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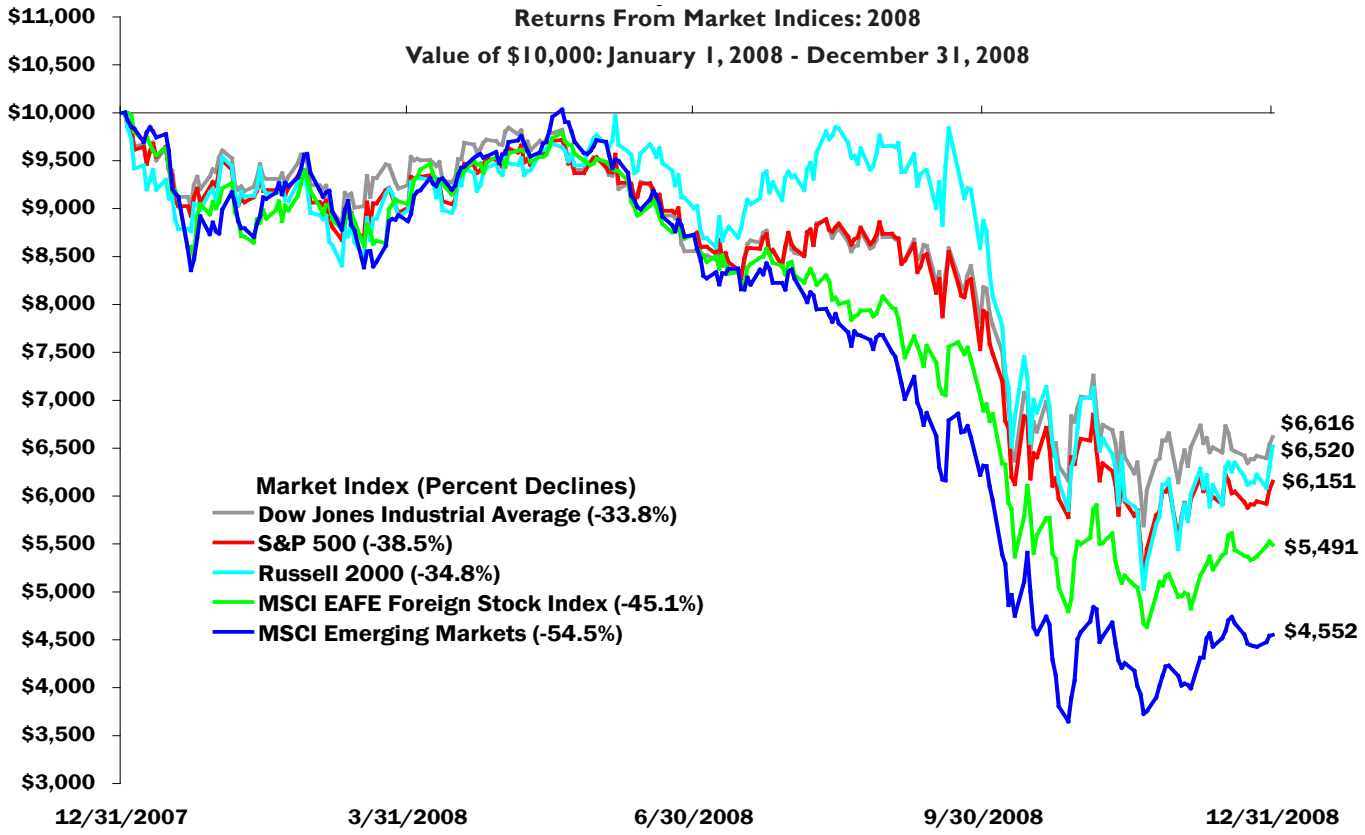
WORLD MARKET SURVEY



The World Market Survey article begins on page 10.

WEALTH MANAGEMENT STRATEGIES: MATCHING APPROACH TO RISK PREFERENCE

Financial economists generally agree that strategic asset allocation is an important factor in determining a portfolio's long-term expected risk and return. Given a sufficiently long investment horizon, the underlying characteristics of the asset classes in which the portfolio is invested should eventually frame the aggregate portfolio's risk and return. Conversely, short-term traders, or *speculators*, lack any semblance of a strategic asset allocation. They seek to profit from a rapid series of round-trip transactions in just a few securities. If price forecasts are accurate, the trader is successful; if not, the concentrated security positions may prove disastrous. Aggressive security traders live in a world of feast or famine.

