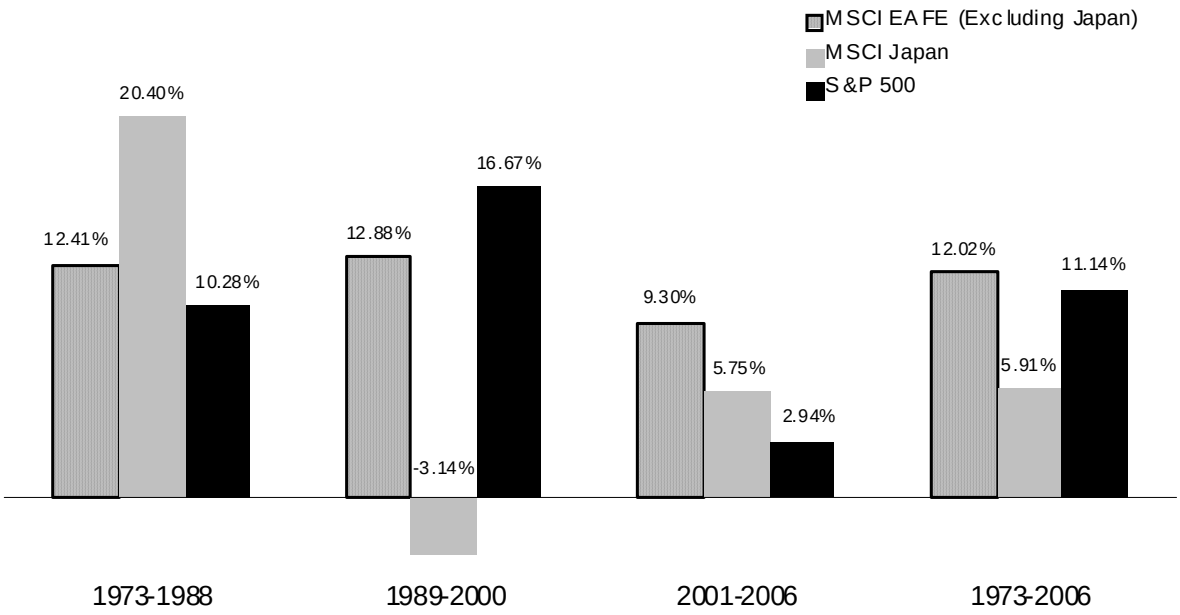
[53] See, for example, Li, K., & Sarkat, Asani, "Should US Investors Hold Foreign Stocks?" Current Issues in Economics and Finance Federal Reserve Bank of New York (March, 2002).

[54] See, for example, Brandhorst, Eric, "International Diversification," Index Equity Research State Street Global Advisors http://www.ssga.com/library/resh/ericbrandhorstsinternationaldiversification71502/page.html (11/9/2005). The author argues that stock return "valuation correlation" (changes in Price/Earnings ratios) has remained high, but that "fundamental correlation" (changes in cash flow growth rates) are relatively low. Even in a new economic regime of increased globalization, the correlation statistic should, in equilibrium, move closer to its historical average.

Figure 2.8: U.S. vs. Foreign Stock Returns
1973 through 2006



Depending on the period under evaluation, foreign stocks have either significantly underpeformed or outperformed their U.S. large company counterparts. However for the entire period 1973 through 2004, U.S. and foreign [EAFE] stocks achieved similar compound returns.

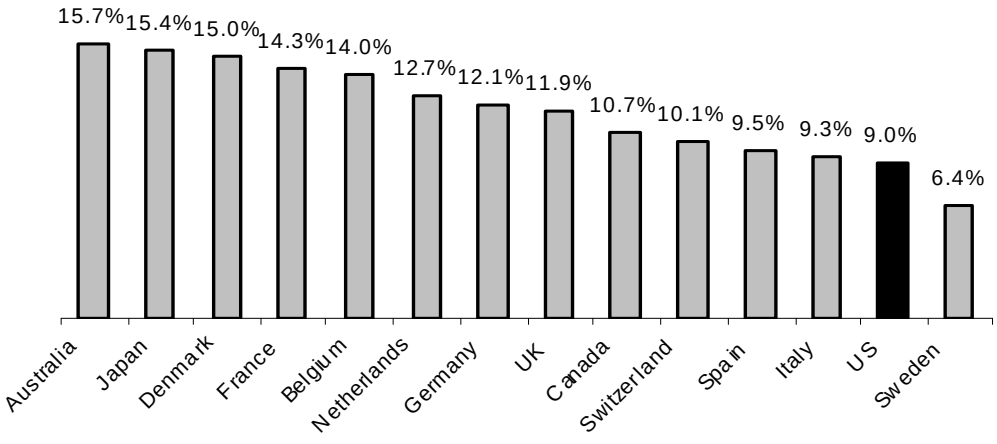
INTERNATIONAL BONDS

Prior to the early 1990s, a compelling case could be made for investing in foreign bonds. The U.S. Bond market ranked in the bottom half of all international fixed income markets five times during the period 1986 through 1993, and never ranked as the top-performing market in any year. Over this period, non-U.S. bonds outperformed U.S. bonds by 3.37% per year.[55] A 1994 study compared U.S. three to five year maturity bonds with comparable maturity bond indexes from thirteen other nations, from December 1985 to March 1994.[56] The study confirmed the poor performance of U.S. bonds compared to the bonds of other developed nations:

[55] Case for International Fixed Income. Unpublished paper by Rowe Price-Fleming International, Inc. Baltimore, MD. For the longer period March 1973 through December 1988, U.S. bonds (proxied by the Merrill Lynch Domestic Master Index) earned an annualized compound return of 9%, compared to a return of 11.3% (in U.S. dollars) earned by a composite index of German, French, Swiss, Dutch, Japanese and British bonds. Rosenberg, M.R., "International Fixed Income Investing: Theory And Practice," The Handbook of Fixed Income Securities, 4th Edition (Irwin Professional Publishing, 1995), pp.1046-1047.

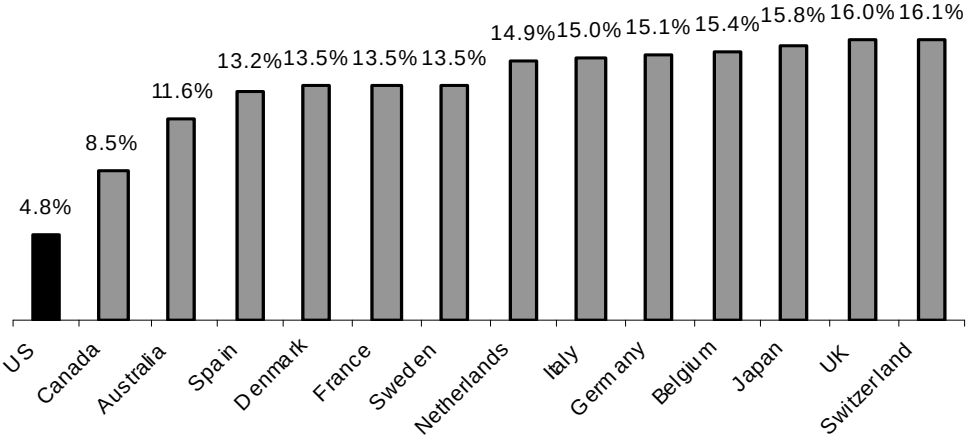
[56] Erb, C. B., Harvey, C. R., & Viskanta, T. E., "National Risk In Global Fixed-Income Allocation," The Journal of Fixed-Income (September, 1994), pp. 17-26. Data for Italy, Spain and Sweden included as of December, 1987.

Figure 2.9: U.S. vs. Foreign Bond Returns (12-85 - 3/94)



However, these results can only be evaluated in terms of the risk taken to achieve them. Thus, the higher returns from foreign bonds over this period must be considered in conjunction with the volatility (risk) of the foreign markets. Annualized volatility (based on monthly standard deviations of returns measured in U.S. dollar terms for each national market) during the period under evaluation was as follows:

Figure 2.10: U.S. vs. Foreign Bond Volatility (12/85 - 3/94)



Based on reward to risk it appeared that bonds from any one of these countries would represent a risky investment for a U.S. investor. However, as we have seen, portfolio diversification benefits are a product not just of return and risk but of correlation, as well. When asset class correlation is low (or negative), it may be beneficial to add low return or high-risk assets. Historically, foreign bonds have provided substantial diversification benefits.

Controversy, however, continues to surround academic opinion regarding the benefits of an

portfolio position in international bonds. For example, Michael Rosenberg's early study comparing bond markets (1978-1988) indicates that an equally weighted combination of the foreign bond markets resulted in a portfolio with annual volatility of 5.9%, compared to volatility of 10.6% for a U.S. only bond position.[57] Although individual foreign bond markets were volatile in isolation, the pattern of returns differs significantly in different countries, with upward moves in some national bond markets offsetting downward moves in others.

By 2000, Rosenberg had altered his position on foreign bond investments significantly. In a conference address to the Association for Investment Management and Research, Rosenberg concluded that a performance review over the period beginning in 1986 shows that "only in the two year window of 1986-1987, when the U.S. dollar collapsed, did unhedged foreign bonds substantially outperform U.S. bonds."[58] Rosenberg concludes that the expected returns from foreign bond investment is about the same as the expected return from investments in U.S. fixed income investments. Although hedged foreign bonds during the period 1978 through 1987 exhibited higher returns at a volatility level lower than U.S. bonds, the returns to U.S. bonds were higher in the subsequent 1988 through 1995 period. Rosenberg points out that, on a go forward basis, removing the exchange rate risk from foreign bond returns, although positive because it dampens volatility, may reduce the value of using this asset class because hedging also increases correlation.[59]

What, then, is the case for foreign bonds? Although Central Bank policies in most developed nations have converged in the sense that they formally or informally target inflation, hedged foreign bond positions retain significant diversification properties. Specifically, they enable investors to "gain the advanatage of interest rate risk diversification without the penalty of exchange rate risk."[60] Briefly, the main attractions of Foreign Bond investments include:

1. Smaller variance compared to investments in the U.S. domestic bond market;
2. Mitigation of interest rate risks that are systematic to domestic investors, but diversifiable to global investors;
3. Diversifiation of "monetary policy mistakes of central banks;"
4. Diversification of real economic shocks.[61]

During the period of the late 1980s through the end of the 1990s the correlation between U.S. and foreign bonds was relatively constant. Thus, in terms of reducing portfolio risk, the benefits of international bond diversification appear to offer attractive portfolio construction opportunities in the fixed income area.

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[57] Rosenberg, Op. Cit., pp. 111-112. The lack of strong positive co-variance of bond returns during this period was, at least partially, attributable to heavy market segmentation due to capital flow restrictions and to instability in U.S. monetary policy during the late 1970s and early 1980s.

[58] Rosenberg, Michael R., "Foreign Bonds: Not a Strategic Asset," Association for Investment Management and Research (2000), p. 6.

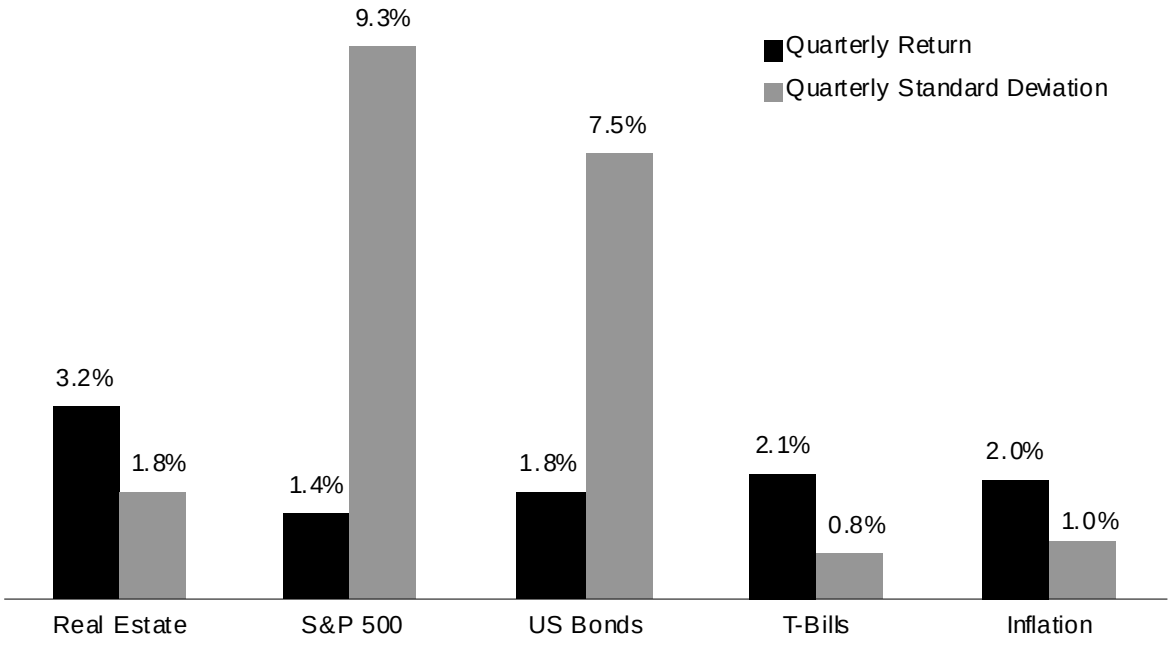
[59] The decision to eliminate exchange-rate risk from a portfolio by establishing a currency hedge remains controversial. Much academic research suggests that an investor deciding to hedge against currency fluctuations is better served by hedging foreign bond exposures as opposed to foreign equity exposures. This is especially the case when the primary use of bonds within the portfolio is for dampening the risk of price declines. See, for example, Winkelmann, Kurt, "International Diversification and Currency Hedging," Modern Investment Management (John Wiley & Sons, 2003), p. 142: "Because currency dramatically affects foreign fixed income, we recommend that investors hedge 100 percent of the currency exposure in their foreign bond portfolios."

[60] Thomas, Lee R., "Foreign Bonds: A Strategic Asset," Association for Investment Management and Research (2000), p. 13.

[61] Ibid, p. 17: "Real shocks affect economies differently. A change in the price of oil does not affect Japan in the same way that it affects the United States; it will not affect Japanese bonds the way it does U.S. bonds."

The 1970's and early 1980's were a golden age for U.S. real estate. The high inflation of those years made real property valuable relative to financial assets. Over a ten-year period, real estate offered high returns, inflation protection and diversification benefits. Studies indicated that real estate had a negative correlation to bonds (which lost much of their value in the inflation of the late 1970's), and close to zero correlation with stocks. Indeed, real estate in this period earned substantially higher returns (3.2% per quarter) than either U.S. stocks or bonds, yet exposed investors to significantly lower volatility (as measured by standard deviation of returns of 1.8% per quarter) than either of these asset classes. During the late 1970's, real estate moved from a trough to a peak, while other capital markets underperformed. Some believed that real estate was the only asset class suitable for a cautious investor. The following chart, based on a 1986 study covering the fourth quarter of 1973 through the third quarter of 1983, demonstrates the attractiveness of real estate during this period:[62]

Figure 2.11: Quarterly Performance Comparison
Q4 1973 through Q3 1983



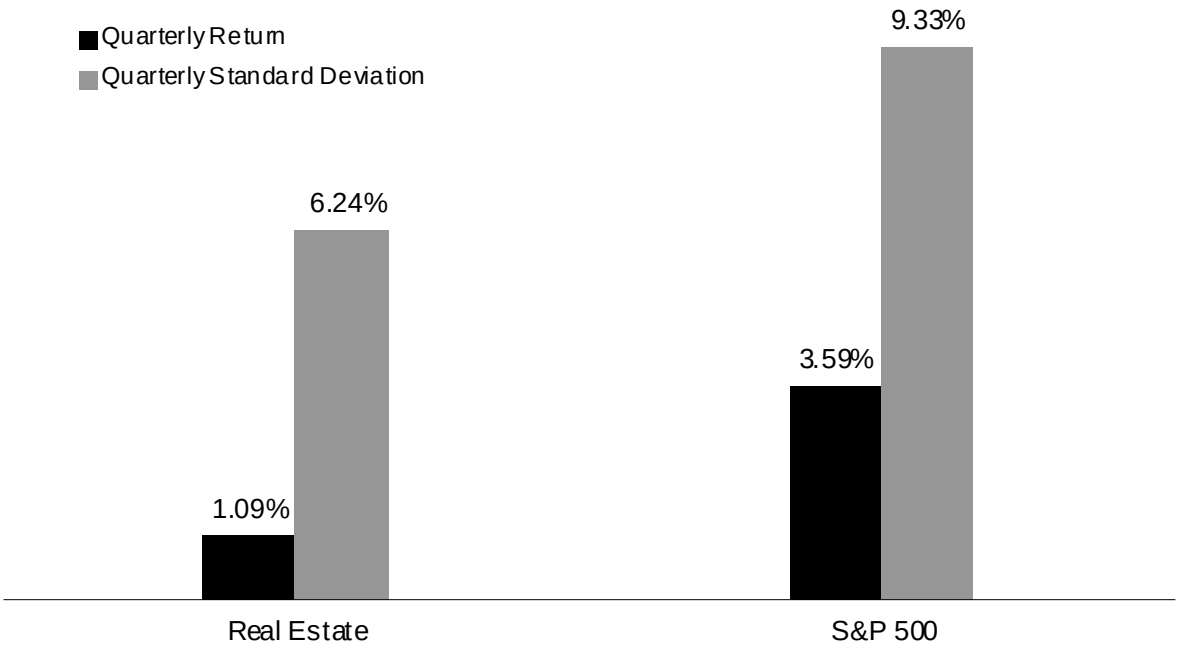
Source: Downs, D.H., & Hartzell, D.J., "Real Estate Investment Trusts," The Handbook of Real Estate Portfolio Management (Irwin Professional Publishing, 1995), p. 601

The problem with a limited sampling period, however, is that the data may not reflect the true distribution of long-term returns. Evaluation of data from a later period produces dramatically different results. A comparative study of returns from an Equity Real Estate Investment Trust index and from the S&P 500 underscores these differences:[63]

[62] Cited in Downs, D. H., & Hartzell, D. J., "Real Estate Investment Trusts," The Handbook of Real Estate Portfolio Management (Irwin Professional Publishing, 1995), p. 601.

[63] Real Estate Finance and Investments, ed. William Brueggerman & Jeffrey Fisher (Irwin Professional Publishing, 1993), pp. 813-814.

Figure 2.12: Quarterly Performance of S&P 500 vs. Real Estate
1986 through 1990



Source: Real Estate Finance and Investments, ed. William Bruegg erman & Jeffrey Fisher (Irwin Professional Publishing, 1993), pp. 813-814.

An evaluation of real estate using only data from this period would indicate that, in isolation, real estate is not an attractive investment. However, despite dismal overall performance, real estate still provided some risk reduction benefits. Specifically, although a large amount of real estate in a stock portfolio would have reduced returns more than it would have reduced risk (that is, the risk/return tradeoff was not beneficial), the imperfect correlation of the two asset classes (the equity REIT correlation to the S&P 500 was .807) meant that adding a small (approximately 20%) real estate position to the portfolio would have created a better overall risk/return tradeoff.

Until recently, many individual investors' portfolios did not include real estate. Private real estate equity investments in apartments, offices, warehouses, hotels, etc. are expensive propositions that, because of the necessity for complex financing arrangements, often demand a high degree of leverage. For many individual investors, either the leverage increases risk beyond their tolerance level, or the collateral and financing arrangements make private real estate equity investments impractical. Dificulties with real estate investments include illiquidity (you cannot sell a fraction of a building), lack of marketability (high transaction costs), lack of geographic diversification, lack of diversification by property type, and high sensitivity to local market financial conditions including unemployment, and tax policy. Additionally, many investors remember the financial debacle that followed the S&L crisis, and the collapse of commercial real estate prices as the Resolution Trust Company dumped property on the market for pennies on the dollar. By the end of the 1980s, many believed that commercial real estate investment was best left to financial institutions such as insurance companies, and large pensions and endowments that could afford to own and manage commercial real estate in several cities or who could purchase private placement debt secured by real estate assets.

Real estate, like many investments, drops in and out of fashion. In the first part of the 21st century, until the advent of the mortgage 'liquidity crisis,' real estate investors enjoyed a spectacular run up in the price of single-family homes, as well as solid gains in the stocks of real estate operating companies, home-

building / home-improvement companies, financing companies, and building-supply firms. The investment vehicle of choice for many individual investors is the Real Estate Investment Trust (REIT). A publicly traded REIT (that is, a REIT that lists its shares on a stock exchange and, therefore, is both priced and traded like other stocks) is akin to a closed-end mutual fund. A REIT's assets consist primarily of real estate equity (ownership of properties) and/or debt interests in real estate. Under current tax law, REITs are not taxable provided that at least 75% of the net assets are invested in real estate related assets, and provided that they pay out at least 95% of net income to shareholders. REITs are actively managed to increase shareholder value just as a public corporation is actively managed to promote economic objectives including return on equity, return on assets, increased market share, and so forth. REITs buy and sell properties like corporations acquire and spin off divisions; and, like other publicly traded companies, they utilize debt financing. In the period 2000 through 2003, debt for most REITs was in the 30 to 40 percent range.

An Index for REITs—the National Association of Real Estate Investment Trusts, or NAREIT index—started in 1978. This is a capitalization-weighted index of all publicly listed REITs; and, as such, is similar in construction to other capitalization-weighted stock indexes such as the S&P 500 index of U.S. stocks. The NAREIT index provides the longest pricing history for the asset class of securitized (that is, publicly traded) real estate equity investments. Today, there are several indexes that track the performance of publicly traded REITs.

In the early 1990's the mutual fund industry launched several real estate equity funds. These funds invest, for the most part, in stocks of real estate related companies or in REIT shares. Among the early entrants into the real estate index fund business were DFA (Dimensional Fund Advisors) and Vanguard Funds, each of which developed a mutual fund designed to track a specific REIT index (e.g. the Vanguard REIT index tracks the Morgan Stanley REIT index). More recent indexed investments include the Barclays iShare Cohen & Steers Realty Majors Fund, and the iShares Dow Jones U.S. Real Estate Index Fund.

