



Investment Advisory Whitepaper

Program Objective: We developed our investment program for our clients' "serious money." Their serious money will finance their important long-term family and personal goals including retirement, college education, and inheritances and bequests.

In being serious money, we believe we must support our advice with scientific thinking and academic research. In this whitepaper, we lay out the principles we use with the supporting academic research.

Principles and Academics: We base our advice on four principles, each supported by academic research:

1. Markets work.
2. Risk and return are related.
3. Diversification is essential.
4. Structure determines performance.

In this whitepaper, the term risk will be used as it is in the research; namely, as the volatility of returns. As this paper also discusses the average individual investor, we specify this academic definition of risk. Furthermore, in this academic definition, the funds are continuously invested and risk is measured with no buy or sell actions occurring. We understand that "risk" to the average individual investor means "a permanent loss of capital." Volatility is not the same as a permanent loss of capital; we desire to establish a clearly understood difference at the beginning of this whitepaper. (We recognize that an individual investor may have a permanent loss of capital if that investor, as a result of the asset's volatility sells the asset. However, we will try to separate investment returns from investor behavior in this discussion of risk and volatility.)

1. Markets work – the supporting research is the "Efficient Markets Hypothesis." This hypothesis (EMH) states that, at any given time, all information regarding a security is known and "priced into" the current price. If markets are efficient, then consistently and predictably outperforming benchmarks by applying intelligence, models, or additional information cannot be expected. Eugene Fama's "The Behavior of Stock-Market Prices" published in the Journal of Business in January 1965 and "Random Walks in Stock Market Prices" published in the Financial Analysts Journal (September/October 1965) provided the foundation for the EMH. From Professor Fama's "Random Walk" paper:

An "efficient" market is defined as a market where there are large numbers of rational, profit-maximizers actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants. In an efficient market, competition among the many intelligent participants leads to a situation where, at any point in time, actual prices of individual securities already reflect the effects of information based both on events that have already occurred and in events which, as of now, the market expects to take place in the future. In other words, in an efficient market at any point in time the actual price of a security will be a good estimate of its intrinsic value.

Random walk theory works with the Efficient Market Hypothesis. Random walk theory's premises are that stock prices do not follow any patterns (hence, the "random walk") and past price movements can not predict future price movements. Professor Fama refers to those who believe that past price movements can predict future price movements as "chartists." In Professor Fama's conclusion to the "Random Walk" paper:

The empirical evidence to date provides strong support for the random walk model. In this light the only way the chartist can vindicate his position is to show that he can consistently use his techniques to make better-than-change predictions of stock prices. It is not enough for him to talk mystically about patterns that he sees in the data. He must show that he can consistently use these patterns to make meaningful predictions of future prices.

The efficient market hypothesis's conclusion then becomes that the investor should buy the market. Attempting to buy and sell individual securities at certain times in an attempt to beat the market will likely provide sub-market returns.

What if markets are not efficient (or only somewhat efficient)? If markets were inefficient, then, as investment advisors, this would only be meaningful if there were an effective means to identify the inefficiencies in a predictable manner that would then lead to consistent market outperformance over time. It is not enough to identify times when the market was "obviously mispriced" on an "after-the-fact" basis to throw out the EMH as the basis for investment advice. If markets are inefficient and inefficiencies may be captured for profit, then good "active" managers (chartists as Professor Fama names them above) would be able to beat the market consistently over the long-run.

2. Risk and return are related – the original research is the "Capital Asset Pricing Model" (CAPM).

William Sharpe's 1965 paper published the capital asset pricing model (CAPM). Others, including Treynor (1961), Litner (1965), and Black (1972), published similar papers on asset pricing theory. The 1990 Nobel Prize in Economics was shared by Sharpe for his CAPM work (along with Harry Markowitz [see Modern Portfolio Theory later in this whitepaper] and Merton Miller). The CAPM expands on the concept of risk discussed in Modern Portfolio Theory (MPT) to identify two risks – systematic risk and unsystematic risk.