Capital Markets as a Time Machine

By contrast, economists assume that most investors wish to use capital markets to move available funds forward or backward in time. An endowment fund wishes to have sufficient money to build a new hospital facility in eight years; a worker wishes to accumulate funds to support consumption during retirement; a young couple wishes to accelerate capital into the present by borrowing to finance a home purchase. Capital markets act like time machines, sending money from the present to the future (investing), or from the future to the present (borrowing). In these circumstances, a speculative approach is generally inappropriate. Although capital markets accommodate different types of participants, ranging from hedgers (farmers selling a futures contract against their crop) to arbitrageurs (buyers and sellers who act when they perceive a violation of the "law of

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one price" — i.e., securities with identical payoffs in all future economic states must sell for the same price), we will focus primarily on individual investors wishing to accumulate funds for important future goals, such as retirement.

Bill Gates doesn't need to worry about stock returns to ensure his personal financial security. Even if his portfolio earns nothing in the future, he will not run out of money.

Wealth, Risk Aversion and Required Return

First, we observe that if current wealth is sufficient to fund future objectives by investing only in risk-free investments (for example, U.S. T-Bills), there is no need to take additional market-related risk. Bill Gates doesn't need to worry about stock returns to ensure his personal financial security. Even if his portfolio earns nothing, he will not run out of money. Bill Gates does not need a strategic asset allocation that includes risky asset positions.

Investors with less money than Mr. Gates, however, must solve this problem, at least in part, by determining an appropriate set of long-term exposures to the risks and returns of capital markets — an approach Nobel Laureate Bill Sharpe calls establishing systematic risk exposures. Returns generated as a function of these systematic risks will help satisfy future spending objectives. If I want to retire comfortably in ten years, what percentage of current wealth should I expose to real estate, foreign small capitalization stock, the S&P 500 stock index, and so forth? If my objectives are ambitious and my current wealth is small, then my allocation must incur substantial systematic risk, such that I can rationally expect commensurately high returns. If my objectives are modest relative to my current wealth, then I don't need a risky allocation.

What is the best way to manage the portfolio so that, as it evolves, its risk does not exceed the investor's ability (and willingness) to withstand possible losses?

Solving for an Optimal Strategy

But determining hypothetical "optimal" asset allocations based on systematic risk exposures is merely an intellectual exercise. On paper, many investors want to maximize expected return, and many investors have the courage of lions. If all investors:

- Share the same set of capital market efficiency assumptions (e.g., that markets are the optimal mechanism for allocating societal wealth);
- Own the same amount of wealth, and,
- Have the same personal preferences and goals,

Then the most appropriate wealth accumulation strategy would simply be to buy the capitalization-weighted world capital market and hold it throughout the applicable time horizon.

In fact, as Vanguard founder and pioneering indexer John Bogle notes, buying and holding the world capital market can be an optimal strategy for many investors. But, of course, investors have different capital market assumptions, preferences and wealth. Thus, an accumulation strategy that is appropriate for one investor may be far from optimal for another. These differences make solving for an optimal accumulation strategy more difficult. Investors must resolve at least two complex problems:

1. What is the portfolio's most appropriate strategic asset allocation?
2. What is the best way to manage the portfolio so that, as it evolves, its risk does not exceed the investor's ability (and willingness) to withstand possible losses?

Other factors can make finding the optimal strategy even more difficult. For example, portfolios making current cash distributions face additional complex issues.

A knowledgeable advisor, working with a properly drafted Investment Policy Statement (IPS) can help address these problems. The first problem is relatively straightforward. For example, actuarial calculations may suggest appropriate longevity and return assumptions over the applicable planning horizon to determine the "required return" for a portfolio owned by a worker and spouse who are twelve years from retirement. If the required return is in excess of what can be earned in the capital markets, the worker must either decide to delay retirement, or reduce planned annual withdrawals during retirement.

WEALTH MANAGEMENT STRATEGIES

The second problem is more difficult. While more money is always better than less, chasing returns in the pursuit of more money increases the risk of a future shortfall. A portfolio that generates higher expected ending wealth is not necessarily preferable to a portfolio with both lower expected terminal wealth and lower downside risk. Hence, expected ending wealth should not be the only standard for comparing alternate portfolios. Rather, the investor should select the portfolio that maximizes both return requirements and risk preferences. In economic parlance, the investor should select the portfolio that maximizes "utility," defined as satisfaction with the portfolio in terms of its likelihood of meeting both future economic goals and interim risk preferences and investment constraints.