Investors now have more comprehensive information available to them so that they may better judge the advantages of adding real estate to an investment portfolio. However, despite the informational advantages, the benefits of real estate remain uncertain. For example, is real estate an effective hedge against inflation? It seems that the answer to this question depends on the definition of real estate, on the definition of inflation, and on the time period under evaluation. The distinction between public and private real estate equity is important with respect to real estate's inflation-hedging ability. Since REIT stocks are stocks of real estate corporations that own portfolios of assets, a reasonable working hypothesis would be that REITs and private real estate equity would exhibit similar responses to inflation. However, this is often not the case. One researcher, for example, notes a positive correlation (+0.41) between inflation and private real estate returns over the period 1978 through 1997; but argues that the value of the correlation statistic between inflation and securitized real estate is 0.00 for the same period. A correlation statistic is only an average for the entire period; and, examination of sub-periods can reveal return patterns significantly different from the overall average. For example, although the study concludes "that private real estate provided a meaningful positive inflation hedge," this is not to be expected under all market conditions: "when space markets experience significant excess supply, as in the 1988-1992 period, the presence of unanticipated inflation will not necessarily result in a rise in real estate returns."[64]

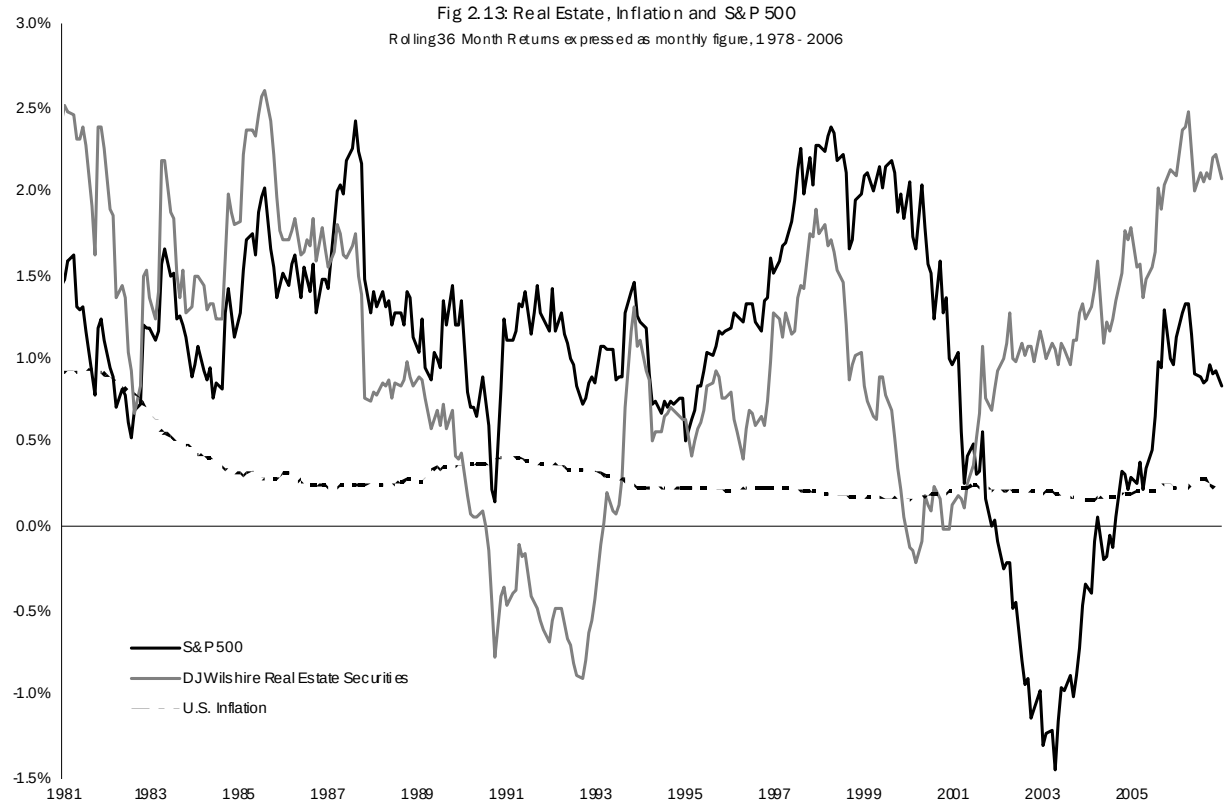
Other than high expected returns, academic studies offer several reasons for inclusion of real estate securities in a prudent and balanced investment portfolio:

- Real estate may offer a hedge against inflation; and,

[64] Sanders, Grayson, "An Updated Look at Asset Allocation: Private and Public Real Estate in A Multi-Asset Class Portfolio," The Real Estate Finance Journal (Winter, 1998), pp. 5-13.

- Real estate securities have low correlation with other common stocks.[65]

The chart below shows how real estate has behaved vis-à-vis inflation and the S&P 500 from 1978 through 2006.



By combining asset classes that respond differently to future economic conditions, the portfolio becomes more stable and, therefore, less likely to produce unacceptable downside returns. Susan Hudson-Wilson, for example, argues that real estate is a good portfolio diversifier.[66] After developing a custom index reflective of the "four quadrants" of real estate investing (public and private debt instruments / public and private equity positions), she notes that the value of the correlation statistic between stocks (S&P 500) and real estate is +0.547 during the period 1987 through 2000, and the correlation between bonds (Lehman Corporate / Government Bond Index) and real estate is +0.284 during the period. She notes: "when the return to an asset class is high enough, or the risk is low enough, and/or the correlation reflects a sufficiently different pattern of returns, the asset class earns a place in the portfolio for at least a portion of the return-risk spectrum. Real estate meets these tests, and is therefore a component of the well-diversified mixed-asset portfolio."[67]

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[65] A comprehensive discussion of real estate's role in the investment portfolio appears on our website at http://www.schultzcollins.com/files/IQ2004Q2.pdf.

[66] Hudson-Wilson, Susan, "Why Real Estate?", The Journal of Portfolio Management (Fall, 2001), pp. 20-31.

[67] It is interesting to note that, when the four 'quadrants' are combined into a capitalization-weighted index of real estate debt and equity securities, the index suffered no nominal dollar losses in any year from 1982 through 2000. However, this observation must be tempered by noting that, for most of this period, the index is weighted primarily to private debt and equity.

Questions remain, however, regarding the optimal portfolio allocation to real estate. Susan Hudson-Wilson suggests that "real estate is a risk-reducer at low to moderate risk and return levels, and so has no role in highly risk-tolerant portfolios." She pegs the optimal allocation for very risk-averse investors at 27%; however, this weight drops to zero rather quickly as one moves up the risk spectrum seeking higher returns. Thus, in her opinion, real estate is primarily suitable only for investors interested in capital preservation.

Ziobrowski, Caines & Ziobrowski arrive at exactly the opposite conclusion: "conservative managers seeking low risk and willing to tolerate lower returns should hold little or no real estate. Managers seeking higher returns who are more tolerant of risk should hold some real estate, but not very much, ranging between 4% and 18% of the total portfolio maximum."[68]

Grayson Sanders advances the proposition that "the optimal portfolio ... turns out to be 40 percent bonds, 30% stocks, and 30% public real estate. This is probably not a feasible solution in the marketplace because of the mismatch with the size of the investable universe.... From a practical perspective we can take comfort from this analysis that a 10 to 15 percent allocation to either public or private real estate or a combination thereof can be readily justified."[69]

The diversity of learned opinion is a good example of how statistical conclusions are hypersensitive to the sampling period and to the way the variables of interest are defined. The investor must clearly understand the role of real estate within the portfolio. It is not a guaranteed safety net against the ravages of unexpected inflation, nor is it an asset class that will produce returns with 'smoothed' volatility. Allocation weightings reflect precise calculations, investor preferences, and common sense. If an investor holds no investment real estate assets outside of the portfolio, a modest allocation to real estate appears to be prudent and suitable. However, if an investor owns a large amount of private real estate equity, a heavy allocation towards real estate within the investment portfolio may create redundancies and unnecessary asset concentration risks.

EMERGING MARKETS

Emerging markets are the equities markets of countries still in the early decades of forming the institutions that make for economic success. In emerging markets, fundamental elements of a market system, such as property rights, contract law, freedom of speech, and due process, may not be securely instituted. The stock markets of developing nations can be extremely volatile. For example, in 1990, the Taiwanese Stock Exchange Index started the year near the 5,000 level. By the end of the first quarter, it had reached 12,600; six months later it had plunged to 2,500.

A broader perspective on emerging market volatility is provided by a BARRA study of the period 1987-1991[70]. In general, stock market volatility (as measured by standard deviation) was considerably higher for emerging market economies than for the U.S.:

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[68] Ziobrowski, A.J., Caines, Royce & Ziobrowski, B. J., "Mixed-Asset Portfolio Composition with Long-Term Holding Periods and Uncertainty," Journal of Real Estate Portfolio Management (Vol. 5, 1999), pp. 139-144.

[69] Sanders, Grayson, "An Updated Look at Asset Allocation: Private and Public Real Estate in a Multi-Asset Class Portfolio," Real Estate Finance Journal (Winter, 1998), pp. 5-13.

[70] Divecha, A .B., Drach, J., & Stefek, D., "Emerging Markets: A Quantitative Perspective," The Journal of Portfolio Management (Fall, 1992), p. 42.

Figure 2.14: Equity Volatility in Emerging Markets & the United States
1987 through 1991

Country	Standard Deviation
Argentina	108%
Turkey	84%
Brazil	74%
Taiwan	63%
Portugal	61%
Greece	56%
Mexico	56%
Indonesia	39%
Korea	29%
US	17%

Although returns from emerging market investments were also high during this period (19.7% vs. 12.6% for the London Financial Times World Index of developed nations), the variability of returns from individual nations is striking. A more recent survey of emerging market returns, covering the period 1975 through 1999, derives similar results for the longer-term series of monthly returns:

Figure 2.15: Summary Statistics for Emerging Markets 1975 - 1999

Country	Return	Standard Deviation
Argentina	4.54	25.86
Brazil	2.14	16.99
Chile	2.46	10.52
Colombia	2.07	9.20
Greece	1.20	9.98
India	1.41	8.05
Indonesia	2.08	17.56
Jordan	0.78	4.77
S. Korea	1.61	11.17
Malaysia	0.91	10.51
Mexico	2.04	12.24
Nigeria	1.81	12.56
Pakistan	1.00	8.98
Philippines	2.35	11.23
Portugal	2.41	11.09
Taiwan	2.27	13.34
Thailand	1.35	10.08
Turkey	3.83	20.04
Venezuela	1.89	14.72
Zimbabwe	1.08	10.43

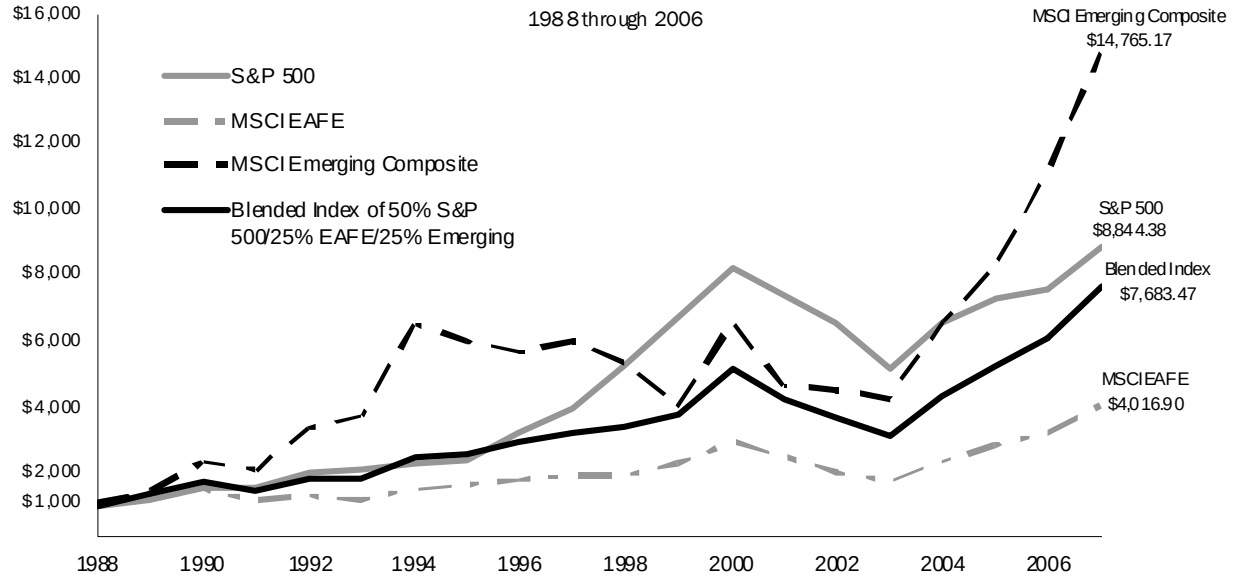
The average monthly return is 1.62% over the period under evaluation. This return compares to

returns of 1.26% for EAFE and 1.36% for the U.S. When each country is considered in isolation, monthly volatility for the period averaged 12.46%–a number evidencing significant investment risk. However, when considered as a single portfolio, an investment in the aggregate emerging markets asset class had a monthly volatility of only 5.70%. This compares to monthly volatility of 4.73% for EAFE andf 4.23% for the U.S.

The more recent data appears in a study by Conover, Jensen, and Johnson. [71] The authors examine the behavior of emerging markets over the period 1976 through 1999, including all emerging markets with at least ten years of returns data as of December 1999. They calculate returns for a composite emerging markets index, with underlying countries weighted according to each market's gross domestic product. Thus, the larger economies of Brazil, India and Mexico are heavily weighted in the index, while Zimbabwe contributes little. They note: "The US market offers a substantially higher return for a given level of risk, which indicates that emerging markets are not attractive stand-alone investments." But, in the authors' opinion, this does not rule out emerging markets as elements of diversified portfolios; "the attraction of the emerging markets lies to a large extent in their much lower average correlations with developed markets."

The following graph illustrates the ending value of $1,000 invested in various indices over the period 1988 through 2006. It is noteworthy that the emerging markets asset class has performed extraordinarily well during 2004 and 2005 as the US Federal Reserve engaged in a series of interest rate increases.

Figure 2.16: Ending Value of $1,000 in U.S. and Foreign Stocks
1988 through 2006



One source of diversification benefit lies in the fact that, unlike stocks of other developed economies, performance of emerging market stocks is not closely correlated with US Federal Reserve policy. This implies that "developing countries are less likely to establish monetary policies that align with those of the developed countries." Thus, apart from the compensation of the raw investment returns they offer, the risk of investing in emerging markets may also be compensated by a reduction in overall portfolio volatility during periods of restrictive U.S. monetary policy (that is, "tight money" brought about through increases in the Federal Funds discount rate). While the stock returns of developed nations seem to correlate closely with the performance of U.S. stocks over interest rate cycles, the returns from emerging markets evidence a greater degree of

[71] Conover, C. Mitchell, Jensen, Gerald R., & & Johnson, Robert J.,. "Emerging Markets: When are they Worth It?" *Financial Analysts Journal*, (March/April, 2002), pp. 86-95.

independence. The authors conclude: "Even for investors interested in maintaining relatively low-risk equity positions, the optimal portfolio has a large international exposure and most of it is in emerging market stocks."

The Conover, Jensen & Johnson study echoes conclusions made by previous studies:

- Returns of emerging market nations are not strongly correlated, so investment in the overall asset class is substantially less risky than an investment in any single individual emerging market; and,
- Returns of emerging market nations are not strongly correlated with those of developed nations; thus, they offer an opportunity for effective portfolio risk reduction.

The low correlation of returns means that, in a well-diversified portfolio of emerging market investments, the pattern of gains or losses in one nation's markets offset those in others. Several studies demonstrate that adding emerging markets to an international portfolio reduces overall portfolio risk. Divecha, Drach, & Stefek reviewed varying mixes of the Financial Times World Index with the International Finance Corporation Emerging Market Index. They concluded that "until reaching about 20% in the Emerging Markets Index, the risk of the overall portfolio decreases, because of the low correlations between the two."[72] Using another set of benchmarks (Morgan Stanley Capital World Index and Genesis Emerging Markets Fund) in a study of the period July 1989 to June 1993, J. Paulson-Ellis demonstrated "…that an investor can reduce risk until 40% of the portfolio is in emerging markets."[73] Finally, Conover, et. al, concluded that even low-risk portfolios can accommodate up to 33% in emerging market equities.[74] Thus, it seems clear that emerging markets offer important diversification benefits to investors wishing to implement prudent investment portfolios.[75]

Although the above discussion covers asset classes commonly used to construct investment portfolios, it is not an exhaustive list. The SCLC website offers a more technical discussion of the benefits of other asset classes, including inflation-adjusted bonds and commodity investments. The working paper entitled "Investing in Commodities: Issues and Current Research is particularly useful.[76]

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[72] Op. Cit., Divecha, Drach & Stefek, p. 49.
[73] Paulson-Ellis, J. "Introducing Emerging Markets," Managing Emerging Market Portfolios (AIMR, 1994), p.15.
[74] Op. Cit., Conover, et al., p. 92.
[75] An in depth discussion of the role of emerging markets in an investment portfolio is found on the SCLC website at http://www.schultzcollins.com/files/IQ2004Q1.pdf.
[76] This is found at http://www.schultzcollins.com/files/Investing%20in%20Commodities.pdf.

ASPECTS OF THE U.S. MONEY MANAGEMENT INDUSTRY

Investors need to develop expectations regarding the risks and returns of investment choices. In many respects, the problem of portfolio construction is the problem of

1. Selecting assets under conditions of uncertainty; and,
2. Appropriately weighting of each investment within the portfolio.

As suggested earlier, large segments of the retail investment industry (stockbrokers, financial planners, money managers) focus on the security selection decision. The quest is to discover securities that are mispriced (i.e., undervalued) and to form portfolios that are collections of stocks and bonds that, in the manager's opinion, offer the best opportunities for positive investment returns over the forthcoming period.

Although money managers use many terms to catagorize their investment philosophies ('momentum,' 'contrarian,' 'market-neutral,' 'sector rotational,' etc.), two terms are in common usage. These are 'value-oriented managers' and 'growth-oriented managers.' Value and Growth investment styles reflect the fact that certain categories of stocks share specific characteristics and exhibit common return patterns. These stock categories, moreover, perform differently than stocks grouped in other categories. The common or shared characteristics are, in the parlance of economists, 'factors.' Stocks sharing high exposure to certain factors are more likely to exhibit relatively high correlation. 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 during recessionary periods. Thus, economist distinguish between 'return-to-small' and 'return-to-large' risk factors. Likewise, there exists 'return-to-value' and 'return-to-growth' risk factors.

In general, 'Growth-oriented' investment managers form portfolios of companies that:

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

Although the share prices for these companies may be high, financial analysis may predict continued above-average growth in both marketshare and return on the firm's invested capital.

However, the risks associated with growth investing are both obvious and notorious:

1. Investors may fall into the trap of overpaying for attractive or 'glamour' companies with the result that even though the company continues to produce stellar accounting statements, the return to the investors is less than expected; or,
2. Marketplace shocks may reduce rock-solid 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 be highly profitable and often 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 recent highwater mark in the popularity of growth-style investing.

'Value-oriented' investors generally purchase securities when the market value of their shares approaches the book value listed on their financial statements. Relative to growth stocks, value stocks tend to be less profitable and to exhibit less robust opportunities for future earnings growth. The universe of value investors, however, includes several well-known names including, Benjamin Graham, Warren Buffet, and John Neff. Graham, for example, developed a formulaic, yet rigorous, approach to stock picking. He advised investors to avoid stocks when their "normalized" [(current price – average price) ÷ standard deviation of price] 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 that reflect modern styles of portfolio formation through stock picking 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."[77] 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 assets within a portfolio context, nevetheless, his research offers useful insights; and, it continues to command respect from financial analysts.

In 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.[78]

Projection investors wish 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 divorce a security's market price from its fundamental 'value.' In Graham's view, the stock market is not "efficient"—i.e., may not price securities close to their fundamental value. Graham encourages investors to develop sufficient information to allow them to identify a subset of mispriced securities and to invest therein.

Such a recommendation, however, cannot comfortably co-exist with the hypothesis of market efficiency (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.

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

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

high, and a growth portfolio with only a few stocks has a high likelihood of being wiped out."[79] 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, for example, has a well-known disdain for diversified portfolios, and preaches the gospel of finding good companies at a good price and holding them for a length of time sufficient to reap the expected rewards. In the Buffet ideology, it does not matter which way the crowd will go as long as the investor has the conviction that his valuation analysis remains correct; and has the patience to hold the stock through the ups and downs of market irrationality.

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), recently replied to the question "How many stocks should a portfolio hold?" as follows: "With Windsor, we probably had 60, and the top 10 were about 40 percent of our portfolio."[80] The titans of the money management industry from both the growth and value stock picking camps embrace asset concentration risk as a reasonable investment strategy.[81]

VALUE/GROWTH ASSET CLASS INVESTING V. UNDERVALUED STOCK PICKING

In 1982, Tom Peters and Robert Waterman published a best-selling study of major American companies entitled *In Search of Excellence*.[82] Among the criteria they used to identify excellent companies were six long-term (1961 through 1980) measures of financial superiority:

Compound growth of assets;

Compound growth of shareholder equity;

Average ratio of market value to book value;

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 departure point. She hypothesized that an investor might be able to realize superior returns by holding a portfolio of companies that have demonstrated financial excellence. She tested the hypothesis by screening the S&P 500 for companies with

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[79] Ibid.

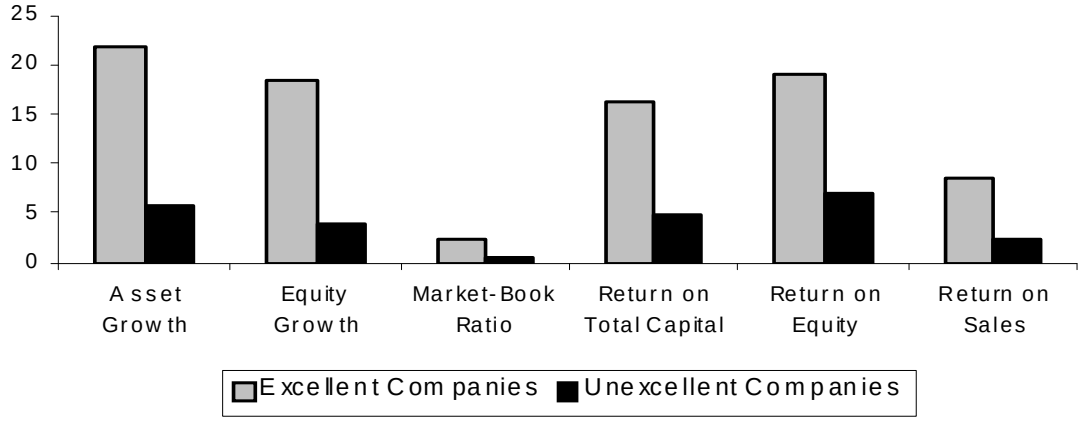
[80] Neff. John B., "A Conversation with Legendary Value Investor John B. Neff, CFA," Equity Analysis Issues, Lessons, and Techniques (AIMR, 2004), pp.5-8.

[81] 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 stupid stock picks destroy wealth. Conversely, if one has perfect forecasting skill (i.e., a prophet of profits), 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 (i.e. internal to) 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 itself 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, 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.

[82] Peters, Thomas J. & Waterman, Robert H., In Search of Excellence: Lessons from America's Best-Run Corporations, 1982.

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 were as follows:

Figure 3.1: Excellent vs. Unexcellent Company Ratios:
1976 - 1980



Clayman tracked results from equally weighted portfolios of excellent and unexcellent companies from 1981 through 1985. As expected, the 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.[83] Clayman had 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 mere statistical anomaly for the brief period under evaluation. However, Nobel Prize winner William Sharpe, in a well known study of mutual fund performance,[84] 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').

Sharpe published his study only a few months after a separate and independent historical review of U.S. stock returns by two professors of economics: Eugene Fama and Kenneth French.[85] 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.

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

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

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

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 demonstrated that the relative superiority of unexcellent firms was a worldwide phenomenon.[86] As noted, Sharpe calls stock 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 growth will provide high returns to investors over the long run. Value style investors seek to buy securities that can be purchased for prices that are low relative to the companies' estimated underlying values.[87]

Rather than using fundamental analysis (close examination of corporate financial performance data) to find a few stocks offering good 'value,' money managers, by the early 1990s, formed broad-scope portfolios by dividing 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, however, 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 specific 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.[88]

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

[87] Ibid., p.27. A recent 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. You would therefore not expect any correlation between the magnitude of the economic value added and stock returns or even between the change in economic value added and stock returns. 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, 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.

[88] 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 HISTORICAL EVIDENCE: IS VALUE A STRONG LAW OF ASSET PRICING?

Things became a bit 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 future 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. Stilll 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). One of the complexities faced by investors is the plethora of investment products that carry the label 'value' but that utilize significantly different definitional criteria for security selection.