The premises of the CAPM:

- ✓ The expected return of a stock (or group of stocks) = cost of capital for the firms.
- ✓ Expected return = Risk free rate + (Beta of security * Equity Market Premium)
- ✓ Definitions are:
 - Risk free rate: an investment return with no risk (e.g. 10 year US government bond).
 - Equity Market Premium = Expected equity market return – Risk free rate.
 - Beta: measure of stock price's volatility relative to the entire stock market where a beta of 1 means the stock moves in line with the market, <1 means the stock moves less than the market, and >1 means the stock moves greater than the market.

CAPM also uses additional simplifying assumptions about markets; however, the fundamental premise is stated above.

The theory then implies that an investor should earn a higher expected return on one stock when compared to another if the beta of the first stock is higher than the second stock. Fama and French studied individual US stock returns for the period of 1963 through 1990 and found that beta did not completely explain the differences in stock returns over this time period.

This observation then leads into the discussion of equity (stock) risk. Two types of equity risk exist:

- ✓ Systematic risk – market-wide risk impacting all companies in the market that may not be reduced by diversification. Systematic risk is measured by the beta and is the investor's gain or loss over time (compensation for risk).

- ✓ Unsystematic risk – specific risks to an individual company or market sector that may not be diversified away and provide no expected investor return. Unsystematic risks (for example, owning a stock of an individual company) may lead to a permanent loss of capital which is the risk individual investors fear.

Fama and French expanded on the equity risk factor in their “multi-factor” equity model published in 1992. (Kenneth French is a professor at the Amos Tuck School of Business at Dartmouth College.) Their objective was to find a model to replace the CAPM that better identified the factor or factors that related to market returns. They arrived at a three-factor equity model. The three factors that, when taken together, provide the best explanations of returns are:

- ✓ Equity market exposure,
- ✓ Company size (as expressed by market capitalization where small/mid caps have higher risk and returns than large caps), and
- ✓ Book-to-market ratio (where value stocks – as expressed by high book-to-market ratios – have higher risk and returns than growth stocks – low book-to-market ratios).

Fama and French recognized that there are different ways to measure or define value versus growth style stocks; however, their research indicated that the book-to-market (BtM) measure best explains the differences.

When taken together, the three-factor equity model better explains returns than the single-factor CAPM. In analyzing market data, the three-factor equity model explains the vast majority of market returns. These “explained” returns are the beta (as above, the volatility relative to the market as a whole). The “unexplained” returns are significantly reduced in the three-factor model. The unexplained returns (also may be called the “excess returns”) are the alpha which could be “noise,” luck, and/or portfolio manager skill. These are small relative to the explained returns. (Our reminder – in modeling, the alpha is positive; however, in practice, a portfolio manager’s contribution to return may be negative due to any or all of poor timing or investment selections, investment management and trading costs in excess of the incremental returns, and additional taxes due to trading.)

Consequently, portfolios should then be structured to identify risks the investor is willing to take and earn a return based on the structure of the three-factor equity model – total market exposure, small/mid cap exposure relative to the total market, and value style exposure relative to the total market. The return “driver” should therefore be only the beta with no return expectation from the alpha. (In this instance, the alpha is from selecting securities and/or timing when to buy or sell in an effort to add additional returns above market returns [represented by the beta].)

Subsequent research by Fama And French (Robert Novy-Marx/Eugene Fama/Kenneth French 2012) expands on the three factor equity model by adding profitability (also referred to as quality) and momentum factors to explain equity price returns.

- ✓ Profitability – when two companies have similar size and book-to-market value characteristics, the company with higher profitability generally has offered higher stock price returns over time.
- ✓ Momentum – when stock price movements of a company are moving either upward or downward, the directional movement tends to persist for three to twelve month periods.

The process of using the profitability and momentum factors into an operational model that becomes part of the beta is, based on our research and assessment, partially developed and in practice. Several reasons exist:

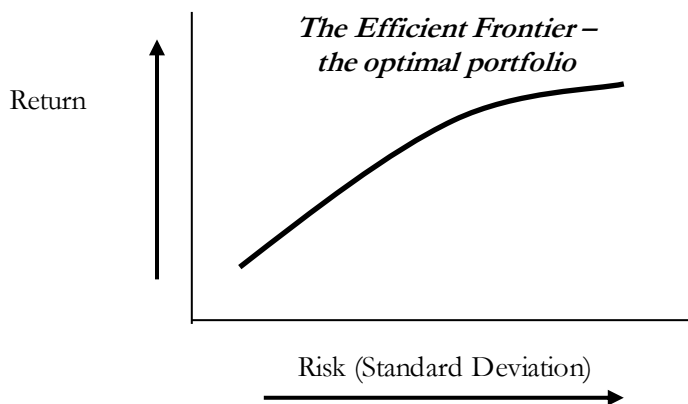
- ✓ Profitability – the profitability measure(s) to be used across markets and firms by investment companies are relatively new; extended operational experience and returns will be needed to determine if these measures create consistent models making profitability part of the beta.
- ✓ Momentum – At the research level, a “pure” momentum strategy of holding (going long) in stocks with upward momentum and selling stocks short (by buying puts) indicates that expected returns are likely. In practice, the trading costs to implement and the tax costs of realizing gains (many of which would likely be short-term gains) would, with high probability, make an applied pure momentum strategy a low or no expected return strategy (especially in taxable accounts). Using momentum to assist managers to determine when to buy or sell stocks to maintain diversification in a portfolio appears to be the current operational approach attempting to make momentum part of the beta.

In application and at the current time, we consider profitability and momentum to be less developed and operational than equity market exposure, company size, and book-to-market ratio.

The emergence of profitability and momentum factors supports the efficient market hypothesis previously discussed. Over time, the ongoing research and skill of both researchers and investment managers reduces and eventually eliminates any pricing inefficiencies that appear to have historically existed and generated profits.

3. Diversification is essential – “Modern Portfolio Theory” (MPT) provides the research that supports structuring investment portfolios with broad global asset class exposure. MPT originated in Harry Markowitz’s 1952 doctoral dissertation. While this means MPT is no longer “modern,” MPT made fundamental changes in investment management and remains important, and may be the most important, consideration in the investment process. In 1990, Dr. Markowitz shared the Nobel Prize for Economics for his MPT.

The fundamental changes presented by Dr. Markowitz were in considering risk (not simply maximizing return) in building the investment portfolio, that risk should be considered at the portfolio level, and that, for a given risk level, there was a portfolio that would maximize expected returns (“the efficient portfolio). He defined the “efficient frontier” as the line across which the efficient portfolio returns related to the risk the investor was willing to take (Dr. Markowitz defined risk as the standard deviation of returns).



Prior to MPT, portfolio construction primarily consisted of selecting securities for the portfolio with minimal or no consideration of the relationship between securities expected returns and volatility of returns. Security selection formed the basis for most portfolio construction methodologies. Benjamin Graham’s and David

Dodd's *Security Analysis* was one example of the security selection research being used in portfolio construction.

The theory of portfolio construction is that for every given risk level there is a highest expected return portfolio that may be created.

MPT clearly establishes the investor benefits of diversification, mainly by reducing the risk to overall portfolio returns. Markowitz further develops the theory with examinations of risks in two areas:

- ✓ Two risk types – security return risk has two parts –
 - Systematic risks: Market risks unable to be “diversified away.” Recessions, bubbles, interest rate changes, and governmental conflicts are examples of systematic risks.
 - Unsystematic risks (also “specific risks”): These are risks specific to an individual stock or stock market sector. These risks are those not associated with the overall market risk. One may diversify away the unsystematic risk by increasing the number of stocks in a portfolio (or as we stated above “buy the market”). All risks could lead to the permanent loss of capital.

We briefly discussed these risks previously in our section on CAPM. The principles discussed in this whitepaper complement one another and, for this principle, the MPT preceded the CAPM. The CAPM advanced the investment theory on risk's relationship to the expected returns for a security.

- ✓ Correlation of returns – this principle is that, while two securities have their own risk/return profiles, in building a portfolio, the correlation of the two securities' returns makes a difference.
 - Two securities having uncorrelated returns or low correlation of returns will reduce the overall portfolio's risk.
 - Two securities have highly correlated returns will not reduce the overall portfolio's risk.

With increased computing power since Markowitz presented the MPT, portfolio “optimizer” programs now develop recommended portfolios with the highest expected returns for a given risk level. While these programs “crunch the numbers” over long market periods, they often overlook that, in times of severe market stress (a recession and major market downturn), nearly all asset classes become highly correlated. The exceptions are extremely high-quality short-term bonds, intermediate US Treasury bonds, and cash.