Strategic Allocation and Investment Policy

A properly drafted IPS should memorialize the investor's risk/return preferences, asset allocation, planning horizon, tax and legal issues, liquidity demands, and other constraints. The IPS should be customized for the investor, based on factors such as:

- Current wealth;
- Personal preferences for future consumption (the future "cash flow" problem);
- Ability to tolerate downside portfolio risk; and
- Planning horizon.

At the heart of most individual investors' IPS documents is a strategic asset allocation, which defines appropriate systematic risk and return exposures. The correct asset allocation enhances the investor's ability to achieve economic success at an appropriate level of volatility. We will now focus on how the investor's risk tolerance affects IPS design; and, specifically, how the investor calibrates risk tolerance and wealth accumulation objectives under conditions of uncertainty — i.e., when investing in risky assets.

Constant Absolute Risk Aversion

Consider Jane, who will build her portfolio from just two assets — a risk-free asset (Treasury Bills) and a risky asset (stocks). The risk-free T-Bill's return for the forthcoming year will be 3%. The expected return from stocks is 9%, with volatility (risk) of ±15%. Jane selects a portfolio with a strategic asset allocation consisting of 30% T-Bills and 70% stocks. The expected payoff from this portfolio equals:

(30%)x(3%) + (70%)x(9%) = 0.9% + 6.3% = 7.2%.

If Jane has initial wealth of $1 million, the portfolio's gain at the end of the year is expected to be $72,000. What is the portfolio's downside risk? The risk-free asset has no volatility. Consequently, the portfolio's risk as measured by annual standard deviation is 10.5%. Given the portfolio's million dollar beginning value, a variance of:

- One standard deviation represents a range in actual return of ± $105,000;
- Two standard deviations represents a range in actual return of ± $210,000; and,
- Three standard deviations represents a range in actual return of ± $315,000.

Assuming that portfolio returns follow a normal distribution function, Jane runs the risk of the following downside results:

- A 34% probability of one-year portfolio value between $1,072,000 and $967,00;
- A 13.5% probability of one-year portfolio value between $967,000 and $862,000;
- A 2% probability of a one-year portfolio value between $862,000 and $757,000; and,
- A 0.5% probability of a one-year portfolio value below $757,000.

At the end of the year, Jane decides to add additional funds to bring the total portfolio value

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Blueprint-oriented IPS documents may not work for all investors.

up to $2 million. However, she does not wish the strategic asset allocation to incur any additional risk to dollar wealth. In other words, the portfolio should not incur more than a one-standard-deviation risk of $105,000. If the expected volatility and returns for the risk-free and risky assets remain the same as before, the portfolio's asset allocation changes to a 65% T-Bill (risk free)/35% stocks (risky) asset weighting. Jane will not put any additional funds into stocks, because she wishes to limit dollar-denominated risk to a $105,000 standard deviation. She selects an initial strategic asset allocation, but, as portfolio wealth changes, she does not "stay the course," in the sense that she does not maintain the initial target allocation through future periods.

The IPS implications for this investor are clear — the portfolio should not maintain a constant percentage exposure to the systematic risk of stocks. However, many IPS documents presume that constant risk exposures will be maintained. Traditionally, there have been two primary justifications for the design and implementation of portfolios that are periodically rebalanced to their target asset allocation:

1. A mathematical approach, based on the concept of maximizing investor utility. Under this approach, deviations from optimal risk exposures produce disutility, and should therefore be corrected, provided that the cost of rebalancing does not exceed "utility loss."
2. A statistical approach, based on the assumption that a sufficiently long planning horizon produces results that converge to long-term expected values under the "law of large numbers." This means that holding to a constant asset allocation target through both up and down market cycles is the best path to long term success.

Jane exhibits a risk aversion function called "constant absolute risk aversion," or CARA. While interesting, it is not common. Note that, as indicated in our example, an IPS incorporating a constant strategic asset allocation is inappropriate for investors with CARA functions.