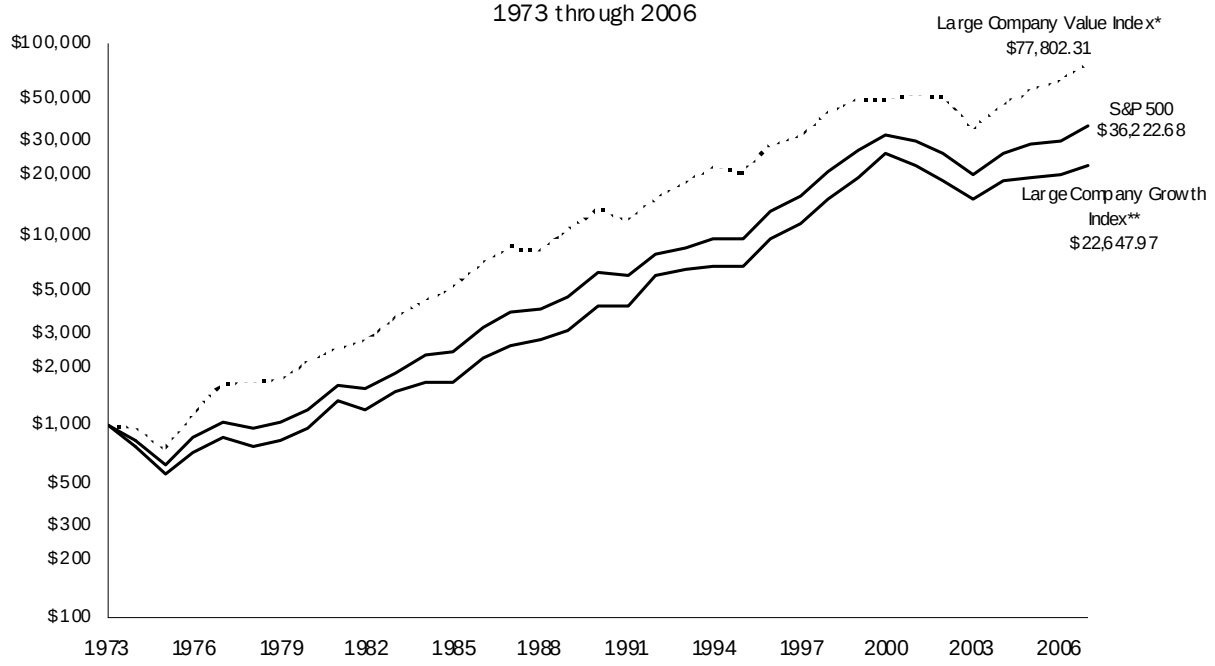
By the mid 1990s, however, it appeared that the return advantage of value stocks was substantial. For example, a comparison of the Growth, Value, and S&P 500 Stock indexes (maintained by the Center for Research in Securities Prices) reveals the following results for an initial investments of $1,000:

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 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. There is little possibility of finding a mispriced security; or, in Benjamin Graham's words, a stock that offers a superior investment value.

Following Sharpe, economists wished to know if there were factors other than the market that could explain the return generating process for securities. If other factors could be identified and measured, portfolios might be formed to capture the risk premiums from a variety of factor exposures. Factor analysis might lead to better measurement and management of investment risk as well as to higher expected investment returns. The hunt for priced risk factors began; and the multifactor investment portfolio was about to be born.

Figure 3.2: Ending Value of $1,000
Large Company Growth vs. Large Company Value Stocks
1973 through 2006

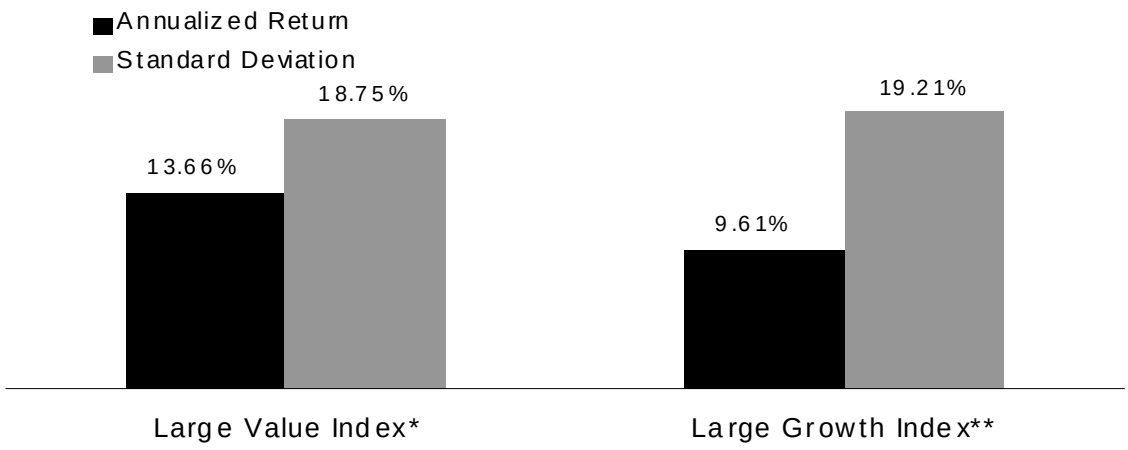


* Fama-French Large Value Index
** Fama-French Large Growth Index

Not only did the studies published in the early and mid 1990s note the higher return to value, they also struggled to explain why diversified portfolios of value stocks do not manifest relatively 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:

Figure 3.3: Growth vs. Value

1973 through 2006



* Fama-French Large Value Index
** Fama-French Large Growth Index

During this period, value style investing in large U.S. company stock 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 than stocks of firms with distressed earnings. In explaining this phenomenon, one popular theory was the 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.[89]

The academic community was split along several lines:

1. Value investing is a strong law of asset pricing. The return to value stocks was explainable either by a cost-of-capital argument or by a priced risk factor argument. The priced risk factor argument claimed that value stocks were risky but that the risk (as measured by historical standard deviation) had not yet manifested itself in the marketplace. Skeptics began to refer to the "metaphysical risk" dimensions of value investing.

2. The returns to value style investing represents 'agency risk.'[90] Decision makers for 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

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

[90] Lakonishok, J., Shleifer, A., & Vishny, R. "Contrarian Investment, Extrapolation, and Risk," Journal of Finance (December, 1994).

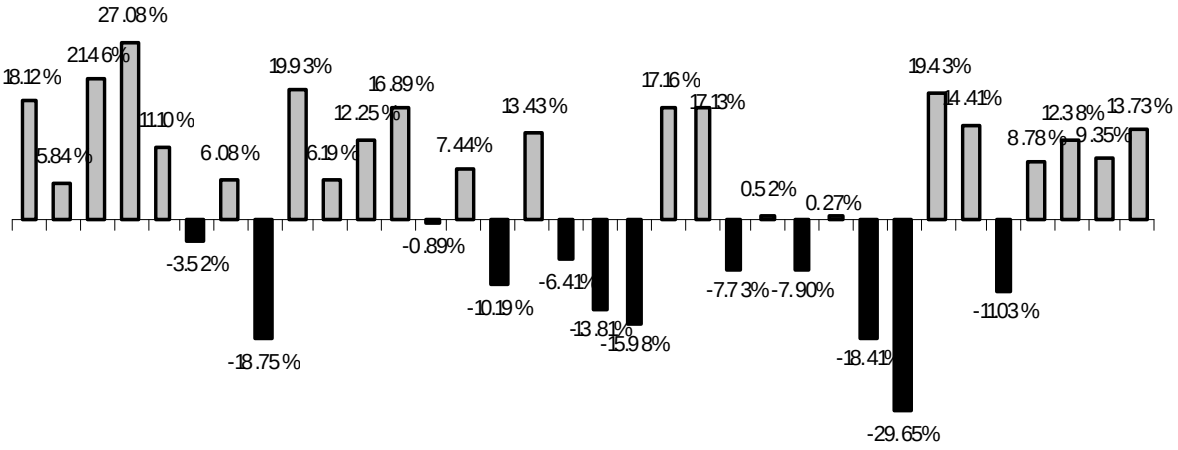
stocks may have higher expected returns. This reluctance to hold value stocks means that the price of such stocks adjusts downward to reflect the demand-to-hold schedule—that is, value stocks become a relative bargain.

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)[91] 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 1989 through 2006 is as follows:

Figure 3.4: Value Premium Over Growth

(annual differential 1973 - 2006)



More recent academic research treats the value/growth debate as part of a general examination of portfolio 'factor analysis.' This analyslis asks:

1. Which factors are true determinants of return;

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[91] 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.

More recently, 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 was 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 indicated no substantial diminution in the value premium. These studies highlight the continuing academic controversies surrounding value style investing.

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 identificable marcro 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 (i.e., unobservable factors that are implicit to the matrix of time series returns). However, once the unobservable factors are found, they may be "re-translated" into known factors through various 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.

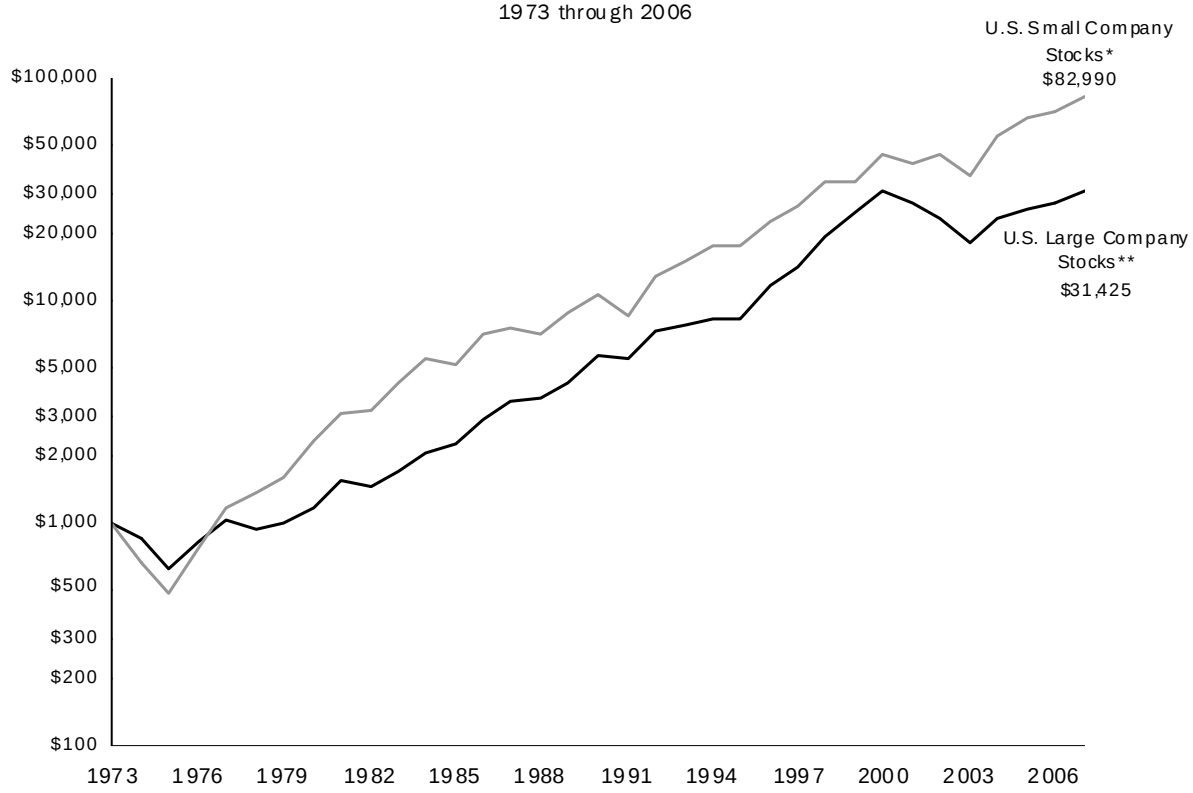
THE SMALL COMPANY / LARGE COMPANY DIMENSION

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.[92] For example, over the period 1973 through 2006, a $1,000 investment in small company stocks grew to $82,990 versus $31,425 for a comparable investment in large company stocks:

[92] 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.

Figure 3.5: Ending Value of $1,000 from U.S. Large and Small Stocks

1973 through 2006

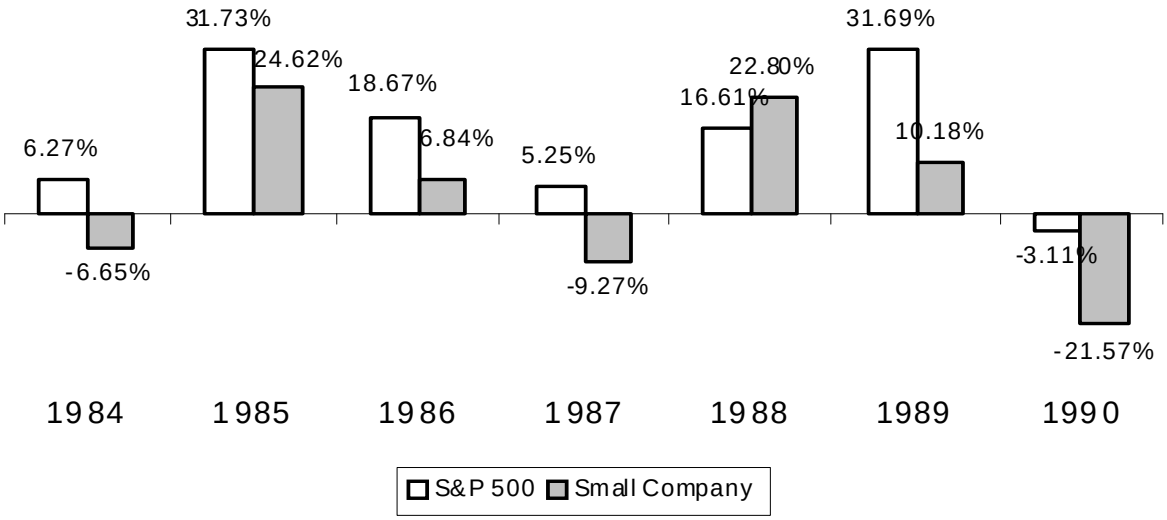


* CRSP NY/AM/NM 6-8
** CRSP NY/AM/NM 1-2

The graph illustrates that, over the long term, investments in small company stocks have earned a comparatively high return.[93] 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. Consider, for example, 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). The shaded area indicates years of small cap stock *underperformance* relative to the S&P 500:

[93] 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 mid 1990s which considered the small cap factor to represent a priced risk.

Figure 3.6: Large vs. Small Stock Returns
(1984 through 1990)



During this period each dollar invested in small company stock[94] 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[95] (or, may be confounded with other factors). 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 control risk (reduce return 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 company 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 experts 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 (small stock returns were , however, strongly positive in 2004),[96] although the diversification benefits of adding small company stocks to the portfolio appear to remain.

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[94] 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.

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

[96] 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 recent 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 factor multiplied by valuation measures like price to sales or price to earnings, the size and value effects are intertwined. For example, a large

THE THREE FACTOR MODEL: EMPIRICAL RESULTS

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

The market risk factor - exposure to the risk of equities as opposed to risk-free fixed income (T-Bills);

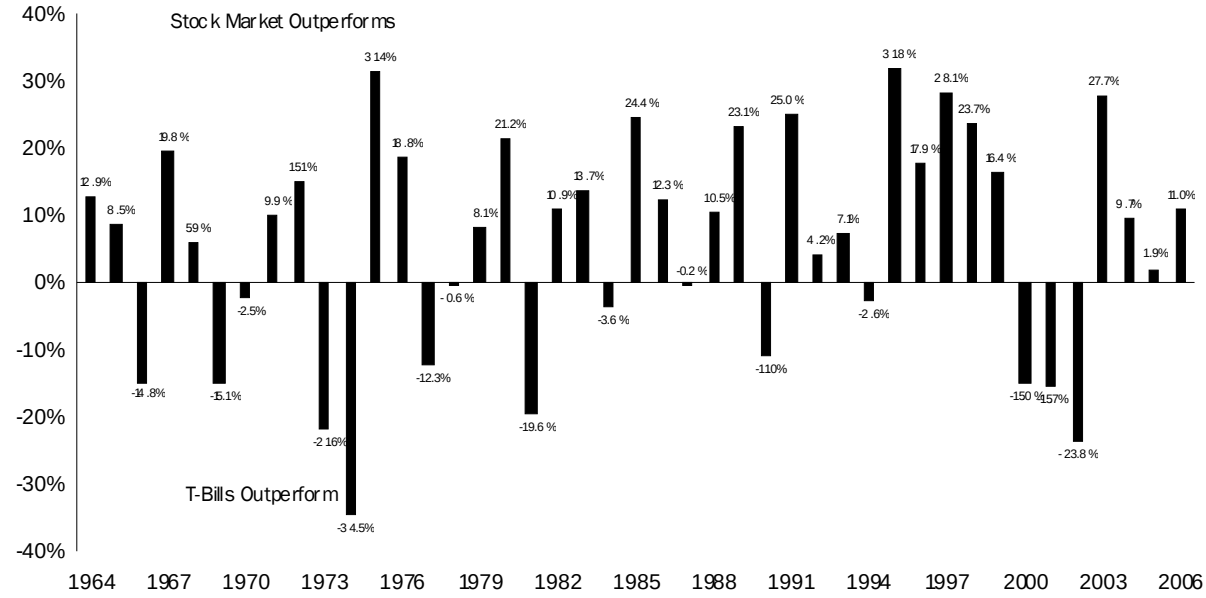
The size risk factor - exposure to small company risk as opposed to large company risk; and,

The value risk factor - exposure to value investing as opposed to growth investing.

Investors in the aggregate U.S. stock market as proxied by the S&P 500, from 1964 through 2006, earned a return in excess of T-Bills of 5.72% per year compounded. However the extra reward (equity risk premium) of 5.72% per year was never precisely realized in any single year. Rather, the investor earned the reward by tolerating a significant amount of year-to-year volatility. The following graph depicts the year by year differential returns (Equity minus T-Bill) during the period:

Fig 3.7: Market Risk Premium

Market Returns[1] minus Risk Free Returns[2], 1964-2006



[1] S&P 500
[2] 30 Day U.S. Treasury Bills

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."[97] Current estimates of the ERP range from approximately negative one percent through positive nine percent, depending on the length of the projection horizon. The debate has far-

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."

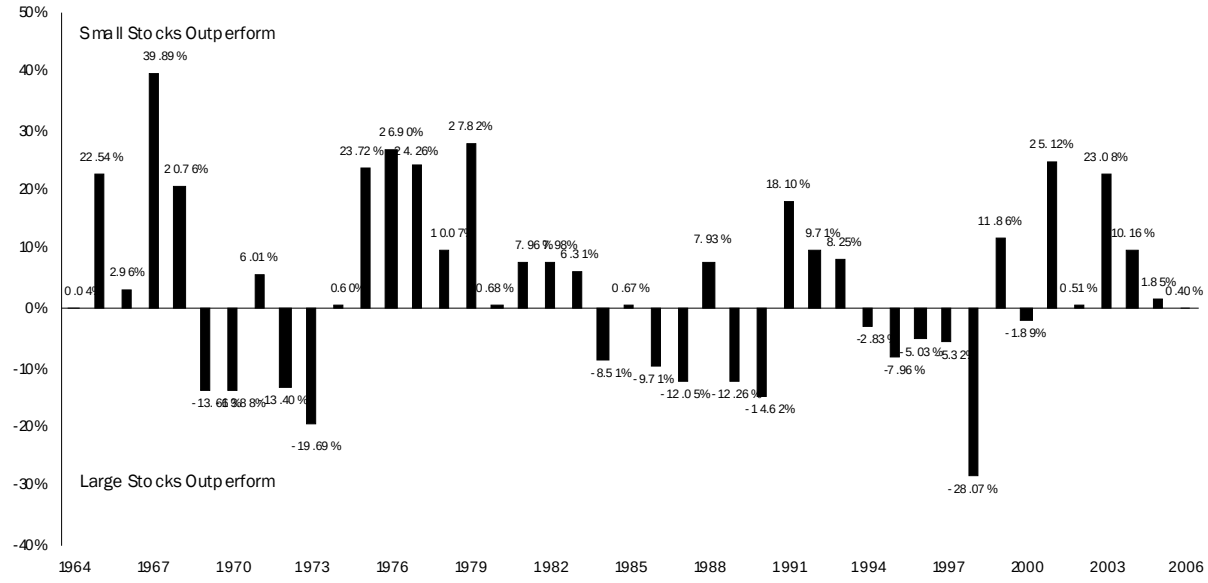
[97] Brealey, Richard A. & Myers, Stewart G., Principles of Corporate Finance. 6th Edition (Irwin McGraw-Hill, 2000), p. 1071.

reaching practical consequences for both individual investors, pension plan sponsors, and shapers of public policy. For example, the debate on creating private Social Security accounts assumes 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 range; Peter Diamond of MIT and John Shoven of Stanford both estimated a future compound ERP in the 3% to 3.5% range.[98] 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 the chart above, and given the low estimates of the ERP on a go forward basis, the investor should not be surprised to discover that 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.

From 1964 through 2006, stocks of small capitalization companies returned 5.16% per year more than stocks of large capitalization companies. In 29 of the 43 years in this period, small company U.S. stocks outperformed large company U.S. stocks. The following graph depicts the yearly 'size-factor' premium (return of small stocks minus return of large stocks).

Fig 3.8: Small Stock Premium

Small Company Stock Returns* minus Large Company Stock Returns**, 1964 through 2006



* CRSP NY/AM/NM 6-8
** S&P 500

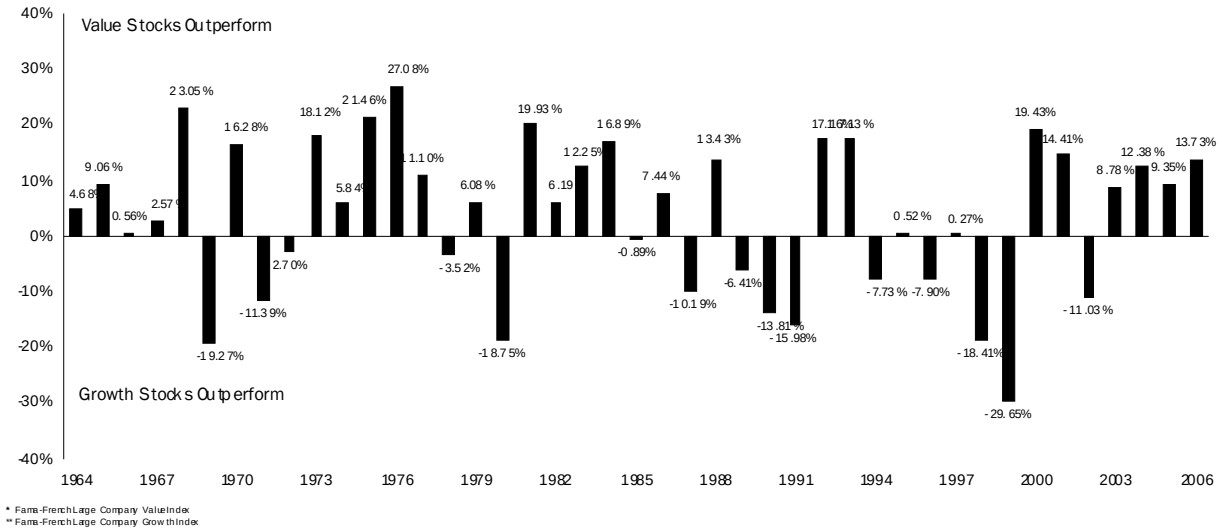
However, like the market-based equity risk premium, the expected return for investing in small capitalization stocks is not a sure thing. In 2007, the small stock premium was a negative 5.71%.