MPT's messages for investors and investment advisors may be summarized in:

- ✓ How one constructs the portfolio is the return driver for the investment risks one takes.
- ✓ Taking systematic risks are those that provide the investor's expected returns.
- ✓ Diversification is essential to “diversify away” unsystematic risks and to include low correlation securities that reduces overall portfolio risk.

4. Structure determines performance – Studies show that asset allocation decisions account for the vast majority (in excess of 90%) of portfolio returns (the Brinson and Beerbower studies being the most well-known of these studies).

In making investment decisions (what and when to buy and sell) for a portfolio, there are three ways to make decisions:

- ✓ Asset allocation,
- ✓ Security selection, and
- ✓ Market timing.

The research shows that asset allocation decisions dominate in the explanation of portfolio performance; in excess of 90% of portfolio returns are explained by the asset allocation decisions made in the portfolio.

Security selection and market timing account for approximately equal amounts in explaining portfolio performance.

Studies supporting the dominance of asset allocation decisions in explaining portfolio returns include:

- ✓ **Brinson, Hood, Beebower**, “Determinants of Portfolio Performance – Investment Policy Dominates Investment Strategy,” *Financial Analysts Journal*, January-February 1995
 - Research of 90+ institutional portfolios and investment performance.
 - Finding: 93.6% of return variation attributable to market change of asset class vs. stock selection within asset class.
- ✓ **Ibbotson, Kaplan**, “Does Asset Allocation Policy Explain 40, 90, 100 Percent of Performance?,” *Financial Analysts Journal*, January-February 2000.
 - Research of 94 balanced mutual funds, 58 pension funds.
 - Findings:
 - 90% of fund performance variability attributable to asset allocation.
 - Asset allocation explains 100% of the performance on average.
- ✓ **O’Rielly, Chandler**, “Asset Allocation Revisited,” *FPA Journal*, January 2000.
 - Research of 230+ domestic/international equity/fixed-income mutual funds
 - Finding: around 90% of fund performance variance attributable to asset allocation.

The studies identified the factors and their attributions to actual portfolio performance. The studies did not compare the actual portfolio performances to any benchmarks. This means that the studies did not show how any of asset allocation, security selection, or market timing decisions added to performance; the studies simply showed how the decisions impacted performance. To effectively utilize these studies’ findings in investing, one must then assess decision-making capabilities for each of asset allocation, security selection, and market timing.

As the asset allocation decision accounts for more than 90% of the performance outcome, this clearly becomes the primary decision to make. The asset allocation decisions are the systematic risks (see the CAPM discussion above) to be taken.

To assess whether security selection and/or market timing decisions should also be made in an effort to provide alpha (excess returns), we must go back to the discussion above of the Efficient Market Hypothesis and the low likelihood of selecting active managers in advance who will make security selection and market timing decisions that add excess returns.

Charles Ellis, author of *Winning the Loser’s Game*, believes that asset allocation will provide more than 100% of expected returns for the average investor since the average investor will make mistakes in selecting active managers and individual securities and in timing the market. (The message of *Winning the Loser’s Game* is that the investor will be successful by making fewer mistakes than other investors and investment managers.)

Return “Drivers:” When we “pull it all together” and apply the four principles, the drivers of expected returns then become –

- ✓ Behavior supported by principles and academics.
- ✓ Diversified asset allocation (weighting of stocks, market cap, and value vs. growth orientation).
- ✓ Controlling asset allocation through disciplined rebalancing.

In applying the drivers, we seek to control what can be controlled (in other words, take only the risks worth taking and stay composed) –

- ✓ Asset allocation – initial and with rebalancing.
- ✓ Diversification – broad and global.
- ✓ Expenses.
- ✓ Taxes.
- ✓ Emotions (avoid mistakes to win the “losers game”).

Fee Transparency: As investment advisors providing services in investment advisory accounts, clients receive the added benefit of fee transparency as fund investment management expenses and advisory fees are separated.

Prudent Investor Rule: We use the Prudent Investor Rule as guidance. The American Law Institute published “The Restatement of Trusts Third” (The Prudent Investor Rule) in 1992. The National conference of Commissioners on Uniform State Laws then published “The Uniform Prudent Investor Act” (UPIA) in 1994. These establish the prudent fiduciary standards for private family trust trustees to conduct investment policy for the trusts.