Other Risk Aversion Functions and Their Implications for Investment Policy

Unlike CARA investors, most investors view increases in portfolio dollar value as a "cushion" that, all else equal, allows for an increase in portfolio risk. Having a cushion makes the investor feel more comfortable accepting risk. Conversely, some investors manifest increasing risk aversion -- putting fewer dollars at risk as the portfolio's cushion grows. Other investors exhibit "constant relative risk aversion" or CRRA. The CRRA investor is willing to risk a constant percentage of wealth (as opposed to a constant dollar value of wealth), provided that the current level of wealth doesn't change significantly. A CRRA investor might be willing to risk 10% of wealth when the portfolio value is $1 million, and would still be willing to risk 10% provided that portfolio values stayed between $800,000 and $1.2 million. The CRRA investor is most likely to approve and sustain a fixed target asset allocation through both up and down markets. For this investor, the IPS serves primarily as an "architectural document," akin to a building blueprint, where all aspects of the portfolio's structure must remain "up to code," rather than as a "systems engineering" protocol, where the portfolio owner periodically evaluates different asset management options.

Blueprint-oriented IPS documents may not work for all investors. Expanding our example, assume that a financial advisor presents Jane with a series of model portfolios, each of which has a different allocation between safe and risky assets. The least volatile portfolio allocates 100% to T-Bills, while the most volatile allocates 100% to stocks. Other model portfolios fall between these two extremes. Each point on the allocation spectrum represents a trade-off between reward and risk. Jane must select an allocation that best suits her return objectives and risk tolerance. She decides that, given her current wealth and planning horizon, an allocation of 78% to risky assets and 22% to risk free assets maximizes expected utility (satisfaction with the portfolio).

We can develop an equation that describes Jane's risk aversion function. Intuitively, the slope of her risk aversion is exactly equal to the rate at which she is willing to trade risk for return. If this were not

the case, she would move either up or down the risk/return spectrum, to the trade-off point that maximizes her expected satisfaction. Of course, every investor wants to earn positive returns; but, positive returns from risky assets can never be guaranteed. However, at the moment of portfolio selection, the financial advisor knows the "marginal rate of substitution" of a risk averse investor who:

1. Prefers more money to less, and
2. Selects a specific risk/return trade-off.

The investor's portfolio selection decision identifies both:

1. The investor's marginal rate of substitution (the investor's ability and willingness to trade risk for return); and,
2. The rate of return required to achieve the investor's financial objective.

Together, these two factors jointly determine the most appropriate strategic asset allocation for the investor.

Unfortunately, investors do not walk around with their unique risk aversion equations tattooed on their foreheads. Furthermore, although the advisor may infer the correct equation from an investor's strategic asset allocation choice, the advisor only knows the equation in the "neighborhood" of the asset allocation point (in this example, 78% risky assets/22% safe assets). This limited knowledge could be a problem. Let's jump ahead one year and revisit our hypothetical investor, Jane.

Why Optimal Allocations Might Change

It has been a bad year. Jane's portfolio has declined significantly, and the planning horizon has also changed. Remember, Jane selected the 78/22 allocation based, in part, on economic circumstances (dollar wealth) at the time of the initial decision. Given the ability to make another decision, based on today's wealth, does she retain the 78/22 allocation, or choose a new allocation because of a change in her risk aversion function? What would motivate her to revisit this decision?

There are several factors that can affect the asset allocation decision when wealth declines due to falling asset prices:

The Wealth Effect: A decrease in wealth may increase risk aversion (especially if portfolio values are nearing the critical point at which the investor has no further wealth "cushion"). If enough investors exhibit increased risk sensitivity due to declining wealth, all else equal, asset prices will fall as risky asset are sold in favor of safe assets. Eventually, this effect can trigger an asset price death spiral, as sales generate a feedback loop that motivates ever increasing sales.

The Risk Effect: Falling asset prices, perceived as increased downside price volatility, cause investors to require higher future expected returns for investing in risky assets (an increase in the expected "risk premium"). As asset prices fall, future expected returns naturally increase, thereby increasing the expected future risk premium, especially if volatility moderates. The risk effect counterbalances the potential death spiral of the wealth effect, and brings value and contrarian investors into the market.