Over a comparable period, the premium to the value-style investor (value stock returns – growth stock returns) was 5.43% compounded per year. Although the return to value was greater in 29 out of 43 years in

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

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.[99]

Fig 3.9: Value Premium
Value Stock Returns* minus Growth Stock Returns* *, 1964 through 2006



* Fama-French Large Company Value Index
** Fama-French Large Company Growth Index

The Fama/French three factor model, although subject to the criticism that it is not grounded in economic theory because it uses stock attributes to explain stock returns,[100] has, in the main, provided an attractive reference point for beginning a discussion about multifactor portfolio construction.[101] 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 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 (that is, 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

[99] The "return-to-value" in 2007 was a negative 20.53%.
[100] 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.
[101] A more detailed discussion of factor models is found on the firm's website (www.schultzcollins.com) in the paper entitled "Multifactor Asset Pricing Models and the Rationale for Investing in Value Stocks."

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.).[102] Recent findings regarding the role of labor income, proprietary (business-owner) wealth, established 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-maturtiy premium. It appears that at some yet 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, especially, 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 answer the question whether loading a portfolio for, e.g., the value effect does not constitute an increase in exposure to unsystematic - that is, uncompensated - risk, and is therefore imprudent. 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 abjure 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.[103]

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 regimes, and hold different illiquid investments (e.g., family real estate, privately owned businesses, etc.).

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[102] Cochrane, John H., "Financial Markets and the Real Economy," Working Paper, University of Chicago (September 21, 2005), provides a good review of the literature.

[103] See, for example, Fama, Eugene F. & French, Kenneth R., "Disagreement, Tastes, and Asset Prices," Working Paper, University of Chicago (February, 2004). 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." (p. 6). 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.

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 puts it: "To rationalize anything but the market portfolio, you have to be different from the average investor in some identifiable way."[104] 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. 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) thereby defined 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.[105]

It may be, therefore, rational and prudent to load for such factors as 'value' and 'size,' despite the fact that such loadings may not be macro-consistent with 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 effected. To invest ten percent of a portfolio in a single small foreign firm is indeed to assume a high degree of uncompensated risk. On the other hand, a ten percent allocation to broadly diversified funds investing in many thousands 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 to be 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.[106]

As the cost of information continues to drop, new investment products enable investors to load for increasingly specific risk factors (e.g., European Small Cap Value stocks) 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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[104] Cochrane, John H., "Portfolio advice for a multifactor world," Economic Perspectives Federal Reserve Bank of Chicago (3rd Quarter, 1999), p. 73.

[105] This point is made by Harry Markowitz in a recent article: "…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. There is a long history of debate on the issue of whether broad market proxies such as the S&P 500 are themselves efficient portfolios. See, for example, Benninga, Simon, Financial Modeling (MIT Press, 1997), pp. 117-123.

[106] Focardi, Sergio M. & Fabozzi, Frank J., The Mathematics of Financial Modeling & Investment Management (Wiley Finance, 2004), p. 539.

The asset allocation decision forms the foundation of the portfolio.[107] How should the investor make the asset allocation decision?

Effective diversification makes possible the measurement and control of overall portfolio risk. On the assumption the investor intends to build a diversified portfolio, the portfolio's asset allocation structure flows from a decision about how much portfolio risk the investor is willing to bear. Strategic asset allocation is a function both of the investor's required return and the investor's tolerance for risk. Trivially, an allocation with an expected return below that required to achieve financial goals is inappropriate. It is easy to see this type of mistake. Equally insidious, however, are allocations that produce more risk than necessary in light of the purposes, goals and economic circumstances of the portfolio. The greater the risk, the greater is the uncertainty of future results. That is to say, the portfolio's asset allocation policy is best tailored to meet the investor's return objectives without generating a potentially dangerous 'risk gap,' where risk gap is defined as the voluntary election to assume risk greater than necessary. More money is better than less; however, the pursuit of more money may be dangerous to your wealth. Effective portfolio management requires both measurement and management of risk.

One way for an investor to find an asset allocation suitable to his risk tolerance is to track the behavior of a set of model portfolios. The investor considers the historical returns achieved by various diversified portfolios each each of which differs according to their percentage allocation to fixed income (bonds) versus equities (stocks). A low variance portfolio owns a greater percentage of fixed income investments, while a high variance portfolio allocates more to stocks. Using this method, the investor can "test drive" the consequences of an asset allocation election along a continuum of risk/return choices.

THE RISK / RETURN CONTINUUM

The historical performance of several sample portfolios, based on quarterly returns series from 1973 through 2006,[108] is shown in the tables and graph below. The first table illustrates the distribution of each

[107] See, for example, Farrell, James L., Portfolio Management: Theory and Application 2nd Edition (Irwin McGraw-Hill, 1997), p. 272: "Determining the asset mix that best suits the risk-return objective of the investor is the most important decision in meeting the longer-range goals of the investment plan." Determining the asset mix without reference to the investor's liabilities (including consumption targets) is, however, comparable to making financial decisions by looking only at the left hand side of a balance sheet. Liabilities should be explicitly stated and well defined so that the investor understands the portfolio's required return. A goal expressed in vague terms such as "growth," or "making a lot of money," or "beating the S&P 500," is not sufficient to allow for the construction of a portfolio that has a reasonable probability of prudently matching assets to liabilities. This is an important but complex extension of the topics in this introductory monograph. For further information, see the article in the Investment Quarterly Volume 11, Issue 2 (2005) "Planning for Retirement Income," found at the SCLC website (www. schultzcollins.com/files/IQ2005Q2.pdf); and Howard, Ronald & Lax Yoel, "Strategic Asset Allocation in the Presence of Uncertain Liabilities," Modern Investment Management (John Wiley & Sons, 2003), pp. 110-135.

[108] Data Sources:

Asset Class	Return Series
S&P 500 Index	Results as reported by Ibbotson & Sinquefield: Stocks, Bonds, Bills and Inflation.
One Year Fixed	One Year Constant Maturity US T-Bills, as reported by Ibbotson Associates.
Five Year Fixed	Lehman Brothers Intermediate Term Govt/Credit, as reported by Ibbotson Associates.
International Small Cap Stocks	DFA International Small Company Index, as reported by Dimensional Fund Advisors.
U.S. 9-10 Index	Center for Research in Security Prices (CRSP) 9-10 Index, as reported by Ibbotson Associates.
U.S. Small Cap Value Stocks	Fama - French Small Cap Value, as reported by Ibbotson Associates.
U.S. Large Cap Value Stocks	Fama - French Large Cap Value, as reported by Ibbotson Associates.

portfolio among various asset classes.[109] The portfolio labels reflect their ratio of equity to fixed income investments (that is, the 60/40 portfolio is 60% invested in equities, and 40% invested in fixed income securities). The table describes how stocks and bonds are distributed into specific asset classes. For example, the 60/40 portfolio invests 10% each in the S&P 500, U.S. Large Cap Value Stocks, U.S. Small Cap Stocks, U.S. Small Cap Value Stocks, International Large Cap Stocks, and International Small Cap Stocks. On the Fixed Income side, it invests 30% in One Year Fixed Income securities and 10% in Five Year Fixed Income securities. Taken together, the six model portfolios define a continuum of allocations from 100% fixed income to 100% equity.

Figure 4.1: Distribution of Model Portfolios Among Asset Classes

	Portfolio Equity/Fixed Income					
Asset Class	**0/100**	**20/80**	**40/60**	**60/40**	**80/20**	**100/0**
S&P 500 Stock Index	0%	4%	6.5%	10%	12.5%	17.5%
U.S. Large Cap Value Stocks	0%	4%	6.5%	10%	12.5%	16.5%
Decile 9-10 U.S. Small Cap Stocks	0%	4%	6.5%	10%	12.5%	16.5%
U.S. Small Cap Value Stocks	0%	4%	6.5%	10%	12.5%	16.5%
Int'l Large Cap Stock	0%	2%	7%	10%	15%	16.5%
Int'l Small Cap Stock	0%	2%	7%	10%	15%	16.5%
One Year Fixed Income	100%	60%	50%	30%	15%	0%
Five Year Fixed Income	0%	20%	10%	10%	5%	0%

The next table illustrates results realized over the thirty-four year period. Annualized Return measures the mean annual compound rate of return. Standard Deviation measures the degree of investment risk realized by each portfolio. Ending Value of $1,000 describes the accumulation of $1,000 invested in each portfolio on January 1, 1973, as of December 31, 2006. The divergence of returns and cumulative results over the thirty-four year period is dramatic:

Figure 4.2: Historical Performance of Model Portfolios, 1973 - 2006

	Portfolio Equity/Fixed Income					
	0/100	**20/80**	**40/60**	**60/40**	**80/20**	**100/0**
Annualized Return	6.95%	8.94%	10.45%	11.97%	13.29%	14.49%
Standard Deviation	3.34%	4.72%	7.56%	10.97%	14.52%	17.96%
Ending Value of $1,000	$9,807	$18,406	$29,370	$46,687	$69,500	$99,597

The $99,597 earned by the 100% equity portfolio for each dollar invested on 1/1/73 is an attractive number indeed. However, investors should consider how disconcerting it would be to experience the worst annual losses that the all-equity portfolio generated over the period. The Arab Oil Embargo years of 1973 and 1974 were particularly distressing.

[109] Returns are proxied by indexes; and, therefore, should not be construed as a track record of any actual portfolio. Indexed investments were not available to investors throughout the entire period. The annual return and standard deviation calculations are based on monthly returns for portfolios that were rebalanced quarterly during each one-year holding period.

Figure 4.3: Annual Portfolio Performance

Annual Portfolio Performance: 34 Calendar Years 1/1/73 - 12/31/06

Year	0/100	20/80	40/60	60/40	80/20	100/0
1973	7.45%	1.39%	**-3.08%**	**-8.21%**	**-12.88%**	**-17.93%**
1974	8.55%	1.50%	**-4.85%**	**-11.40%**	**-17.88%**	**-24.27%**
1975	7.08%	16.33%	24.30%	32.88%	40.97%	49.56%
1976	6.22%	13.64%	17.00%	22.45%	26.12%	32.17%
1977	6.11%	7.61%	12.23%	15.05%	19.53%	21.19%
1978	8.43%	9.43%	14.59%	17.60%	22.44%	24.59%
1979	11.15%	13.03%	14.72%	17.06%	18.50%	21.82%
1980	12.60%	14.21%	17.91%	20.84%	24.23%	27.41%
1981	16.23%	12.97%	10.96%	8.69%	6.39%	4.52%
1982	13.51%	18.04%	17.00%	18.41%	18.00%	19.60%
1983	9.98%	13.96%	18.28%	22.51%	26.76%	31.01%
1984	11.63%	11.35%	10.42%	9.65%	8.85%	7.85%
1985	8.98%	16.63%	23.37%	29.81%	36.99%	42.08%
1986	6.86%	11.87%	17.93%	22.67%	29.05%	32.03%
1987	6.90%	5.73%	7.66%	7.85%	9.62%	8.98%
1988	7.81%	11.07%	14.79%	18.30%	21.97%	25.38%
1989	9.06%	12.66%	14.96%	17.76%	20.25%	23.03%
1990	8.29%	3.63%	**-1.64%**	**-6.59%**	**-11.82%**	**-16.53%**
1991	6.29%	12.95%	15.45%	19.89%	22.81%	27.60%
1992	4.03%	6.54%	5.88%	7.02%	6.52%	8.48%
1993	3.51%	8.28%	12.35%	16.37%	20.71%	23.94%
1994	5.16%	3.07%	3.88%	3.47%	3.92%	3.51%
1995	6.31%	12.42%	14.28%	18.07%	20.38%	24.55%
1996	5.67%	7.43%	8.88%	10.70%	12.06%	14.41%
1997	5.80%	9.98%	11.14%	14.11%	15.37%	19.44%
1998	5.28%	6.91%	7.93%	9.04%	10.22%	11.20%
1999	5.10%	6.72%	10.68%	13.55%	17.27%	19.97%
2000	6.34%	4.71%	1.42%	**-1.13%**	**-4.24%**	**-6.77%**
2001	3.84%	4.94%	2.71%	2.19%	0.22%	0.11%
2002	2.09%	**-0.72%**	**-5.09%**	**-9.19%**	**-13.18%**	**-18.04%**
2003	1.26%	11.23%	20.43%	29.84%	39.19%	48.18%
2004	1.79%	5.85%	9.99%	13.96%	18.16%	21.75%
2005	3.54%	4.21%	6.06%	7.31%	9.06%	10.10%
2006	5.02%	7.93%	11.55%	14.79%	18.37%	21.42%

To be truly successful, portfolios must often generate returns over and above the cost of living. Adjusting nominal annual returns for inflation provides a useful picture of portfolio results:

Figure 4.4: Annual Constant Dollar Portfolio Performance

Annual Portfolio Performance Adjusted for Inflation: 34 Calendar Years 1/1/73 - 12/31/06						
Year	**0/100**	**20/80**	**40/60**	**60/40**	**80/20**	**100/0**
1973	**-1.24%**	**-6.81%**	**-10.92%**	**-15.63%**	**-19.93%**	**-24.56%**
1974	**-3.25%**	**-9.54%**	**-15.20%**	**-21.03%**	**-26.81%**	**-32.51%**
1975	0.06%	8.71%	16.15%	24.17%	31.73%	39.76%
1976	1.34%	8.42%	11.63%	16.83%	20.33%	26.10%
1977	**-0.62%**	0.79%	5.11%	7.76%	11.95%	13.51%
1978	**-0.55%**	0.37%	5.10%	7.87%	12.31%	14.27%
1979	**-1.90%**	**-0.25%**	1.25%	3.31%	4.58%	7.51%
1980	0.18%	1.61%	4.91%	7.51%	10.52%	13.36%
1981	6.69%	3.70%	1.85%	**-0.23%**	**-2.34%**	**-4.06%**
1982	9.28%	13.64%	12.64%	14.00%	13.60%	15.15%
1983	5.95%	9.79%	13.95%	18.03%	22.13%	26.21%
1984	7.39%	7.12%	6.22%	5.48%	4.71%	3.75%
1985	5.02%	12.40%	18.88%	25.09%	32.01%	36.92%
1986	5.66%	10.62%	16.62%	21.30%	27.61%	30.56%
1987	2.39%	1.26%	3.12%	3.29%	4.99%	4.38%
1988	3.25%	6.37%	9.93%	13.29%	16.81%	20.07%
1989	4.22%	7.66%	9.86%	12.53%	14.91%	17.57%
1990	2.06%	**-2.33%**	**-7.30%**	**-11.97%**	**-16.90%**	**-21.33%**
1991	3.13%	9.59%	12.02%	16.33%	19.16%	23.81%
1992	1.10%	3.54%	2.90%	4.00%	3.52%	5.42%
1993	0.74%	5.39%	9.35%	13.26%	17.48%	20.62%
1994	2.42%	0.39%	1.17%	0.78%	1.22%	0.81%
1995	3.68%	9.64%	11.45%	15.15%	17.40%	21.46%
1996	2.27%	3.98%	5.38%	7.14%	8.46%	10.73%
1997	4.03%	8.14%	9.28%	12.20%	13.44%	17.44%
1998	3.61%	5.21%	6.22%	7.31%	8.47%	9.44%
1999	2.36%	3.93%	7.78%	10.58%	14.20%	16.84%
2000	2.85%	1.28%	**-1.90%**	**-4.37%**	**-7.37%**	**-9.82%**
2001	2.25%	3.33%	1.14%	0.63%	**-1.31%**	**-1.42%**
2002	**-0.28%**	**-3.02%**	**-7.29%**	**-11.30%**	**-15.19%**	**-19.94%**
2003	**-0.60%**	9.18%	18.21%	27.44%	36.62%	45.45%
2004	**-1.42%**	2.52%	6.53%	10.36%	14.43%	17.91%
2005	0.12%	0.76%	2.55%	3.77%	5.46%	6.46%
2006	2.41%	5.25%	8.79%	11.95%	15.44%	18.41%

The constant dollar adjustment shows that inflation is a threat to the portfolio that is both subtler and more persistent than sudden shocks to the domestic or global financial markets. Inflation strikes hardest at the 100% fixed income portfolio. This low variance portfolio traditionally appeals to the most risk-averse investors.[110] However, over the long term, the "safest" portfolio is perhaps the most risky. For example, when portfolio returns are measured over five-year periods, the 100% fixed income portfolio experienced the greatest number of real losses:

Figure 4.5: Overlapping Five-Year Period Constant Dollar Portfolio Performance

30 Overlapping Five Year Periods 1/1//73 - 12/31/06						
Starting In	**0/100**	**20/80**	**40/60**	**60/40**	**80/20**	**100/0**
1973	**-0.75%**	0.03%	0.58%	0.82%	0.79%	0.37%
1974	**-0.62%**	1.52%	3.97%	5.89%	7.84%	9.06%
1975	**-0.34%**	3.53%	7.72%	11.74%	15.82%	19.70%
1976	**-0.32%**	2.14%	5.55%	8.57%	11.83%	14.79%
1977	0.72%	1.23%	3.63%	5.19%	7.25%	8.69%
1978	2.65%	3.69%	5.07%	6.38%	7.57%	9.00%
1979	3.96%	5.57%	6.79%	8.32%	9.39%	11.19%
1980	5.85%	7.09%	7.81%	8.77%	9.41%	10.40%
1981	6.86%	9.27%	10.55%	12.11%	13.37%	14.65%
1982	6.65%	10.69%	13.58%	16.58%	19.60%	21.93%
1983	5.27%	8.17%	11.59%	14.30%	17.73%	19.56%
1984	4.73%	7.48%	10.79%	13.37%	16.69%	18.38%
1985	4.10%	7.59%	11.54%	14.85%	18.88%	21.37%
1986	3.51%	4.61%	6.13%	7.06%	8.37%	8.64%
1987	3.01%	4.42%	5.28%	6.16%	6.89%	7.49%
1988	2.74%	4.88%	5.23%	6.31%	6.59%	7.71%
1989	2.24%	4.69%	5.12%	6.30%	6.71%	7.81%
1990	1.88%	3.23%	3.40%	3.98%	4.04%	4.54%
1991	2.20%	5.65%	7.28%	9.72%	11.48%	14.03%
1992	2.03%	4.54%	5.98%	7.93%	9.40%	11.51%
1993	2.62%	5.46%	7.26%	9.58%	11.42%	13.94%
1994	3.20%	5.42%	6.64%	8.40%	9.66%	11.75%
1995	3.19%	6.16%	8.00%	10.43%	12.34%	15.09%
1996	3.02%	4.49%	5.28%	6.41%	7.14%	8.44%
1997	3.02%	4.36%	4.42%	5.08%	5.14%	5.95%
1998	2.15%	2.11%	1.04%	0.26%	**-0.81%**	**-1.87%**
1999	1.31%	2.86%	3.23%	3.76%	3.88%	3.88%
2000	0.55%	2.58%	2.98%	3.72%	3.92%	4.07%
2001	0.01%	2.48%	3.90%	5.43%	6.65%	7.58%
2002	0.04%	2.86%	5.43%	7.70%	10.05%	11.60%

The salient point is that, in spite of the fact that the 1970s was arguably the worst decade for the U.S. stock market since the Great Depression, balanced portfolios did well over this period, and over most subsequent five year periods. Poorly diversified portfolios, tilted strongly towards either 100% fixed income or 100% equity, however, did not. When the bear market of 2001-2002 is factored in, the advantage of prudent,

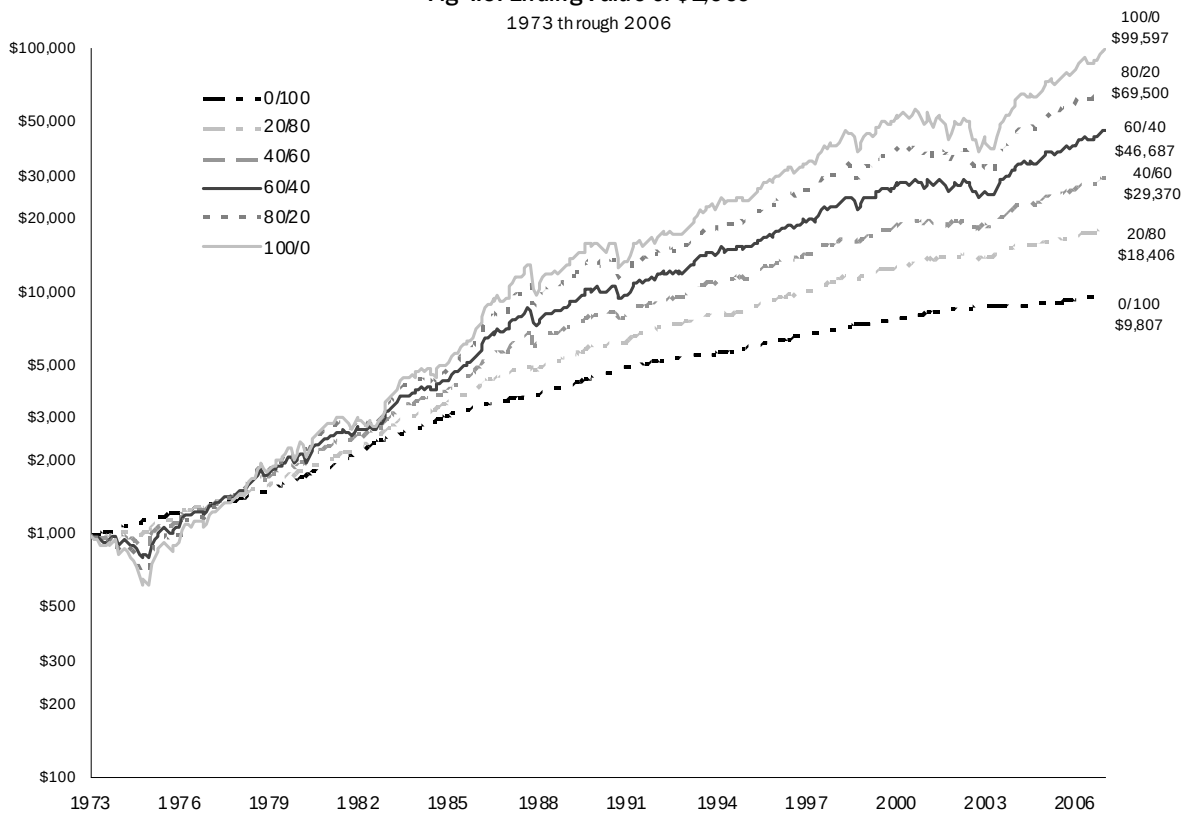
[110] For a more detailed discussion of the combined effects on portfolios of inflation, trading costs and taxes, see TAXES, INFLATION AND TURNOVER below.

balanced and globally diversified portfolios is fully borne out.[111] All-equity portfolios appeal to investors wishing to accumulate wealth quickly. Ironically, however, the return variance properties of an all-equity portfolio require the investor to possess both great patience and extraordinary risk tolerance.

As the graph below makes manifest, risk and return are quite tightly related (note that the y-axis is logarithmic in scale). Increasing portfolio exposure to equities increases the period-to-period amplitude of changes in portfolio value. The $99,597 terminal value was not a free lunch.

Fig 4.6: Ending Value of $1,000

1973 through 2006



DEFINING ASSET CLASS WEIGHTINGS

The Risk/Return Continuum is useful as a heuristic tool, either to gauge risk tolerance or to convey the cost in volatility that must be paid to achieve a required return. Once the investor determines the preferred risk and return characteristics of the portfolio, the job of portfolio building and implementation begins.