- ✓ **Efficient Markets:** “Economic evidence shows that, from a typical investment perspective, the major capital markets of this country are highly efficient, in the sense that available information is rapidly digested and reflected in the market prices of securities. As a result, fiduciaries and other investors are confronted with potent evidence that the application of expertise, investigation, and diligence in efforts to ‘beat the market’ in these publicly traded securities ordinarily promises little or no payoff, or even a negative payoff after taking account of research and transaction costs. Empirical research supporting the theory of efficient markets reveals that in such markets skilled professionals have rarely been able to identify under-priced securities (that is, to out-guess the market with respect to future return) with any regularity. In fact, evidence shows that there is little correlation between fund managers’ earlier success and their ability to produce above-market returns in subsequent periods.”
- ✓ **Risk and Return Relationship:** “Proper understanding and analysis of risk-reward relationships, associated strategies (such as those based on the modern portfolio theory), and the means of their implementation may be of considerable interest and importance to the trustee. This is because conscious, informed, and careful decisions and actions that are undertaken to increase portfolio risk are the prudent investor’s primary path to higher expected return.”
- ✓ **Modern Portfolio Theory – Diversification and Portfolio as a Whole:**
 - “As a result of the tendency of the value fluctuations of different assets to offset one another, a portfolio’s risk is less than the weighted average of the risk of its individual holdings. A portfolio’s expected return, on the other hand is simply a weighted average of the expected returns of the individual assets. Thus, the expected return is not affected by the portfolio’s reduced level of what is often called ‘specific’ or ‘unique’ risk – insofar as those terms are used to refer to risks that can be reduced by diversification. Other types of risk; however, are generally compensated through market pricing.”
 - “[Prudent investing] requires the exercise of reasonable care, skill, and caution, and is to be applied to investments not in isolation but in the context of the trust portfolio and as a part of an overall investment strategy, which should incorporate risk and return objectives reasonably suitable to the trust.”

- “Specific investments or techniques are not per se prudent or imprudent. The riskiness of a specific property of its inclusion in the trust estate is not judged in the abstract but in terms of its anticipated effect on the particular trust’s portfolio.”
- ✓ Passive (Index) Investing: “Investing in index funds that track major stock exchanges or widely published listings of publicly traded stocks is illustrative of a thoroughly passive but practical investment alternative to be considered by trustees seeking to include corporate equity in their portfolios. It is one that offers the pricing security and economies of buying in essentially efficient markets. Additional benefits may be derived from broadening the market coverage and thus the portfolio’s diversification.”
- ✓ Expenses and Taxes Relating to Active Strategies:
 - “There will be new expenses of investigation and analysis, increases in general transaction costs, and additional risks such as may result from the judgment calls involved and from an acceptance of more specific risk. They must then be taken into account, both in deciding whether to undertake an active investment strategy and in implementing that strategy.”
 - “Active strategies, however, entail investigation and analysis expenses and tend to increase general transactions costs, including capital gains taxation 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.”
 - “As far as consistent with trust purposes, consideration should be given to the needs and financial objective of the beneficiaries. The federal and state tax positions and other circumstances of the beneficiaries are also relevant, as are the conflicts that may result from the diversity of those tax and other circumstances. For example, a trustee must recognize that pricing and pre-tax returns are affected by the tax-exempt status of certain investments and that different beneficiaries are benefited differently or not at all from tax advantages.”

American Law Institute. *Restatement of Law Third: Trusts: Prudent Investor Rule*. St. Paul, Minnesota. American Law Institute Publishers, 1992.

The Prudent Investor Rule provides guidance for the investment process; however, following the processes neither guarantees returns nor remove the risk of loss. (Excerpts from *The Prudent Investor Rule* courtesy of Dimensional Fund Advisors, Santa Monica, CA.)

Conclusion: The academic research establishes compelling evidence of the principles to be followed in providing investment advice for clients’ serious money. By extension, the research also indicates what is likely not to add value and what may negatively impact returns.

Diversification does not eliminate the risk of loss. All investments have risk. Actual results, performance, or achievements may differ materially from those expressed or implied. Past performance is not an indication or guarantee of future results. Investments are subject to market risk, will fluctuate, and may lose value. Application of the principles and research stated above will neither guarantee returns nor prevent an investment loss.

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