The Liquidity Effect: Falling asset prices make it less likely that a potential buyer will want to purchase your asset. This effect is currently visible in the residential housing market. Three years ago, some real estate agents told customers that their greatest risk was not buying a home immediately, because prices were skyrocketing. Delaying the purchase would only result in a more costly future transaction. Currently, the reverse seems to be true. Agents find it difficult to find willing buyers, because delaying a purchase may raise the likelihood that a cheaper purchase will be possible in the future. Liquidity (the ability to sell an asset at a reasonable price within a reasonable time) can evaporate rapidly in a deflating market. Facing diminishing liquidity, extremely risk averse investors may sell assets even at substantially reduced prices.

The Diversification Effect: Falling asset prices can put price pressure on many kinds of securities. Under this scenario, falling prices cause inter-asset correlation to increase (most investments in the

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portfolio move downward in lockstep). Consequently, diversification becomes a less effective portfolio risk management tool. Highly risk averse investors may sell risky investments in an effort to substitute principal guarantees for asset diversification.

Cumulatively, these effects cause investors to revisit their asset allocation decisions. Although forces push investors in both directions, both theory and experience indicate that falling asset prices tend to increase investor preference for less risky allocations.

Buy and Hold: Portfolio Risk Drops as Values Fall

How does Jane react to the decline in portfolio dollar value; and, most importantly, how does she choose to position the portfolio for the future? Recall that the portfolio consists of two assets — a risk free position in T-Bills and a risky position in stocks. The initial strategic asset allocation was 78% stocks and 22% T-Bills — a ratio of 3.54 [78 ÷ 22]. We know that the asset pricing dynamics caused a decrease in this ratio, thanks to the decline in the portfolio's dollar value. The dollar value of the safe asset remains the same while the dollar value of the risky asset falls. If, for example, the $1 million portfolio loses 10% over the year, the ratio goes to 3.09 [68 ÷ 22], assuming no net interest on the T-bills. A 20% loss produces a 'risk/safety' ratio of approximately 2.64, with lower ratio values indicating yet a further reduction in portfolio risk due to the deceleration in the rate of future dollar declines.

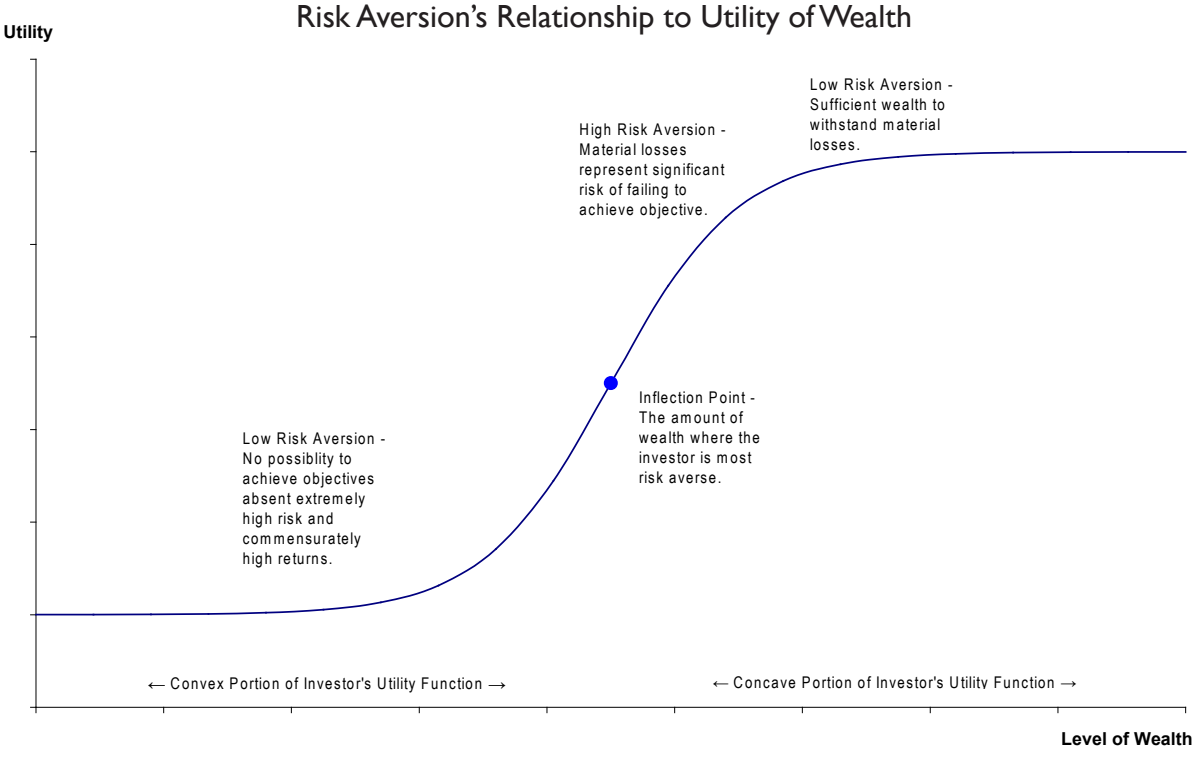
If Jane's risk sensitivity increases more than proportionately with changes in wealth, then she will want to make no changes to the portfolio. Rebalancing to initial asset allocation target exposures will not seem attractive. To see this, note that the risk/safety ratio dropped by 13% as the portfolio dollar value declined by 10% ($1 million to $900,000). The ratio dropped by an additional 15% as the portfolio declined by an additional 11% ($900,000 to $800,000). For Jane, optimal wealth management may involve a buy-and-hold portfolio management strategy. Theoretically, as the price of risky assets goes to zero, the portfolio's minimum value approaches $220,000 (plus interest).