The first step is the selection of asset classes. Numerous asset classes are absent from the model portfolios of the risk/return continuum. These include Real Estate, Emerging Markets, and International Bonds. Most investors will want to include one or more of these asset classes for the sake of diversification. As a general rule, expanding the opportunity set of investments will enhance the ability to customize a portfolio that can produce a satisfactory future outcome.

[111] One cannot conclude that the 100% equity portfolio, which generated the highest terminal wealth in the absence of cash flows, would also generate the greatest amount of ending wealth in the presence of periodic distributions. The presence of cash flow requirements may alter the optimal asset allocation because each cash flow acts as a multiplier on downside returns and as a cap on upside returns. The 'Equity is better because it outperforms Bonds' argument is a potentially dangerous approach to wealth management in the presence of liquidity needs.

On the other hand, many investors have unique preferences or constraints that limit asset allocation policy. For example, the investor may believe that U.S. investments are intrinsically superior to foreign investments; or that investing in foreign companies facilitates the transfer of domestic job opportunities to overseas competitors. Alternately, some investors are leery of certain U.S. Large Company stocks, and may wish to avoid investing in companies engaged in businesses or practices they consider morally reprehensible or environmentally destructive. Although engaged in many, varied and far-flung businesses, for example, General Electric is active in defense contracting and nuclear energy. Similarly, RJR/Nabisco is both a food and beverage as well as a tobacco company. Either firm might be objectionable to socially conscious investors.

The asset allocation decision increases in complexity when an investor owns illiquid financial assets. Illiquid financial assets include residential and commercial real estate, closely-held business interests, annuities, long-term certificates of deposit, and limited partnership units. Alternatively, even when financial assets are readily tradeable, the capital gains tax on sales of highly appreciated positions in stocks or mutual funds may make sales impracticable. All these factors affect which asset classes a portfolio should own, as well as each assets proportionate weighting within the portfolio.[112]

Once the investor identifies and selects appropriate asset classes, he must determine suitable target weightings. Adoption of one of the naïve allocations used in the Continuum Model Portfolios may be inappropriate. At this point, the advantages of portfolio 'factor loading' come into play. By customizing exposures (value vs. growth; small vs. large, foreign vs. domestic, etc.), investors can fine tune their portfolio so that it can better support cash flows, wealth accumulation, or other objectives. For example, some investors may have a "dynastic" or multi-generational planning horizon for family wealth accumulation. They may wish to invest solely in U.S. stocks because of their long-term high expected returns; but they are not prepared to assume the amount of risk exhibited in a 100% U.S. large company portfolio. By diversifying the portfolio by including U.S. small company and value risk factors, they can fine tune the portfolio's asset allocation so that it is better matched to their objectives and preferences.

Factor loading, if it is not to expose the portfolio to substantial unsystematic risk, should be both careful and sophisticated. Indeed, intelligent factor loading may enable investors selecting a fixed income percentage allocation to increase the expected return to the equity portion of their portfolios. As one commentator puts it:

> Risks can be productive if they are expected to generate return, or unproductive when they are too large or unintended. Thus, knowing the level of risk in a portfolio is not enough. The investor needs to measure where the risk is coming from.[113]

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[112] This introductory monograph does not consider the "hedging" aspects of investment decision making. For example, a college professor or civil service employee may have labor income similar to a bond. An investor with this type of labor wealth may have a high demand to hold equities in the investment portfolio. An entrepreneur, however, may have an income stream with equity-like characteristics and, therefore, may have a high demand to hold fixed income instruments in the portfolio. Hedging objectives can be critically important in the design of the investment program; and picking the money managers with the highest realized returns to date in the hope that positive returns can also hedge shocks to labor income may be counterproductive to both consumption and wealth accumulation objectives.

[113] Litterman, Bob "Risk Measurement," Modern Investment Management (John Wiley & Sons, 2003), pp.33-34.

Portfolios are aggregations of specific investments. Once an investor determines the portfolio's asset allocation, he must select investments to meet the asset class weighting targets. An important decision is whether to purchase individual securities (that is, individual stocks, bonds, options contracts, etc.) or pooled investment vehicles (that is, mutual funds, exchange-traded funds, etc.). For all but the largest portfolios, pooled investment vehicles are preferable if the investor wishes to achieve a reasonable level of diversification.[114]

Pooled investment vehicles such as mutual funds offer efficient diversification for each dollar invested. Even small dollar amounts invested in a broadly diversified fund can, in effect, spread investment risks across many individual issues within an asset class. A U.S. investor attempting to purchase a broad sample of Pacific Rim small company stocks, for example, would face daunting information and trading costs if he elects to purchase individual securities. Mutual funds, however, offer significant economies of scale because they spread costs across thousands of customers, and risk over hundreds of securities.

When selecting a mutual fund, however, it is important to monitor how closely the fund's performance mirrors the performance of the asset class it is intended to represent within the portfolio. This is not a simple matter of consulting the fund's prospectus or its marketing materials. The behavior of funds, and thus their reliability as a representative of a given asset class, can change significantly for a number of reasons:

Fund investment objectives, policies, and portfolio holdings can change over the course of a market cycle;

Fund investment objectives, policies, and portfolio holdings can change with a transition to a new manager, or with a change in the fund's analytical support team;

Funds may experience style drift as the corporate capitalization and accounting ratios of securities change over time;

Funds define asset class boundaries differently. For example, there is disagreement within the financial community about where to draw the line between small cap and mid cap companies.

Prospectuses often give fund management wide latitude to purchase different kinds of securities. Many funds, for example, invest in international equities or bonds despite the fact that their marketing literature suggests that they are domestic funds.

To reach a judgment about how well a fund's returns track those of a comparable asset class, the investor must use statistical methods. A commonly used evaluation metric is the 'coefficient of determination,' or R^2 statistic.[115] R^2 is a measure of how closely the variations in return of one data series - e.g., an index - explain variations in a second data series - e.g., a mutual fund. An R^2 statistical value close to 100 evidences the success of the fund in capturing the returns of the asset class it represents. Further, the R^2 statistic provides data on the degree to which investment vehicles chosen to meet asset class weighting targets have strayed

[114] Consider, for example, the research findings of Burton Malkiel: "…to get to where idiosyncratic risk asymptotically touches the systematic risk line…you need about 10 times as many stocks as before, or 200 stocks. If you want to get the returns of the asset class itself, of course, indexing would be the best strategy. Malkiel, Burton G., "How Much Diversification is Enough?" Equity Portfolio Construction (AIMR, 2002), p. 26.

[115] The square root of R^2 is the correlation statistic. The reader should note that a high correlation to a benchmark, although of great importance, may not be as critical as the selection of the benchmark used as a proxy for the asset class. For example, a small cap fund emulating the Citibank S&P Small Company Value index will perform very differently from a fund emulating the Russell 2000 small company index despite the fact that they are both small company index funds. Choice of appropriate benchmarks is a critical decision for asset allocation policy, as well as for investment manager selection and retention policy. These issues, however, lie outside the scope of this discussion.

from their intended purposes - a state of affairs which, left uncorrected, might skew the portfolio's future asset allocation.

ACTIVE VERSUS PASSIVE MANAGEMENT

Investment management styles fall into one of two basic categories--active and passive:

> Active management attempts to achieve superior returns by identifying mispriced securities. Superior returns follow from a willingness to disagree with market prices, concentrating holdings in a limited number of securities. The manager embraces asset concentration risk believing that, over time, other market participants will identify the mispricing, and drive the security's price to its "true" price, generating better than market returns for the fund.
>
> Passive management attempts to earn market returns by buying all (or a statistically representative sample) of the securities within an asset class or index. Generally, passive management does not try to beat the market; but, rather seeks to match the returns of the market.

The distinction between active and passive investment strategies is nicely captured by the following distinctions: "passive investment management consists of tracking the market, without attempting to anticipate its evolution....the objective of active investment management is to perform better than the market, or better than a benchmark that is chosen as a reference."[116]

ACTIVE MANAGEMENT

The fund prospectus defines the investment objective of an actively managed fund. Actively managed funds perform significant research and security analysis, and tend to experience relatively high portfolio turnover. A limited number of securities are selected from the available investment universe (the "opportunity set"). Selection and timing of security purchases rely on either fundamental analysis (business cycle, inflation and interest rate forecasting), or on technical analysis (forecasting stock market trends based on price and volume movements). The fund's management attempts to beat the market.[117] Purchase and sale of individual securities is based on macroeconomic capital market forecasts as well as forecasted inputs to pricing and asset volatility models. Success or failure of investment decisions is largely a function of the accuracy of analysts' predictions and on the integrity of their security valuation models.[118]

As noted earlier, under the Prudent Investor Rule the investor must justify any risks and costs attributable to active management:

> Active strategies...entail investigation and analysis expenses and tend to increase general transaction costs, including capital gains taxation. Additional risks also may result from the

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[116] Amenc, Noel & Le Sourd Veronique, Portfolio Theory and Performance Analysis (John Wiley & Sons, 2003), pp. 6-8.

[117] Active managers seek to add value by beating their comparative benchmarks. Investors, however, should evaluate their personal objectives prior to portfolio design. Is the objective to beat a market or is the objective to solve an intertemporal cash flow problem or a wealth accumulation objective?

[118] A vast amount of literature explores the accuracy of analyst forecasts, the extent to which forecasts may be biased, and the impact of the recent SEC disclosure obligations (Regulation FD's requirement for corporations to disclose material information publicly and uniformly). Dreman, David N. & Berry, Michael A, "Analyst Forecasting Errors and Their Implications for Security Analysis," Financial Analysts Journal (May/June, 1995), pp. 30-41 provides a good historical survey of the research. A comprehensive update is found in Francis, Jennifer, Chen, Qi, Willis, Richard H. & Philbrick, Donna R., Security Analyst Independence (Research Foundation of CFA Institute, 2004). The investor wishing to select active managers should be sufficiently skilled so that he can, at a reasonable confidence level, identify managers with positive forecasting abilities.

> difficult judgments that may be involved and from the possible acceptance of a relatively high degree of diversifiable risk.... If the extra costs and risks of an investment program are substantial, these added costs and risks must be justified by realistically evaluated return expectations. Accordingly, a decision to proceed with such a program involves judgments by the trustee that:
>
> Gains from the course of action in question can reasonably be expected to compensate for its additional costs and risks;
>
> The course of action to be undertaken is reasonable in terms of its economic rationale and its role within the trust portfolio; and
>
> There is a credible basis for concluding that the trustee - or manager of a particular activity - possesses or has access to the competence necessary to carry out the program and, when delegation is involved, that its terms and supervision are appropriate.[119]

Until recently, investment orthodoxy focused on two methods for controlling risk and enhancing portfolio returns. Traditional wisdom holds that successful portfolios derive either from superior security selection, or astute market timing decisions, or both. A preponderance of academic evidence, however, indicates that it is difficult to sustain consistent market beating performance by using either of these approaches.

Fundamental Analysis

The Efficient Market Hypothesis represents a challenge to classical approaches to stock investing.[120] Financial analysts had long used fundamental analysis to locate mispriced securities. At the heart of such systems lies the belief that analysts can use accounting ratios, valuation techniques, and data from corporate financial statements and economic reports to develop algorithms for discovering overvalued or undervalued stocks. Good fundamental analysis entails investigating a firm's financial statements, industry position, general economic trends, competitive advantages, earnings prospects, etc., to forecast its future profitability.

Historically, many believed that financial analysts were best positioned to predict future stock price movements. Their in-depth knowledge and close observations of particular firms or industries justified trading (buy/sell) recommendations. Traditionally, the analyst would alert investors - through their brokers - to undiscovered buying opportunities or unsuspected problems.[121]

The widespread use of fundamental analysis by the major institutions that dominate trading is an important reason why bargains can no longer easily be found. The more numerous and more skillful analysts become, the more difficult it is to earn abnormal profits. As one Wall Street observer comments:

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[119] *Restatement of the Law, Third, of Trusts (Prudent Investor Rule),* p. 30.

[120] For example, Benjamin Graham, a prominent advocate of techniques of fundamental analysis, writes, in 1976: "I am no longer an advocate of elaborate techniques of security analysis in order to find superior value opportunities.... In the old days any well-trained security analyst could do a good professional job of selecting undervalued issues through detailed studies; but in the light of the enormous amount of research now being carried on, I doubt whether in most cases such extensive efforts will generate sufficiently superior selections to justify their cost. To that very limited extent I'm on the side of the "efficient market" school of thought now generally accepted by the professors." "A Conversation with Benjamin Graham" Financial Analysts Journal (September/October, 1976), p. 22.

[121] It was not that long ago that investors valued brokers because of their timely tips. Money managers were selected for their ability to act on insider information gleaned from their positions on boards of directors as well as from their relationships with corporate management. Today, clients who trade on material nonpublic information provided by their brokers end up like Martha Stewart. In many respects the role of the broker has changed from a vigilant watchman of market developments who seeks to protect investors from adversity, or who alerts clients to emerging opportunity, to something akin to a waiter announcing the 'house specials' on the current investment menu.

> ...the movement of increasing amounts of money into professional management...would make it just that much more difficult for us to capture rewards for our clients' pocketbooks. With competition for information becoming ever more intense, professional managers were destined to have a hard time in trying to outperform one another. We could not beat the market because we were rapidly becoming the market.[122]

Academic evidence raises questions whether analysts can add value for retail investors in a market dominated by institutional analysts:

> Discovery of good firms does an investor no good in and of itself if the rest of the market also knows those firms are good. If the knowledge is already public, the investor will be forced to pay a high price for those firms and will not realize a superior rate of return.... This is why fundamental analysis is difficult. It is not enough to do a good analysis of a firm; you can make money only if your analysis is better than that of your competitors because the market price is expected already to reflect all commonly available information.[123]

The existence of large numbers of savvy analysts who ensure that stock prices correctly and instantaneously reflect available information creates an investment environment in which successful security selection is extremely difficult.

Technical Analysis and Market Timing Systems

Technical analysts differ from financial analysts in that they look primarily at information about a company's stock trading patterns, such as price, volume and other market-related trends. These analysts generally ignore accounting information and macro-economic data. However, the central question is whether a careful analysis of past stock price movements and overall market trends can create a successful investment strategy. [124]

In a pioneering 1953 statistical study, Maurice Kendall considered this question. Kendall found no evidence that any statistically meaningful patterns could be found in stock prices. Securities prices trace a random walk. On any given day, it is equally likely that the price of a stock would increase or decrease, no matter what the stock's recent performance.[125] Such randomness in price changes is characteristic of an

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[122] Bernstein, Peter. Capital Ideas: The Improbable Origins of Modern Wall Street. Maxwell Macmillan, New York (1992), p. 140.

[123] Bodie, Zvi, Kane, Alex, and Marcus, Alan J. Investments. Irwin, Burr Ridge, Illinois (1993), p.364.

[124] Technical analysis underlies two strategies: (1) market timing; and, (2) trade execution. Market timing refers to tactical asset allocation strategies such as sector rotation, fixed income duration management in light of interest rate forecasts, equity beta management in light of macro economic forecasts, and so forth. Tactical asset allocation assumes a willingness to deviate from the portfolio's long-term strategic asset allocation. The extent of the deviation is a function of the investor's confidence in his or her forecasting ability. Unlike fundamental analysts, technical analysts justify such deviation based on market-related information rather than on exogenous accounting / macro-economic information. This essay does not discuss the use of technical analysis in the formation of portfolio trade execution strategies. There is little question that technical analysis has great value in the areas of portfolio implementation and trading strategies. See, for example, Hasbrouck, Joel, Empirical Market Microstructure, Oxford University Press (2007), p. 4: "At a single instant there may be many prices, depending on direction (buying or selling), the speed with which the trade must be accomplished, the agent's identity or other attribute, and the agent's relationship to the counterparty...." Close attention to price volatility, volume, evidence of buy/sell imbalances in the market, and so forth, may be critical to implementing successful trading strategies. See, also, Schwartz, Robert A. & Francioni, Reto, Equity Markets in Action: The Fundamentals of Liquidity, Market Structure & Trading (John Wiley & Sons, 2004), pp. 95-96.

[125] Kendall, Maurice. "The Analysis of Time Series, Part I: Prices.," Journal of the Royal Statistical Society, London. Vol. 96 (1953), pp.11-25. Subsequent research indicates that long-term price changes evidence some degree of predictability. See, for example, Campbell, John Y. & Shiller, Robert J., "The Dividend-Price Ratio and Expectations of Future Dividends

efficient, rational market in which current prices reflect all information. According to this line of research, the market's price movements are not irrational responses to events; rather, it is the events themselves that are unpredictable. In such a market, only new information can alter investor perceptions and, by definition, new information arises in an unpredictable fashion.

Some Technical stock analysts promote market timing systems. Market timing is the attempt to align portfolio exposure to market risk factors in anticipation of predicted changes in security prices. The lure of market timing is strong. It promises a system that generates gains and avoids losses. Market timing vocabulary is pervasive. It is found in many articles written by the popular press, and is constantly broadcast over radio and TV programs.

Claims of market timing ability are a fruitful area for independent, third party investigation because standard statistical tests can readily validate or invalidate such claims. In general, market timers justify their asset management strategies by advancing three assertions:

1. The decision maker or advisor, in fact, possesses market timing ability;
2. Market timing transactions reduce investment risk; and,
3. Market timing transactions increase investment returns.

At the limit, market-timing strategies eschew the diversification of a balanced portfolio approach in favor of concentrating asset positions into a single capital market (stocks, bonds or cash). However, if the market timing call is *incorrect*, the effect on portfolio value can be catastrophic. This is easy to see when the market timing recommendation calls for movement from all cash to all stocks. Given the susceptibility of a 100% equity position to unanticipated economic shocks, such a concentrated bet demands a high level of confidence in forecasting skills. When a timing recommendation calls for abandoning stocks for cash, however, the risk may be less easy to see. In this case, however, the catastrophe to wealth occurs not in the form of loss of principal, but in the form of opportunity costs—the cost of missing the wealth-generating process of the stock market.

The first important inquiry into market timing abilities is the Treynor and Mazuy essay published in 1966.[126] The authors test the hypothesis that market-timing skill can be found in the universe of professional mutual fund managers. They define market-timing skill as the ability to raise the sensitivity of the portfolio to the return of the stock market prior to the onset of bull market periods and lower portfolio sensitivity to stocks in anticipation of bear markets. Statistically, they compare (regress) returns in excess of the risk-free rate for a mutual fund's portfolio with returns in excess of the risk-free rate achieved by the stock market. If there is evidence of successful market timing ability, the characteristic line of the regression equation (i.e. Beta) should evidence a steep slope as the excess returns of the stock market grow large and a shallow slope as the excess returns turn negative (i.e. the market earns less than a T-Bill). Upon evaluating the professional management of 57 mutual funds over the period 1953 through 1962, the authors identify only one fund that exhibits statistically significant ability to time markets successfully.

In 1975, future Nobel Prize winner William Sharpe proposed another approach to measuring the market timing ability of investment professionals.[127] Sharpe assumes that a manager changes the composition of his

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and Discount Factors," Review of Financial Studies (fall, 1988), pp. 195-228 and Fama, Eugene F. & French Kenneth R., "Business conditions and expected returns on stocks and bonds," Journal of Financial Economics (November, 1989), pp. 23-49. Whether investment managers can successfully exploit market predictability to earn excess profits remains an open question. See, for example, Malkiel, Burton G., "Can Predictable Patterns in Market Returns be Exploited Using Real Money?" The Journal of Portfolio Management (30th Anniversary Issued, 2004), pp. 131-141.

[126] Treynor, Jack & Mazuy, Kay, "Can Mutual Funds Outguess the Market?" Harvard Business Review (July-August, 1966), pp. 131-136.

[127] Sharpe, William F., "Likely Gains from Market Timing," Financial Analysts Journal (March-April, 1975).

or her portfolio based on market forecasts. Shifts in portfolio composition and weighting are, therefore, proxies for the manager's market predictions. A close correspondence between the predictions of the manager and the actual direction taken by the market is evidence of superior market timing skill. However, given the fact that markets tend to outperform risk-free investments approximately two-thirds of the time, a market timer who is an eternal optimist will exhibit a 67% success rate. Sharpe therefore proposes several statistical adjustments to measure the proportion of correct timing calls in both bull and bear markets. A perfect market timer generates a score of 200% (correct prediction of each bull and each bear market) while an eternal optimist with no prediction skills generates a score of 100% because he or she will always fail to predict a bear market but will never miss a bull market. Sharpe's research leads to two important conclusions:

1. There is little evidence of superior market timing skills among the population of professional investment managers (i.e. the scores do not statistically differ from 100%); and,
2. The onus of transaction costs and commissions incurred in a simple one-time-per-year market timing system between stocks and T-bills demands that the market timer make correct calls at a 74% frequency rate (i.e. achieve a score of 148 or better) to beat a naive buy and hold strategy.

Further refinements in the methodology of statistical measurements generated a sequence of market timing studies in the 1970s and 1980s. The majority of these studies conclude that, in general, the professional money management industry possesses negative market timing skills.[128] The Journal of Financial Services Research published, in 1998, a study that extends research on market timing abilities to an evaluation of bank common ("pooled") trusts during the period 1984 – 1992.[129] The authors conclude that, considered in the aggregate, "bank trust department portfolio managers are unable to time the market successfully by changing their portfolio betas in anticipation of differential market conditions and, thus, are unable to outperform a passive buy and hold investment strategy." These results are what you would expect to find in relatively efficient markets.[130] These are markets in which the effects of economic, political, tax & regulatory, and firm-specific news are quickly impounded in the price of stocks. In this type of market, the price of any asset reflects the consensus opinion of investors regarding all relevant information affecting the risks and rewards of owning the security.

PERFORMANCE OF ACTIVE MANAGERS

Research suggests that active managers find it difficult to earn abnormal profits (i.e., profits in excess of expected returns, given the portfolio's risk level). The performance of major pension and endowment funds, and publicly traded mutual funds, should provide significant information. Major institutions attract above average money management talent. Publicly traded mutual funds operate under the spotlight of daily

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[128] See, for example, the survey in Reilly, Frank K., & Brown, Keith C., Investment Analysis and Portfolio Management Fifth Edition (Dryden Press, 1997), pp. 1015-1016; and Jones, Charles P., Investments: Analysis and Management Eighth Edition (John Wiley & Sons, Inc., 2002), pp. 303-304.

[129] Sahu, A., Kleiman, R., & Callaghan, J., "The Timing and Stock Selection Abilities of Bank Funds: Evidence Based on Meta-Analysis," Journal of Financial Services Research (1998), pp. 137-152.

[130] The notable exception to the preponderance of academic opinion is found in Grinblatt, M. & Sheridan, T., "Mutual Fund Performance: An Analysis of Quarterly Portfolio Holdings," Journal of Business (1998), pp. 393-416. This study finds evidence of market timing performance persistence and abnormal returns from market-timing strategies. However, the magnitude of abnormal returns was not great enough to justify the costs of implementing timing strategies. Other studies (e.g. Wagner, Jerry C., "Why Market Timing Works," Journal of Investing (Summer, 1997), pp. 78-81) provide evidence of positive returns to market timing for only limited sample periods. The phenomenon of limited periods of success for market timers, however, has been more deeply examined (e.g. Bauer, R. & Dahlquist, J., "Market Timing and Roulette Wheels," Financial Analysts Journal (January/February, 2001), pp. 28-40) and the study reaffirms academic conclusions regarding the low probability of market timing success.

published investment results. Successful funds attract millions of dollars in new contributions, while lagging results can shrink funds rapidly as investors bail out.

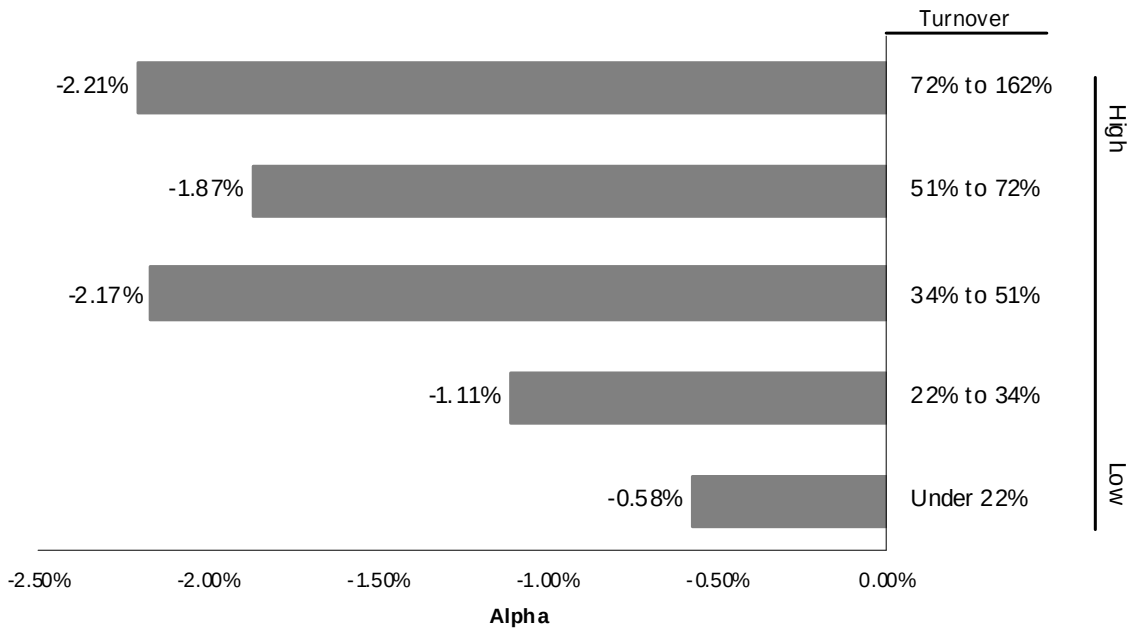
Mutual Fund Performance

An early study of actively managed mutual fund performance that surveyed returns from 115 funds from 1955 through 1964 found no evidence of a consistent ability to achieve superior performance. Indeed, performance was found to be worse than predicted by a 50/50 chance model.[131]

A comprehensive study of actively managed mutual fund performance from 1965 to 1984 (143 funds) by Elton, Gruber, Das and Hlavka[132] found that the mean annual alpha of funds evaluated for this period was negative (-1.59).[133] That is, the value added by active management, as compared with the performance of the relevant benchmark index, was -1.59% per year. Although there were 34 funds with positive alphas during the period, no alpha value was statistically significant. However, of the 109 funds with negative alphas, 21 negative results were statistically significant.

Even more dramatic was the finding that significant levels of active management (as evidenced by levels of trading - i.e., portfolio turnover percentage) detracted from investment performance rather than added to it. The following graph illustrates the study's findings. The x-axis measures the excess return (alpha) achieved by active management.

Figure 4.1 Effect of Trading Activity on Portfolio Return
1965 through 1984



Source: Elton, Edwin J., Gruber, Martin J., Das, Sanjiv, and Hlavka, Matthew, "Efficiency with Costly Information: A Reinterpretation of Evidence from Managed Portfolios," The Journal for Financial Studies, 1993

131 Jensen, Michael C., "Risk, the Pricing of Capital Assets, and the Evaluation of Investment Portfolios," Journal of Business 42, no. 2 (April, 1969) pp. 167-247.

132 Elton, Edwin J., Gruber, Martin J., Das, Sanjiv, and Hlavka, Matthew, "Efficiency with Costly Information: A Reinterpretation of Evidence from Managed Portfolios," The Journal for Financial Studies, 1993

133 Alpha is defined as excess risk-adjusted return.

Although active management subtracted value in every portfolio turnover range, the lower turnover managers outperformed those with high turnover. A similar relationship was discovered between fund expenses and performance results. Funds with high expense ratios do not generate enough extra return to overcome the burden of the added expense. Good performance is negatively correlated with high-priced management. This evidence strongly suggests that one key to long-term investment success is to keep expenses low and to eschew trading oriented systems.

Money Manager Performance

If the managers of publicly traded mutual funds find it difficult to beat the market, what is the record of the private money management industry? The Brookings Institution in 1992 published a comprehensive study of private money management.[134] This study utilized the proprietary SEI database (a private company specializing in evaluating manager performance), which contains a wealth of information on private money managers' performance, total funds under management, accounts gained and lost over specified time periods, fee schedules, equity share turnover, investment style, and so forth.

After adjusting for risk levels, the results for each rolling three year evaluation period 1983 through 1989 were as follows:

Figure 4.2 Equity Managers vs. S&P 500

Interval	S&P 500 Return	Active Management Return	Percent Underperforming
1983 - 1985	19.8	17.4	65%
1984 - 1986	18.5	17.4	57%
1985 - 1987	18.1	17.7	51%
1986 - 1988	13.3	13.0	54%
1987 - 1989	17.4	16.4	60%

According to the Brookings Institution, not only do the majority of private managers fail to beat an unmanaged index, but there is no consistency of performance which would indicate long-term superior management ability. Previous year's best performers segregated themselves almost exactly according to random chance during the following year. Indeed, by selecting the worst performing managers of the base evaluation year, one would have had a slightly better chance of benefiting from top quartile performance in the following year:

Figure 4.3 Prior Year Performance as an Indicator of Subsequent Performance

Prior Year Performance	Subsequent Year Performance			
	Top Quartile	Second Quartile	Third Quartile	Bottom Quartile
Top Quartile	26%	24%	23%	27%
Second Quartile	20%	26%	29%	25%

[134] Lakonishow, Josef, Shleifer, Andrei, and Vishny, Robert W., "The Structure and Performance of the Money Management Industry". Brookings Papers on Economic Activity: Microeconomics, Brookings Institution, Washington, D.C. (1992), pp. 339-391.

Third Quartile	22%	28%	26%	24%
Bottom Quartile	32%	22%	22%	24%

The study concludes that active manager trade strategies are unproductive when compared to naïve buy-and-hold portfolios:

> ...trades made by the funds were counterproductive, costing on average forty-two basis points relative to a portfolio frozen for six months and seventy-eight basis points relative to a portfolio frozen for twelve months.[135]

There was no positive relationship between the fees charged by private managers and actual performance results. When management fees are considered, "the results from the search database would lead one to conclude that active management subtracts value."[136]

SURVIVORSHIP BIAS

Burton Malkiel's comprehensive study of mutual funds from 1971 to 1991[137] points out that most studies of mutual fund returns overstate the benefits of active management because of "survivorship bias." Suvivorship bias occurs when reseach evaluates only the track record of funds that have survived for the entire period. Presumably, the failed funds went out of business because of poor investment performance. By failing to include the record of failed funds, the resulting bias in performance measurement is substantial:

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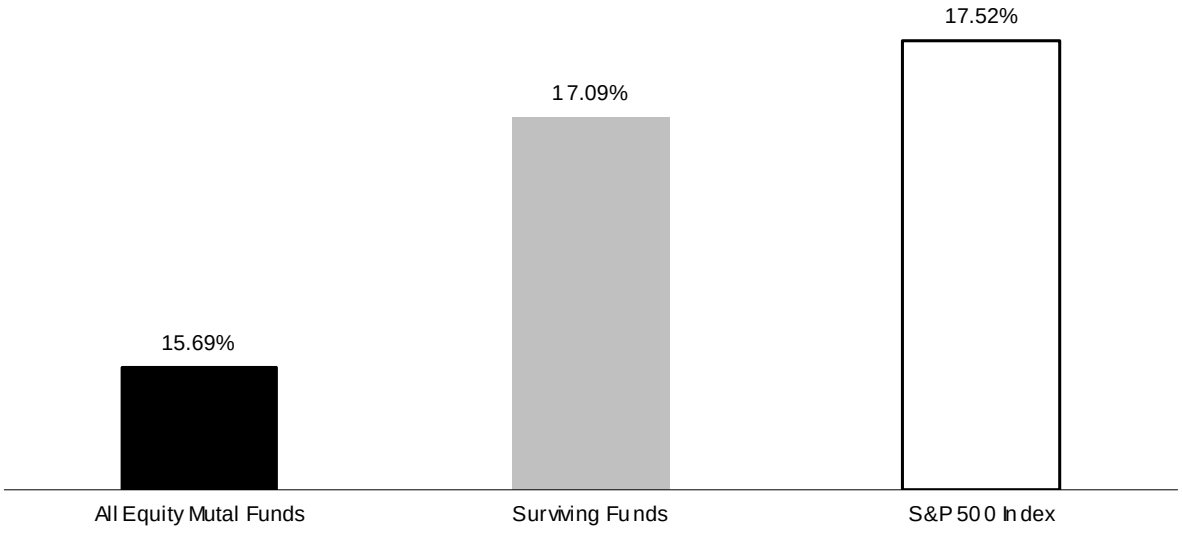
[135] Ibid., p. 354.
[136] Ibid., p. 351.
[137] Malkiel, Burton G., "Returns from Investing in Equity Mutual Funds 1971 to 1991," The Journal of Finance (June, 1995), pp. 549-571.

Figure 4.4: Estimates of Mutal Fund Survorship Bias
As Measured by Investment Returns
1971 through 1991



Source: Malkiel, Burton G., "Returns from Investing in Equity Mutual Funds 1971 to 1991," The Journal of Finance (June, 1995), pp. 549-571

PERFORMANCE CONSISTENCY CASE STUDY: THE FORBES MAGAZINE 'HONOR ROLL'

'Persistence' occurs when an investment manager produces returns consistently above or below the average performance for a group of similar funds or for a comparable manager peer group. More formally, performance persistence is a postive relation between performance ranking in an initial period and a subsequent period. Investors are interested in the issue of performance persistence because, if there is a strong performance correlation over time, investors can use past performance as a guide to predicting future investment performance.

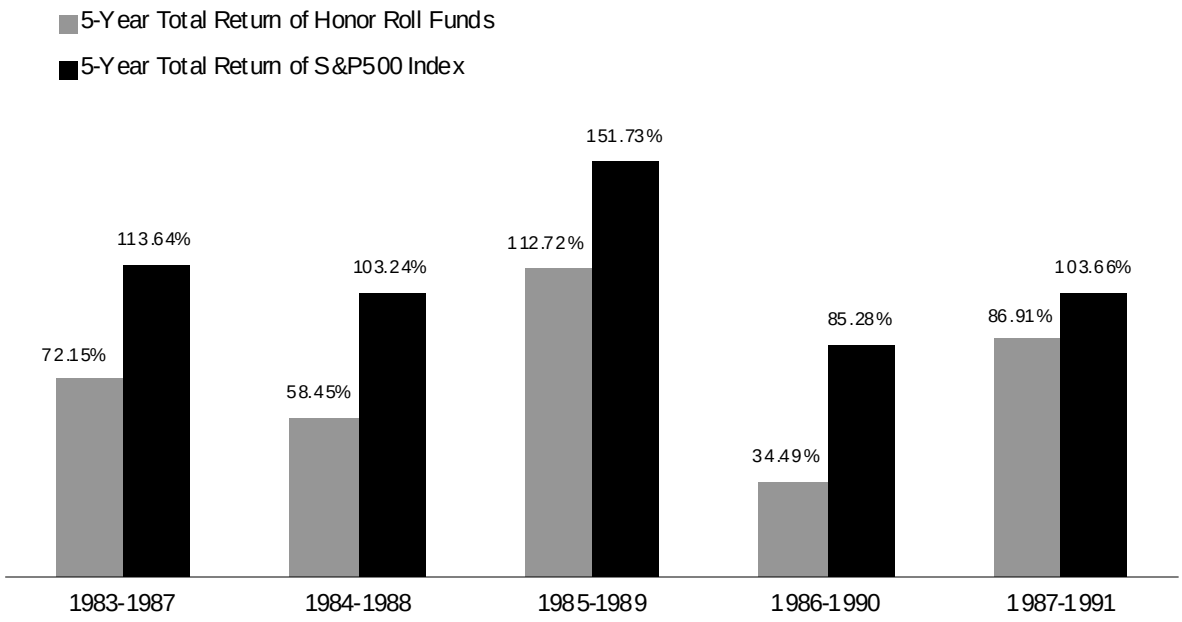
Malkiel's study is an important study of the issue of performance consistency. Ideally, the investor would like to identify funds with track records evidencing both high returns and consistency. Historical success is meaningful to a prospective investor only to the extent that he can reasonably expect that it will continue. Malkiel studies the Honor Roll of mutual funds published yearly by *Forbes Magazine*:

> To earn a place on the honor roll, a fund not only had to have an extraordinary long-run performance record...but also had to meet certain consistency goals. Performance is measured in both up and down markets, and funds must be at least top-half performers in down markets to qualify for honor status. Thus, the Forbes method guards against the selection of only high Beta funds following a sharp rise in the overall market. It is interesting to ask if investors could have achieved superior returns buying these 'consistent performers'.[138]

The following graph illustrates Malkiel's findings:

[138] Ibid., p.566.

Figure 4.5: Forbes' Honor Roll vs. S&P 500



Source: Malkiel, Burton G., "Returns from Investing in Equity Mutual Funds 1971 to 1991," The Journal of Finance (June, 1995), pp. 549-571

Malkiel concludes:

> Most investors would be considerably better off by purchasing a low expense index fund, than by trying to select an active fund manager who appears to possess a 'hot hand.' Since active management generally fails to provide excess returns and tends to generate greater tax burdens for investors, the advantage of passive management holds....[139]

Academic studies have evaluated active management performance over approximately forty years, and most have concluded that it is extraordinarily difficult for active management to add value consistently.[140] A comprehensive report by the Funds Management Research Centre reviews over 100 research papers published globally on the issue of the persistence of performance in managed funds.[141] The report concludes:

1. "Good past performance seems to be, at best, a weak and unreliable preditor of future good performance over the medium to long term. About half the studies found no correlation at all between good past and good future performance. Where persistence was found, this was more frequently in the shorter-term, (one to two years) than in the longer term."

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[139] Ibid., p. 571.

[140] One performance study concludes that, on average, active mutual fund managers are, in fact able to select stock portfolios that consistently outperform relevant comparative benchmark portfolios. However, once returns are adjusted for cash (nonstock) holdings, expenses and transactions costs, their net returns underperform the market by one percent. Wermers, Russ, "Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transactions Costs, and Expenses," The Journal of Finance (August 2000), pp. 1655-1695.

[141] Allen, David; Brailsford, Tim; Bird, Ron & Faff, Robert, "A Review of the Research on the Past Performance of Managed Funds," Funds Management Research Centre (June, 2003).

2. "More studies seem to find that bad past performance increased the probability of future bad performance."
3. "Where persistence was found, the 'out-performance' margin tended to be small. Where studies found persistence, some specifically reported that frequent swapping to best performing funds would not be an effective stgrategy, due to the cost of swapping."

Plausible explanations for these conclusions, in the authors' opinion, include:

- Methods that work well in one set of market conditions will not work well in new future economies;
- Fund managers, seeking to emulate the performance of their successful competitors, will copy investment methods and/or poach investment staffs;
- Large inflows of money to successful funds makes it difficult to find profitable new investments and to maintain relative performance;
- Future investment returns are difficult to forecast accurately and a significant portion of a fund's past performance may be attributable to random luck.

Interested readers may find a review of many articles on the performance evaluation of actively managed funds, investment advice newsletters, television pundits, etc. in previous issues of *Investment Quarterly* and *Fiduciary Forum* (www.schultzcollins.com) available on our firm's website.[142] The website also includes an indepth paper on the topic of investment manager selection and retention policy ["Without More: Trust Investment Manager Selection and Retention Policy"]. This paper provides an update on academic research with special emphasis on studies suggesting that active managers can provide the opportunity to earn excess profits. [143]

EVALUATING ACTIVE MANAGER PERFORMANCE

Although most unbiased studies indicate that capital markets are efficient, and that it is difficult to beat the market without assuming a correspondingly larger amount of investment risk, statistical analyses demonstrates that a small percentage of active managers consistently add value, after expenses. However, from the universe of thousands of active managers, random chance alone will produce some who fall into this elite category. Therefore, decisions to incorporate active management in an investment portfolio require statistical verification that the track record of the fund under consideration is both economically and statistically significant, i.e., is attributable to manager skill rather than luck. Further, actively managed funds should be regularly reviewed to determine their continued suitability for the portfolio.

Actively managed funds face a difficult burden of proof. In order to achieve returns in excess of a comparable benchmark, they must:

Be able to forecast consistently and correctly those securities that offer better than average returns;

Pay for their research costs from the returns that are actually generated;

Implement their buy and sell decisions in a cost effective manner; and

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[142] For example, Fiduciary Forum Vol. 5, #2 (September, 2001) offers an in-depth discussion of several articles: Chevalier, Judith & Ellison, Glenn, "Are Some Mutual Fund Managers Better Then Others? Cross-Sectional Patterns in Behavior and Performance," The Journal of Finance (June, 1999); Jain, P.C. & Wu, J.S., "Truth in Mutual Fund Advertising: Evidence on Future Performance and Fund Flows," The Journal of Finance (April, 2000) and Zheng, L., "Is Money Smart? A Study of Mutual Fund Investors' Fund Selection Ability," The Journal of Finance (June, 1999).

[143] http://www.schultzcollins.com/node/442

Avoid concentrating their 'bets' to the extent that investor risk is significantly magnified.

Fortunately, there are a number of straightforward statistical tests that measure a manager's forecasting ability. These tests represent a set of diagnostics to determine whether proprietary investment strategies are likely to add or subtract value. Employing investment strategies leading to extreme levels of asset concentration, without performing appropriate diagnostics within the money management organization, however, may be evidence of imprudent asset management. Such conduct puts the organization's interest in collecting fees above the clients' interest in achieving successful financial outcomes. In most respects, acting in the capacity of investment advisor or money manager without prudent diagnostics and internal controls is no different than selling medications without sufficient research and testing and without sufficient quality control in the manufacturing and distribution of the pharmaceutical product.[144]

An especially important set of statistical diagnostics is the measurement of forecast errors. If a portfolio manager has perfect forecasting ability (a prophet), diversification would be a stupid and wasteful use of client money. He or she would simply own the single security that over the forthcoming planning horizon generates the greatest return. If a portfolio manager has forecasting ability that is less than perfect, the optimal number of securities that should be held within the portfolio exists on a spectrum that extends from only a few securities to a large number of stocks. As the forecasting ability approaches 50/50, the portfolio's composition should approach the fully diversified index or customized asset benchmark that aligns with the liabilities to be discharged by the portfolio. Managers who market time by overweighting or underweighting sectors must have exceptionally high levels of forecasting skill because their portfolios tend only to own a few stocks concentrated in a few industries.

Additionally, it is worth spending a few moments to consider the marketing of "a disciplined" investment philosophy by many money management firms. Goldman Sachs' Abby Joseph Cohen notes: "…discipline sometimes does not give the right answer. It just gives a formulaic answer and can intensify the consequences of an incorrect answer."[145] There is a critical difference between being a disciplined investor (i.e. staying the course, not making common mistakes, etc.) and being a professional investment firm capable of adding value to a benchmark. Although the two propositions sound similar, the first claim merely suggests that the organization will not blunder as badly as amateur investors; the second that the organization possesses unique advantages that enable it to outperform its professional competitors.[146]

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[144] Martin Leibowitz, a managing director at Morgan Stanley, pointing out the folly of relying on past track record as a guide to future results, stresses the need for internal diagnostics as a necessary condition for prudent investment management. Leibowitz suggests rephrasing the prospectus warning on past performance: "A more ominous rephrasing would be, 'Past performance is not even a good guide to the *quality of the decisions* that went into that past performance.' Yet, the ultimate issue is the soundness of the decision process itself: Was all knowable information incorporated? Was the reasoning thorough and sound? Were alternative scenarios considered and contrary views sought? Was a well-planned implementation and monitoring program established—and then followed? Was there a routine postmortem analysis of lessons learned?" Leibowitz, Martin L., "Alpha Hunters and Beta Grazers," Financial Analysts Journal (September/October, 2005), p. 34.

[145] Cohen, Abby Joseph, "Aristotle on Investment Decision Making," Financial Analysts Journal (July/August, 2005), p. 29.

[146] Larry Harris, chief economist for the U.S. Securities and Exchange Commission, explains the problem as follows: "Traders who estimate values from the same information, using the same methods, tend to estimate the same values. Their estimates are highly correlated. They must compete with each other to profit from their insights. Traders whose estimates are not closely correlated with the estimates of other traders have orthogonal estimates (Orthogonal comes from a Greek word that means 'at right angles.') Traders obtain orthogonal estimates of value when they base their estimates on information that other traders do not use or when they analyze data using different methods than other traders use. The most profitable traders have very accurate estimates of value that are uncorrelated with the value estimates made by other traders." Harris, Larry, Trading and Exchanges: Market Microstructure for Practitioners, (Oxford Univ. Press, 2003), p. 237. Thus, a professional money manager can expect to beat the market only if he or she possesses high forecasting accuracy *and* the manager's forecasts deviate from the consensus forecasts of other market participants. It is hard to beat the market; and an organization should not claim that it is likely to do so prior to confirming its abilities and prior to charging fees to the public.

Thus, the essential question is: what makes the money manager believe that its 'disciplined' approach can create excess profits (profits beyond those reasonable for the risk to which it exposes client wealth)? The question is critical because without a verifiable answer, the investor should have no expectation that trades will be profitable. Organizations that do not, in fact, possess true competitive advantages that allow them to generate excess profits (i.e., add value for their clients) tend to emphasize qualities like "discipline," "personal service," "enthusiasm for meeting organizational goals," and so forth in their sales and client communications materials. It is not enough, in a highly efficient and competitive market, merely to advance reasons why an investment strategy should work. One must also be clear on why and how other 'sharp-pencil' institutional trading organizations will lose when faced with your organization's resources and skills.[147] Professional money managers who are merely better than average (i.e. better than the average individual investor), will earn less than average returns in the market.

One danger of focused portfolios lies in the fact that active management offers only a "conditional expectation" of success. Return is conditioned on the portfolio manager's forecasting abilities and trading skills. Indexed or asset-class investing, however, offers "unconditional" return expectations because the investor has a positive and unconditional expectation that he or she will earn the risk-premium of the capital market. The investor does not always attain the expected premium but lacking a positive expectation for reward, only risk-free investments would remain in the marketplace. Thus, a portfolio that avoids active or conditional investment risk is one that is well-constructed, broadly diversified, and that aligns with the investor's risk/return requirements.[148]

It is important to understand that active investment management may, in fact, represent a prudent course of action for investors. In the context of this discussion, two points are of interest because they reflect the ongoing debate over the wisdom of selecting active investment managers:

1. The focused portfolio school of thought argues that implementing a benchmarked portfolio (benchmarked to liabilities or to an asset-side allocation only) is the risky gamble. Indexes, in this view are capitalization-weighted vehicles that force investors to buy large portions of highly priced stocks and small portions of stocks that may represent potential bargains. Risk is avoided by deviating from the benchmarks (i.e., making active manager decisions) so that you stand a better chance of making money; and, on the other side of the argument,
2. Statistical tests demonstrating that the active manager adds positive risk-adjusted value for the benefit of the investor may not be sufficient to justify placing wealth in the hands of the manager. This is because, the investor could have achieved an unconditional return without active manager risk and; therefore, to justify assuming the extra risks and costs the investor requires some amount of positive alpha merely for taking "benchmark" risk. A second level of testing is required to determine, given the investor' risk aversion, whether the amount of positive value added by the manager is sufficient to justify the extra risks.

A case can be made for active management provided that the investor selects the managers carefully.[149]

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[147] Harris explains the concept of comparative advantage as follows: "On average, better plays win games. Good players and even great players do not generally win when they play against even better players. A player has an absolute advantage when he or she can do something well….A 2:20 marathoner will win the vast majority of marathons that are run every year. Such a time, however, would have been good for only 36th place in the men's marathon at the 2000 Olympics…. To win a game, you must not just play it well. You must play it better than your opponents." p. 476.

[148] Siegel, Laurence B., Benchmarks and Investment Management (The Research Foundation of AIMR, 2003).

[149] In some cases, it would be demonstrably imprudent not to select active management strategies. One example is the decision to utilize cash matching or immunization strategies when managing towards a fixed income liability cash flow stream. It would be highly unlikely that the characteristics of indexed investment products would match the characteristics of the funding liabilities.

PASSIVE MANAGEMENT

Passive funds usually attempt to mirror the returns and risks of an index or an asset class. There are several broad categories of passively managed investments.

Index Funds

An index is an artificial indicator of price levels in a market segment. To build an index, securities are grouped together based on their exhibition of certain quantifiable characteristics, and the weighted average of their prices is computed on a daily basis. The weighting is determined by, for example, their relative market capitalization (the Wilshire 5000 index tracks the stock performance of the 5000 largest companies; the S&P 500 is an index of five hundred large firms from a cross-section of representative U.S. industries); or, by composition (the U.S. Treasury Bond Index is composed exclusively of Government Securities; the Corporate Bond Index is composed exclusively of corporate debt issues).

Index funds seek to replicate a stock or bond index. They may buy every security in the index, or a representative sample of securities whose behavior mimics the index (sampling or sensitivity indexes). The fund manager makes no forecasting decisions. Management attempts to replicate the market rather than to beat it.

Full Replication Index Funds

These index funds hold most or all of the securities contained in the asset class benchmark, in the same weightings that exist within the benchmark. Purchase and sale of individual securities are based on changes in their relative market capitalization weights.

Sample Index Funds

These index funds hold representative samples of the securities contained in the benchmark. Sample index funds built through a 'random sample' process often exhibit large tracking error *vis a vis* the benchmark index. Sample index funds built through a 'stratified cell' approach minimize tracking error. In a stratified cell approach, the risk/return characteristics of underlying securities are decomposed and quantified. Each cell represents one such characteristic, and securities are selected on the basis of how closely their composition reflects the required characteristic.

Other Index Investment Approaches

There are several other approaches used by index funds. In general, these approaches seek to provide performance superior to the index, while retaining the objectivity and risk characteristics of the index approach. These include 'optimization indexes', such as stratified cell index funds; 'enhanced index funds,' which generally use derivatives in an attempt to benefit from market mispricing; and index funds which apply different market weightings to component securities—'equal weighted indexes,' 'fundamental indexes,' etc.

Structured Asset Class Funds

A Structured Asset Class fund is a group of securities that exhibit comparable risk/return characteristics. These funds usually decompose an index to capture a specific dimension of risk or return (e.g., the "value style" subset of S&P 500 stocks with low market value to asset value ratios); or, may group securities into a unique index reflecting certain historical risk/return characteristics (e.g., funds based on yield curve positioning).

Structured Asset Class funds capture returns by purchasing all securities with comparable risk/return

characteristics along an identifiable investment dimension (e.g., market size, yield curve placement, etc.). They may or may not try to track a benchmark index. Unlike an actively managed fund, the fund manager makes no forecasting decisions. Management seeks neither to beat the market nor, strictly speaking, to replicate it. The primary objective is to capture the long-term returns that flow from exposure to risk factors specific to an asset class. Purchase and sale of individual securities are based on passive filters (see below) designed to preserve the stated risk/return characteristics of the fund.

Structured Asset Class: Equity Fund Management

Whereas a large company stock index fund might own every security used to calculate its benchmark index, a small company structured asset class fund might impose passive inclusion or exclusion filters on the universe of securities. Inclusion filters often mandate purchase of securities with certain accounting ratios within a specified range, or purchase of target securities at prices below the bid/ask spread. Exclusion filters might proscribe ownership of bankrupt firms, or initial public offerings.

Structured Asset Class: Fixed Income Fund Management

Fixed income index funds might own a bond through all yield curve environments simply because the weighting of the index demands it. A structured asset class fund investing in fixed income, on the other hand, may shift maturities based on available yields (as reflected in the slope of the current yield curve) and on a horizon analysis of total expected return over the relevant holding period. Such an approach eschews forecasting (whether of interest rates, inter-sector spread or credit quality) because all analytical inputs are derived from the current yield curve environment.

EVALUATING PASSIVE FUND PERFORMANCE

Index Funds

When evaluating index funds, the investor is primarily interested in how well the fund matches the risks and rewards of its comparable benchmark index. For example, how closely does the Vanguard 500 Index Trust match the returns of the S&P 500 US Stock Index? Is the investor getting what he or she paid for?

No index fund tracks its benchmark with absolute precision [funds have expenses; benchmarks are merely paper portfolios]. Additionally, there is no generally accepted standard for determining whether an index fund remains prudent or suitable for an investment portfolio. Rather, the function of an evaluation is to present a range of credible and relevant information so that, taking the weight of the evidence as a whole, the investor can formulate intelligent judgments as to past performance as well as to likely future performance. Such a judgment is relative. Are there better investment vehicles? Is it worth incurring expenses to make changes? Are positive or negative trends likely to continue? Does the index fund offer benefits in some areas sufficient to outweigh negatives in other areas?[150]

Generally, two methods may provide important insight into index fund performance:

- Descriptive Statistics. This method of quantitative analysis is interested in the "shape" of the benchmark index's distribution of returns. What is the average return, the degree to which returns cluster around the average, and the degree to which the benchmark index generates extreme returns? Once the investor understands the risk and return characteristics of the benchmark index, he can determine how well the fund captures critical risk/return dimensions.

[150] Collins, Patrick J., "Monitoring Passively Managed Mutual Funds," The Journal of Investing (Winter, 1999), pp. 49-61.

- Statistical Correspondence. Also known as Regression Analysis, this method plots the period-by-period fund returns against those of the benchmark index. Ideally, the benchmark and fund returns match perfectly. The extent to which the monthly return data points plot off the line indicates the magnitude and prevalence of tracking error. A high degree of tracking error indicates that the index fund is not successfully capturing the risks and returns of the index—i.e., investors are not getting what they paid for.

Structured Asset Class Funds

Structured asset class funds are passively managed funds that incorporate asset management strategies sometimes found in actively managed funds. The most prominent manufacturer of structured asset class funds is Dimensional Fund Advisors (DFA). Dimensional funds generally avoid security selection decisions based on macro-economic forecasting, industry analysis, or security valuation models. Thus, unlike most actively managed funds, Dimensional does not generate returns through price change forecasting or market timing activities. Additionally, unlike many actively managed funds, Dimensional funds avoid asset concentration in only a few stocks or bonds in favor of owning a broad selection of securities within the applicable category (US large, US small, etc.). Hence, the term "asset class" funds – they own many of the eligible securities within the asset class.

Dimensional funds are "structured" by virtue of the application of certain passive filters or screens that are used to eliminate securities with undesirable characteristics. Thus, unlike most funds, investment decisions 'remove from' rather than 'select for.' Filters are passively applied to the universe of eligible securities. For example, the index of US small stocks may be filtered to eliminate companies in bankruptcy, companies without sufficient market liquidity, companies that are primarily closely-held, IPOs, and so forth. Generally, all securities remaining after application of the filters are purchased on a capitalization-weighted basis. Thus, a Dimensional equity fund may look very much like a full-replication index fund that has been "swept" to eliminate securities with certain undesirable characteristics. The filter rules for fixed income (bond) portfolios often take the form of decision rules based not on interest rate or yield-curve forecasts, but on identifying the position on the current yield curve that offers the most favorable credit or maturity risk spreads.

Many of Dimensional's equity funds are actively managed with respect to their market execution strategies. Unlike index funds that must present buy and sell orders quickly in order to avoid drifting away from their underlying index, structured asset class funds are not overly concerned with avoiding tracking risk (risk that the returns will differ from the index). As patient traders they may present transactions more slowly and, therefore, be less subject to unfavorable bid/ask spread expenses or market impact costs. Additionally, executing "off the market" trades through use of electronic communications networks that allow large institutions to deal directly with each other rather than through an exchange or broker/dealer intermediary, can reduce trading commissions and spreads. Dimensional tries to add value through application of filter rules and trading strategies rather than through price forecasting and market timing.

When evaluating structured asset class funds, the investor is primarily interested in whether the filter rules and trading strategies have added value vis-à-vis the relevant benchmark index. In some cases, adding value also extends to the concept of preserving value after fees and expenses. Many Dimensional funds, for example, operate in environments known for high liquidity costs. In these environments, underperforming a zero-cost paper index by only a few basis points per month is a major achievement.

A fully integrated portfolio management must consider the asset allocation issue from the unique perspective of the individual investor. For example, changes in personal wealth often alter the investor's risk tolerance.[151] Some investors, if a portfolio increases in value, will be better able to tolerate risk (the increase in value acts as a cushion against downturns). Others will become more conservative because portfolio gains make it possible to bear less risk in order to achieve financial objectives. Changes in risk tolerance are highly personal because each investor has a unique sensitivity to changes in wealth. Thus, a fully integrated portfolio management system:

1. Optimizes investor utility by creating an initial asset mix that generates appropriate risks and rewards ; and,
2. Monitors changes in investor circumstances to assure that the portfolio continues to be aligned with the investor's purposes, distribution requirements, and financial circumstances.

ASSET ALLOCATION APPROACHES

As a practical matter, asset allocation can follow one of several strategies:

Tactical Asset Allocation

Tactical asset allocation assumes that the investor's risk aversion is fixed. Consequently, wealth changes do not affect allocation decisions. However, asset price changes do affect capital market expectations (future expected returns, risks, and market correlations). Several well-known portfolio management approaches flow from this viewpoint. At the extremes, it leads either to strict contrarian strategies, or to market timing systems.

Strategic Asset Allocation

Strategic asset allocation determines the investor's desired exposure to sources of systematic risk. It is based on the belief that capital markets are generally efficient over long-term planning horizons. An efficient market rapidly incorporates all known information regarding economic and financial matters into the current price of a security. Thus any current asset price represents the consensus opinion of the asset's value. There is rarely hidden value waiting to be discovered by an astute investor. Price changes occur because:

- New information causes a reassessment of the asset's value; or
- There are more liquidity sellers than information buyers (but this results from random chance; no investor has the inside track on the direction of price change.

Under this theory, then, the prices of securities are exactly what the market requires to clear. Once the asset allocation mix is set, the portfolio remains fixed for relatively long periods of time. Among the asset management approaches that flow from this viewpoint are Buy-and-Hold and Constant Mix (which periodically rebalances back to the initial asset allocation) strategies.

Insured Asset Allocation

Insured Asset Allocation integrates both tactical and strategic methods. It takes the efficient market viewpoint that changes in price lack predictability sufficient to form profitable market-beating systems. However, it assumes that changes in wealth affect investor risk aversion. As portfolio value declines, the

[151] Riley, William B. & Chow. K. Victor, "Asset Allocation and Individual Risk Aversion," Financial Analysts Journal (November/December, 1992), pp. 32-37.

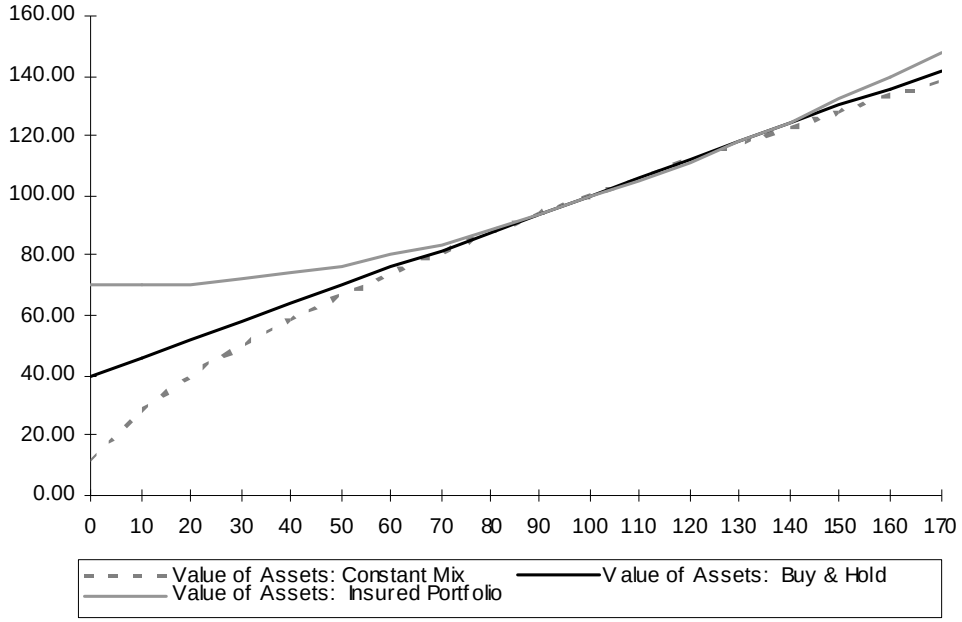
investor is assumed to become more sensitive to investment risks; as the value increases, the investor becomes more comfortable with risk.

The Insured Asset Allocation strategy sets a floor on the dollar value of a portfolio. As the portfolio value approaches the floor, assets are shifted to risk-free Treasuries. If the value sinks to the floor value, the entire portfolio will consist of Treasury Bills and will suffer no further declines. Conversely, as portfolio value climbs above the floor, more funds are committed to equities. Many Insured Asset Allocations have equity commitments of two to four times the spread between current portfolio value and the floor value. This difference is called a "multiplier". [152]

THEORETICAL PAYOFFS TO DIFFERENT ASSET MANAGEMENT APPROACHES

The following graph depicts the value of a portfolio (on the Y-axis) under three asset management approaches as the value of the risky assets (on the X-axis) changes. We consider the Buy and Hold, the Constant Mix and the Insured Asset Allocation approaches. The investment is made when the value of the risky asset is $100. The Buy and Hold portfolio assumes an initial commitment of 60% risky assets to 40% T-Bills. The Constant Mix assumes constantly rebalancing to 60% equity/40% T-Bill. The Insured Portfolio approach assumes a floor value of 70 with a multiplier of two. Therefore, the initial equity investment position of the Insured Portfolio is (100-70) x 2 = 60% equity/40% T-Bill. Although each portfolio starts with the same ratio of equity to risk-free asset, each diverges in value as the price of the risky asset portion changes.

Figure 6.1 Comparative Performance of Asset Management Styles



[152] The white paper entitled "Risk, Return & Rebalancing," located on the website at www.schultzcollins.com, contains a detailed discussion of portfolio allocation strategies.

Buy and Hold

In the case illustrated above, the Buy and Hold investor placed 40% of the portfolio in short-term T-bills and 60% in the risky market portfolio (a combination of stocks, bonds and real estate). What are the implications?

- The dollar value of the portfolio will not fall below that of the 40% commitment to T-Bills;
- The portfolio has unlimited upside potential;
- The future value of the portfolio is (approximately) linearly related to the performance of the risky asset portion, with the rate (slope of the line) of future value change equal to the proportion of the portfolio committed to the risky assets (in this case, 0.60).

Constant Mix

Investors whose risk aversion is not affected by wealth changes will employ a buy low/sell high strategy. If an asset price declines, they will buy into the falling market. Conversely, they will take profits by selling into rising markets. A typical example of this strategy is the Constant Mix management style. The Constant Mix strategy restores the asset allocation to its original proportion of risk-free and risky assets as market prices change. What are the implications?

- Buying into declining markets while readjusting the equity portion to a constant percentage of portfolio value means that, theoretically, 100% of the portfolio is exposed to risk;
- As markets increase in value, equities are sold. Therefore, the investment payoff will tend to lag behind the payoff for a buy-and-hold portfolio that does not trim back equities;
- As equity markets decrease in value, low risk assets are sold and equities are purchased to maintain targeted allocation levels. Therefore, in declining markets returns will also tend to lag behind a buy-and-hold portfolio;
- Therefore, the future change in value of the portfolio has a concave (turned down curve) slope, which generally lies below the straight-line buy-and-hold payoff line.

Insured Asset Allocation

Investors whose risk aversion exhibits above average sensitivity to wealth changes may employ a buy high/sell low strategy. This is a momentum driven strategy best characterized by the Insured Asset Allocation portfolio style. What are the implications?

- The portfolio is only exposed to risk on the amount above the floor value;
- The rate of future change in portfolio value depends on the percentage of the commitment to risky assets when the dollar value is above the floor value. On a million dollar portfolio, for example, with a floor value of $800,000 and an risky asset multiplier of 3, the equity commitment equals (1,000,000 - 800,000) x 3 = $600,000;

- As markets rise, the commitment to risky assets means that the investment payoff will increase exposure to equities, creating a positive feedback loop with beneficial effects on overall return;
- As markets fall, the commitment to risky assets will scale back (by a factor of three in the above example), creating a beneficial negative feedback loop until the value of the portfolio reaches its insured value or floor;
- Therefore, the investment payoff will be convex (a turned up curve) and will outperform both the buy-and-hold straight-line payoff and the Constant Mix allocation payoff.

Cursory analysis would seem to indicate that the insured portfolio asset allocation strategy is superior to other approaches. Indeed, the strategy's logic was so compelling that by the mid-1980's, four times more professionally managed money used the insured portfolio system (buy high/sell low) than used the Constant Mix (buy low/sell high) system. By October 1987, approximately four times as much institutional wealth was managed under the Insured Portfolio approach than under the Constant Mix approach. When market prices started to drop, 20% of the market wanted to buy while 80% of the market wanted to sell. Many economists believe that this order imbalance was a primary contributor to the 1987 market crash. During the crash, severe price declines eliminated the entire buy side of the market. Insured portfolios could not sell, and sank far below their floor values. Thus, in a market crash, when portfolio insurance was needed most, it was ineffective.

If either asset management strategy dominates the money management community, it sows the seeds of its own destruction. Insured portfolio management creates market volatility, because its momentum driven trading strategy exacerbates market swings. However, in volatile markets, it cannot provide the investment payoff functions that it promises. Conversely, Constant Mix portfolio management reduces market volatility by buying when prices are falling and selling as prices rise. But Constant Mix strategies require volatility (sudden price reversals) to make contrarian bets worthwhile. Hence, one may reasonably conclude that there is no "best" asset management approach, because each approach's payoff differs under varying market conditions.

The shape of the payoff curve for each strategy depends on equity market volatility. In trending markets, the Insured Portfolio strategy buys into the favorable trend and rides the winners up. The more the winners win, the better the portfolio's performance. Conversely, the Constant Mix strategy pares back the winners (take profits on the way up) to maintain the proportionate value of the fixed income anchor position. Therefore, when markets trend up or down over long periods, this portfolio management approach has relatively poor performance when compared to Insured or Buy and Hold styles. When market trends reverse, or are nonexistent, however, results are reversed. The Constant Mix portfolio outperforms other approaches by taking advantage of price changes.

IMPACT OF TRADING ACTIVITY ON PORTFOLIO RETURNS

Not only does each asset management approach have a unique set of payoffs; it also has its own pattern of trading activity:

- The trading activity required to maintain the Buy and Holdapproach is zero;
- Periodic rebalancing requires only sporadic trading activity for the Constant Mix style, and results typically in buying low and selling high;
- Trading activity for the Insured Portfolio approach is a function of the momentum of portfolio value change. The higher the price increase of the risky assets, the greater the trading activity required to maintain the multiplier. Momentum-driven trading tends to buy high and sell low.

Paper Portfolios and Real World Results

Portfolio management approaches must be implemented in the real world. Implementation entails trading costs, liquidity costs and (except for qualified plan investors) taxes. One way to measure transaction costs is to evaluate return differences between hypothetical and real portfolios. David J. Leinweber measured implementation shortfall by tracking return differences between the paper portfolio recommended by the Value Line rating service and the actual Value Line mutual fund that replicates the paper index. From 1979 to 1991 the Value Line paper index portfolio had a 26.2% annualized rate of return. The actual Value Line fund, however, earned a net after expense return of only 16.1% during the period.[153] The return difference measures the (pre-tax) implementation costs.

At first, it seems incredible that implementation costs caused a live portfolio's annualized returns to lag its index by 10.1% over a thirteen-year period. Most people assume that implementation costs refer to:

1. Commissions paid to buy and sell securities in the marketplace; and,
2. Operating expenses associated with marketing and managing the live portfolio.

However, these costs are often insignificant relative to other "hidden" or implicit asset management costs.

Cost of Liquidity

As Wayne H. Wagner points out: "...many costs will be incurred long before the marketplace ever sees the order."[154] Wagner's study measures market impact costs and how such costs affect a live portfolio's value. Market impact costs include a broad range of charges assessed against the portfolio by the financial markets in exchange for providing trading liquidity. When a portfolio manager sells a stock, the sale is rarely to a counterparty that wants to buy the precise number of shares offered. Instead, the portfolio manager must trade with a liquidity provider.

For quote-driven markets such as NASDAQ, this is the role of the dealer; on the New York Stock Exchange, this is the role of the exchange floor specialist. Specialists are required to trade the stocks in which they specialize, at a price they determine, with any floor trader at any time. The specialist buys incoming stock orders at a bid price; takes them into inventory; and resells them at a higher ask price. The specialist sets the bid-ask spread to provide adequate compensation for the risk of holding inventory. Holding inventory ties up capital if the stock cannot be resold quickly. The specialist must also cover the risk of absolute loss on inventory if prices should plummet.

Dealer bid-ask spreads are dynamic. As the flow of buy or sell orders strains a dealer's inventory, the spread adjusts quickly, either up or down. The magnitude of the shift depends on whether the dealer is buying increased inventory or selling surplus. The dealer must negotiate with stock traders whose spreads can be many times greater than the dealer's. Thus, when the dealer's inventory is under pressure, he must transact with traders who are under no obligation to buy or sell, and have no market making duties.

This is why even small market orders can have market impact. As a dealer's inventory grows or shrinks, he becomes more and more sensitive to pricing risks inherent in his net position. Therefore even small market

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[153] Leinweber, David J., "Using Information from Trading in Trading and Portfolio Management," Execution Techniques, True Trading Costs, and the Microstructure of Markets ed. K. F. Sherrerd (AIMR, 1993), pp. 25-26.

[154] Wagner, Wayne H., "Defining and Measuring Trading Costs," Execution Techniques, True Trading Costs, and the Microstructure of Markets ed. K. F. Sherrerd (AIMR, 1993), p. 15.

orders can have a large marginal effect on the magnitude of the bid/ask spread. The next time you consider purchasing a particularly hot security, remember that trading costs for momentum stocks can be astronomical:

> The price obtained by the dealer's customer depends to a large extent on how the customer is trading relative to the crowd.... Is the customer trading against the crowd, with the crowd, or independently of the crowd?...Think of transaction costs as an iceberg, with the commission being the tip above the surface. The major parts of transaction costs are unobservable.[155]

As Wagner remarks: "Market liquidity is not a free good. Those who absorb market liquidity must pay those who supply it."[156] Those who trade against the crowd are suppliers. They are reducing the specialists' risk. The crowd is increasing it. Specialists will pay liquidity suppliers for inventory risk reduction, and pass along the cost (with a markup, of course) to the crowd. Liquidity suppliers are therefore able to sell at a relative premium, and buy at a relative discount.

LIQUIDITY COSTS OF PORTFOLIO MANAGEMENT STRATEGIES

Liquidity costs have a profound effect on the different asset management approaches. The Insured Portfolio approach generates significant trading activity. As risky asset prices fall, they are sold (in favor of T-Bills); as prices rise, the investor buys more stocks. Portfolio trading matches market momentum. Buy orders are submitted at a time when buy orders dominate trading activity; and sell orders are entered when most of the market wants to sell. Because trade orders are entered when liquidity is scarce, the Insured Portfolio style must pay a premium price for trade executions.

What does it cost to demand liquidity when it is in high demand? Wagner and Edwards tracked 54,000 trades and concluded that brokerage commissions (the cost just to enter the order) paid per trade were 5.6 cents per share. When the trades reached the market, dealer/specialist bid-ask spread costs and market impact costs deducted an additional 12 cents per share. Finally, the cost of immediate execution (i.e., the cost of liquidity) deducted an additional 99 cents per share.[157] Commissions thus represented only a small fraction of total trading costs. By definition, the Insured Portfolio style entails momentum trading and, to protect the downside floor, demands immediate execution. Clearly, the impact of trading costs on this strategy is enormous.

Constant Mix portfolio management approach rebalances the portfolio periodically. Trading volume is significantly lower than the Insured Portfolio style. More importantly, however, Constant Mix employs what amounts to a contrarian discipline, selling assets as their prices rise and buying as prices fall. This means that those who employ the Constant Mix strategy are liquidity providers, and are in a position to reap profits therefrom. How much of a difference does this make?

Wagner and Edwards estimate that brokerage commissions paid by liquidity providers are the same 5.6 cents per share. However, supplying liquidity adds 4 cents of value when spread and impact costs are measured, and 96 cents of value when liquidity costs are measured.

The implications of large trading costs are apparent:

1) Buying highly recommended or popular stocks (momentum or trend buying) is extremely expensive;
2) Trading stocks frequently is also costly. As Wagner states: "As a whole, active management performance falls short of index fund performance by between 100 and 150 basis points. Where does

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[155] Treynor, Jack & Wagner, Wayne, "Implementation of Portfolio Building: Execution," Managing Investment Portfolios: A Dynamic Process ed. J. Maginn & D. Tuttle, Warren, Gorham & Lamont (New York, 1990), pp. 12-1 to 12-50.
[156] Ibid., p. 15.
[157] Wagner, W. H. & Edwards, M., "Best Execution," Financial Analysts Journal (January/February, 1993), pp. 65-71.

the money go? Into the frictional costs of getting security analysts' and portfolio managers' ideas into the portfolio;"

3) Recovering trading costs is difficult. As Charles Ellis estimates, the operating costs of the average actively managed mutual fund amount to 1.6% per year. Over the long term, equity markets have provided a 6 percent premium over the risk-free return. Thus an active fund manager must outperform the 6% equity premium by 26.7% just to recover costs and break even with the market;[158]

4) Disciplined value style investing (i.e., buying "out-of-favor" securities) may afford opportunities for trading strategies that are also portfolio profit centers.

5) The trading advantage goes to two groups of traders:
   a) Information-based traders who act quickly and who possess information more valuable than the heavy trading costs; and,
   b) Passive investors with a value style orientation using periodic rebalancing.

The latter let the market to come to them. The passive investor pays no premium for speedy transactions, since they are not needed. Empirical evidence suggests that passive, value-oriented portfolios best realize trading cost advantages. These investors tend to purchase out of favor securities (i.e., trade against the crowd on a buy low/sell high basis).

Theoretically, the Insured Portfolio asset management approach works best in a market that is strongly trending. Conversely, the Constant Mix approach works best in a more volatile market characterized by sudden price reversals.

TRADING DECISIONS, 'BEST EXECUTION' AND LOSS OF INVESTOR WEALTH

Trading is "anti-performance." This should mean that money managers have a strong incentive to control trading costs. Paradoxically, however, this may not always be the case. There is evidence suggesting that money managers are directing trades to venues that do not offer the most favorable trade execution services (although the trades execute at the best Best Bid/Offer cost measurement criteria; and, theoretically fulfill the requirements of 'best execution'). For example, small trades for stocks listed on the New York Stock Exchange may be sent to NASDAQ for execution. Selection of the NASDAQ venue may significantly reduce the probability of a trader stepping in to offer price improvement [trading terms better than the Best Bid/Offer]. One possible explanation for the propensity of the U.S. money management industry to direct trades to higher cost venues is that the managers receive a bundled service package from brokers. In addition to pure trade execution, money managers may also receive data access, research, computer systems, etc. in the form of "soft dollar" compensation. One study indicates that over half of all U.S. institutional commissions are "directed" or "pledged" in advance; and, that the recipients of the directed order flows compensate the money managers through soft dollar arrangements.[159]

Regulatory agencies have expressed concern that such arrangements may be a breach of fiduciary obligations to clients. The Department of Labor has been especially interested in this issue; and has made it clear that commissions are a use of a retirement plan's assets. Plan assets must be managed for the exclusive benefit of plan participants and beneficiaries. Receipt of soft dollar compensation may represent use of client/plan funds to pay for expenses associated with operating a money management firm. Use of client funds allieviates the necessity for the money management firm to commit its own capital for business expenses; and may represent a classic principal/agent conflict of interest.

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[158] Ellis, Charles D. Investment Policy, Irwin (Chicago, 1993), p.9.

[159] Conrad, J., Johnson, K. & Wahal, S., "Institutional Trading and Soft Dollars, " Journal of Finance (vol. 56, 2001), pp. 397-422.

Directed brokerage arrangements are often a hallmark of Wrap Fee accounts sold, primarily but not exclusively, to retail investors. A Wrap Fee account is an "all-in" or bundled service package offered by a brokerage firm to its customers. A single fee pays for all trade costs, custodial services, periodic reporting of account positions, investment manager selection and monitoring, and performance reviews. Often the single fee arrangement includes a written IPS, asset allocation advice, rebalancing, and other portfolio management services. However, a brokerage company's wrap fee program may require exclusive trade execution through the sponsoring broker. For money manager clients not in the wrap fee program, the manager is free to seek any trade execution venue, including low-cost ECNs. In certain cases, money management firms may sequence the wrap fee client trades last to avoid violating fiduciary responsibilities to other clients. That is to say, the wrap fee clients may be purchasing securities at the 'tail-end' of a buy order (the highest price) or selling securities at the 'tail-end' of a sell order (the lowest price). Such "costs" are not explicit and may be many times the explicit costs detailed in the wrap-fee contract.[160] Lack of attention to trading activities and to the costs of the adminstrative platforms upon which wealth is managed is the surest way to loose buckets of money from investment activities.

TAXES, INFLATION AND TURNOVER

For taxable investors, high portfolio turnover increases investments costs because trading activity often triggers taxable events. Taxable investors must consider the combined impact of trading costs, taxes, and inflation. These three costs erode returns.

"Why aren't we all rich?" This sentence is the intriguing beginning to a study that appeared in the winter 1995 edition of *The Journal of Portfolio Management*.[161] The authors examined the long term investment results of several asset classes during the period 1926 through 1993, in order to gauge the effect of taxes, inflation and trading costs on overall portfolio return.

For trading costs, the authors used commission costs only. To calculate taxes they assumed a single taxpayer with $75,000 of earned income measured in 1989 dollars and adjusted for inflation, both prospectively through 1993 and retrospectively back to 1926. Additionally, they applied the actual marginal rates on both capital gains and ordinary income from 1926 (in 1926 income taxes were 1%, and capital gains taxes were 6%) through 1993. They assumed 20% portfolio turnover per year. Finally, they inflation-adjusted the data to determine how much real after-tax, after-trading expense purchasing power investors realized per dollar invested.

Their findings are displayed in the following graph:

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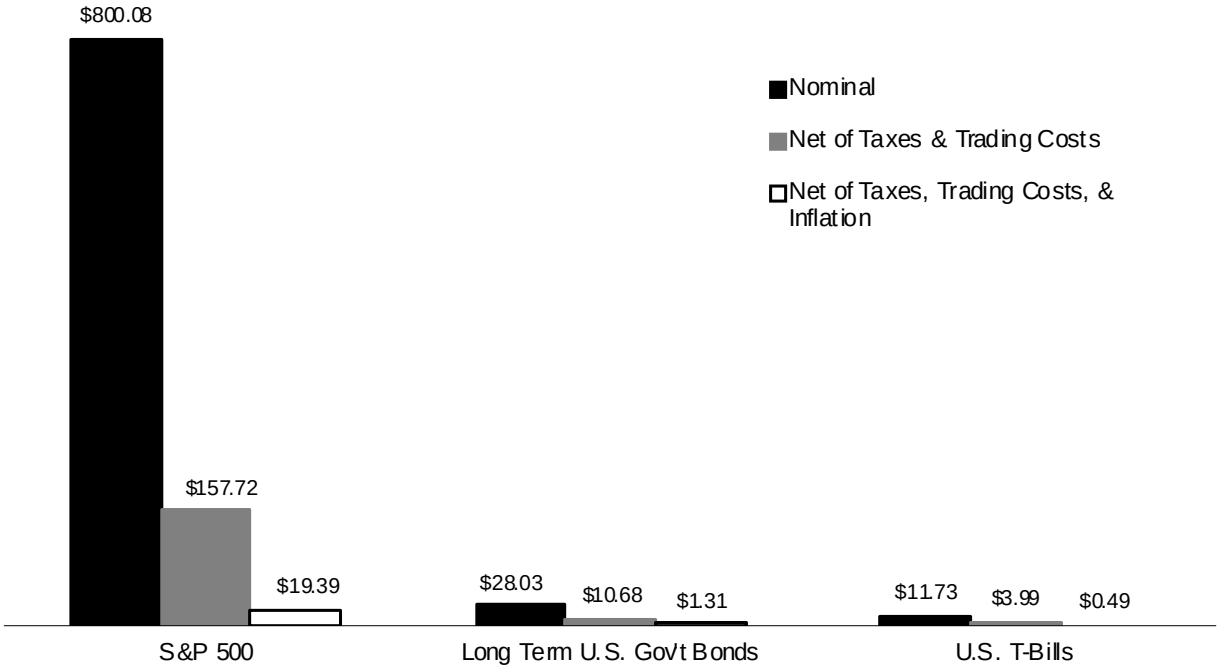
[160] Schwartz & Francioni, Op. Cit, pp. 140-141.

[161] Siegel, S. B., & Montgomery, David, "Stocks, Bonds, and Bills after Taxes and Inflation," The Journal of Portfolio Management (Winter, 1995) pp. 17-25.

Figure 6.3: Ending Value of a $1 for a Variety of Securities
1926 through 1993



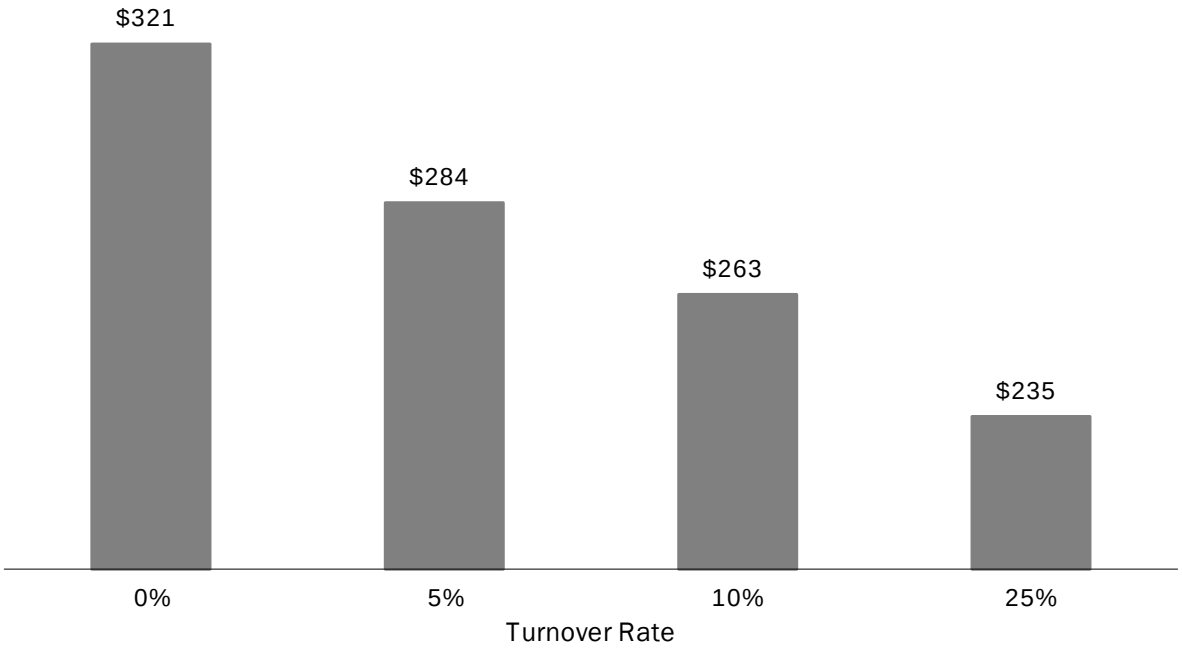
Source: Siegel, S.B., & Montgomery, David, "Stocks, Bonds, and Bills after Taxes and Inflation," The Journal of Portfolio Management (Winter, 1995) pp. 17-25.

These findings are indeed sobering. Although these tax cost calculations assume a 20% per year portfolio turnover (i.e., the average security is retained in the portfolio for five years), by mutual fund industry standards, 20% is a low rate of turnover. A query of the Morningstar mutual fund database as of December 31, 2006 reveals that the average actively managed mutual fund turnover rate for the category most comparable to the S&P 500 - "U.S. Large Company Blend Stock Funds" – is 76%.

What, then, is the relationship between active trading and tax costs? The longer the holding period of the average security, the longer the tax event of a sale can be postponed. "The longer the gains remain unrealized, the more valuable they are, because deferred taxes on unrealized gains compound for the investor instead of Uncle Sam." [162] The following graph, taken from a 1993 study, illustrates how various turnover rates influence ending pre-liquidation wealth for a portfolio operating over a twenty-year period. It assumes an investor with a combined federal and state capital gains tax rate of 35% and a growth rate of 6%:

[162] Koontz, Warren N. "Understanding the Tax Constraints on Private Clients," Investment Counsel for Private Clients (AIMR, 1993) pp. 65-71.

Figure 5.4: Tax Effect of Turnover:
Ending Value of a $100 Portfolio Held for 20 Years



Source: Koontz, Warren N. "Understanding the Tax Constraints on Private Clients," Investment Counsel for Private Clients (AIMR, 1993) pp. 65-71

Moving from zero to five percent turnover decreases the effective holding period from 100 years to 20 years (a factor of 5); while moving from 50 percent to 55 percent turnover rate decreases the holding period from two years to 1.8 years (a factor of 1.1). By the time you reach fifty- percent turnover, most of the tax damage has already been done. Specifically:

- A 5% turnover rate equates to a 0.64% reduction in annual returns;
- A 10% turnover rate equates to a 1.05% reduction in annual returns;
- A 25% turnover rate equates to a 1.63% reduction in annual returns;
- A 50% turnover rate equates to a 1.93% reduction in annual returns.

All else equal, passive (low turnover) portfolios have considerable advantages for taxable investors.

CONCLUSION: INDEPENDENT INVESTMENT COUNSEL

SCHULTZ COLLINS LAWSON CHAMBERS, INC. is an independent firm providing investment counsel to individuals and institutions. Our business is helping clients through the many obstacles they face as investors. All our work is based on the premise that our clients are best served, not by attempts to predict the future direction of markets or prices, but by the practical application of the body of scientific knowledge discovered through research in financial economics. Our focus, therefore, is on staying current with the research, communicating its findings to clients, and using it to improve the operation and performance of their portfolios. Indeed, this document is an important step in service of the latter two goals. It is intended to provide clients with a theoretical context and grounding for the methods and language we use to construct sound investment policy, and to constitute a defensible rationale for their asset allocation and portfolio management decisions.

The freedom to apply academic research in our clients' behalf comes only with complete independence. We believe that working in the best interest of our clients precludes any other interest. In particular, we avoid conflicts of interest by shunning relationships with any firms which would oblige or otherwise motivate us to do business with them on behalf of our clients, other than by virtue of their financial soundness and the quality of their products or services.

Our firm is, therefore, not affiliated with any vendor of investment products or services, nor do we offer advice with the expectation of receiving commissions, finders' fees or other similar forms of remuneration. Rather, we are compensated by clients on a fee basis, with fees calculated as a percentage of assets or at an hourly rate. Our success is tied to the financial success of our clients. We do not sell investment products. We provide investment counsel.

SCHULTZ COLLINS LAWSON CHAMBERS, INC. IS an investment advisor registered with and regulated by the Securities and Exchange Commission, under the Investment Advisors Act of 1940. The Act states that an investment advisor may be designated as "investment counsel" only if a substantial part of its business consists of rendering investment supervisory services.[163] The Act defines investment supervisory services as "providing continuing investment advice based on the individual needs of each client."[164]

SCHULTZ COLLINS LAWSON CHAMBERS, INC. acts as investment counsel. Recognizing that each investor faces a unique set of objectives and circumstances, we provide unbiased and relevant information regarding the structure of investment problems and opportunities, the tradeoffs inherent in investment alternatives, and the range of possible future outcomes. We do not maintain proprietary portfolios into which our clients must fit. Rather, we design and supervise each portfolio in a manner specific to the objectives and economic circumstances of each client. We provide information to help you:

Design a portfolio specific to your objectives and economic circumstances;

Improve your chances of realizing a successful outcome; and,

Understand and quantify both the likelihood and magnitude of possible unsuccessful outcomes.

Our primary objective is to help clients make informed investment decisions. To that end, we are committed to providing investors and fiduciaries with the information and knowledge that make such decisions possible. We employ the quantitative and statistical methodology that generally characterizes the science of decision analysis. In the words of Robert Clemen of the Fuqua School of Business at Duke University:

[163] 15 U.S.C. § 80b-8(c).
[164] 15 U.S.C. § 80(b)-2(a)(13).

> Instead of providing solutions, decision analysis is perhaps best thought of as simply an information source, providing insight about the situation, uncertainty, objectives, and trade-offs, and … yielding a recommended course of action.[165]

INVESTMENT POLICY AND THE PRUDENT INVESTOR RULE

SCHULTZ COLLINS LAWSON CHAMBERS, INC. helps investors define their investment policy in a written Investment Policy Statement. Although an Investment Policy Statement can take many forms, we believe that all investors, not just trustees and fiduciaries, should demand and receive investment advice that conforms definitively to the Prudent Investor Rule.[166] We therefore acknowledge the principles of prudence, and assume the requisite duties:

- Decisions concerning individual assets must be evaluated in the portfolio context. Our firm helps investors develop coherent, practical strategies for combining disparate assets into a viable whole;
- Risk and return are directly related. We act on our duty to analyze and quantify risk, and help our clients make deliberate judgments concerning the level of risk and return most appropriate for their accounts;
- Sound diversification is fundamental to risk management. We assist in minimizing uncompensated, unwarranted or unintended risk;
- The need for current income must be balanced with protection of purchasing power. We provide clients with the means to achieve real returns on their investments, after considering taxes and inflation;
- A prudently managed portfolio avoids unjustified expenses. Our firm is adamant in its drive to eliminate unwarranted fees and transaction costs.

OUR APPROACH TO PORTFOLIO SUPERVISION

We use objective mathematical and statistical concepts to help clients build rational, diversified portfolios that embody the principles underlying the Prudent Investor Rule. Our approach to portfolio management draws upon favorable characteristics from several portfolio management approaches. Client portfolios are often diversified globally across a broad spectrum of asset classes. Allocations to each asset class reflect a careful analysis of each client's risk tolerance and required return.

Each client's portfolio has target allocations (weightings) for the asset classes in which it invests. Depending on the asset management approach selected by the client, we provide appropriate rebalancing and trading policy services. For example, for clients electing a Constant Mix asset management approach, maintaining the weights specified in the strategic asset allocation is critical. Without periodic portfolio rebalancing to targeted weights, random drift attributable to future performance will create underexposure to some asset classes and overexposure to others. Nobel Prize winning economist Paul Samuelson describes this phenomenon in terms of portions (fractions) of the portfolio that inadvertently become over-weighted. Such "bloated fractional representation" leads to:

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[165] Clemen, Robert, Making Hard Decisions: An Introduction to Decision Analysis, (Duxbury Press, 1996), p. 4.

[166] *Restatement of the Law, Third, of Trusts - Prudent Investor Rule*, Ch. 7 p. 7
Uniform Prudent Investor Act National Conference of Commissioners on Uniform State Laws
Chicago October, 1994. Adopted by the State of California July 5, 1995

> an expensive bargain with the devil. In return for hope of a somewhat higher after-tax mean total return, you are risking...excess volatility and risk...[167]

Uncorrected random drift of asset class returns precludes adherence to prior conscious decisions regarding the appropriate level of risk. Since risk can only be judged within the portfolio context, shifting portfolio positions make it difficult to manage portfolio volatility.

Our approach is summarized in the chart on the following page.

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[167] Samuelson, Op. Cit., p. 21.

PORTFOLIO MANAGEMENT APPROACH

DETERMINING CLIENT OBJECTIVES

- Detailed fact finding to build unique client profile
- Hands on assistance to assess individual financial needs and risk tolerance
- Investment goals and approach codified in a customized Investment Policy Statement (IPS)

PORTFOLIO CONSTRUCTION

- Asset classes selected and weighted based on required return and acceptable risk
- Customized portfolios developed to meet individual needs
- Controlled use of actively managed funds
- Broad global asset class diversification
- Diversification within asset class, mitigating systematic risk
- Flexibility to weight specific factors, to enhance return or manage volatility
- Turnover managed using passive/indexed strategies

TAX AND EXPENSE MANAGEMENT

- No-load investments used to mitigate investment costs
- Institutional funds used to minimize fund expense ratios
- Tax liabilities managed using low turnover strategies, exchange traded funds
- Tax arbitrage, using IRAs and qualified plans to hold investments that otherwise generate high tax liabilities
- Option to use tax advantaged fixed income (muni bond) funds in taxable accounts

PORTFOLIO MONITORING AND SURVEILLANCE

- Objective criteria for determining ongoing suitability of specific portfolio investments
- Comprehensive portfolio performance reporting
- Annual review of portfolio results relative to IPS objectives and guidelines
- Current research findings incorporated into asset management process

PORTFOLIO MANAGEMENT

- Periodic rebalancing to asset allocation targets
- Institutional trading to reduce transaction expenses
- Annual rebalancing activity, to avoid impairing portfolio returns in trending markets

In addition to assisting with portfolio design and implementation, we provide portfolio supervision services so that:

- Performance results are presented clearly;
- Returns are compared to wealth accumulation targets;
- Suitability is monitored;
- Investment Policy adapts to changing circumstances and current academic research;
- Portfolio performance is tracked and evaluated relative to client objectives.

We evaluate current arrangements and provide unbiased recommendations for individuals, trusts, endowments and retirement plans. Our firm evaluates most areas of trust and plan operations, and has the expertise to address problems or issues normally considered outside the scope of an investment advisor's responsibilities. With our depth of experience and unbiased perspective, we provide clients with practical, economical and reliable solutions to the broad array of issues encountered by fiduciaries, plan administrators and individual investors. We do not provide legal, accounting or tax advice.

Our goal is to lead our clients to a position of understanding. Decisions can then be taken, not on the basis of hunches, or blind trust in another's expertise, but in the context of a rational, comprehensible, legally defensible and academically supported framework.