Reducing Risk for Hypersensitive Investors

If Jane is hypersensitive to changes in wealth, but still needs to invest in risky capital markets to earn her required return, a buy-and-hold asset management strategy may not adjust quickly enough, given her steeply sloping risk-aversion function. What would cause such hypersensitivity? Consider the chart below, which graphs a risk aversion curve with

A buy-and-hold asset management strategy may not adjust quickly enough given the investor's steeply sloping risk-aversion function.

Risk Aversion's Relationship to Utility of Wealth



a critical point. The horizontal axis represents wealth, and the vertical axis represents utility. The shape of the curve describes the investor's risk aversion. Where the curve is relatively flat, a large drop in wealth corresponds to just a small reduction in utility (satisfaction). But where the curve is relatively steep, even a small drop in wealth represents a significant loss of utility.

The critical point on the curve represents the minimum level of wealth necessary to fund an important liability. This liability could be a balloon mortgage payment, a retirement nest egg with a minimum value, or something similar. To the left of the critical point the investor has a shortfall; to the right, a surplus. As the portfolio's value declines towards the critical point from the right (i.e., moving right to left), the investor becomes more and more sensitive to risk. Moving past the critical point represents a potential financial disaster. The slope of the risk aversion curve steepens as the value of the portfolio moves closer to the critical point. Imagine that Jane becomes more comfortable as the portfolio's wealth moves above the critical point's dollar value. Whenever there is a cushion, she feels like a gambler who plays with "house money." She is hypersensitive to losses in the vicinity of a critical point, but is willing to take substantial risks in the presence of sufficient investment surplus. Similarly, if her wealth is well below the critical point, she may also be willing to take substantial risks, since her only chance of achieving the critical value is to earn the extremely high returns that come only with extremely high risk. Note, however, that if these extremely high returns become manifest, risk aversion may increase rapidly as portfolio values approach the critical point. When the goal is in sight, the pain of unexpected losses becomes much sharper.

The Floor/Multiplier Approach

What is an appropriate wealth management strategy for this investor? One critical aspect of an IPS may be to acknowledge a "floor" below which the portfolio's dollar value should not decrease. Under the buy-and-hold portfolio described above, the theoretical minimum floor was $220,000. If, in fact, the investor's actual floor value should have been $750,000, then, under the buy-and-hold approach, the initial strategic asset allocation was incorrect. The IPS allocation should have been $750,000 to T-Bills and $250,000 to risky assets. This is clearly a "safer" portfolio. Unfortunately, this portfolio also has limited opportunity for meaningful long-term growth. Instead of a buy-and-hold approach, this investor would better be served by a "floor + equity multiplier" approach. This approach is also known as "insured asset allocation" or "constant proportion portfolio insurance." Let's see how the insured asset allocation approach would work in our simple two-asset portfolio example.

The portfolio's initial value is $1 million. Conceptually, its value can be segregated into two pieces: (1) a "floor" of $750,000, and (2) a "cushion" of $250,000. Depending on the curvature (i.e., slope) of the investor's risk aversion function (and on other factors), a "multiplier" is applied to the cushion. In this case, assume that the multiplier is 2.5. This means that for every $1.00 in the cushion, the investor is willing to place $2.50 into the risky asset. The initial strategic asset allocation is, therefore, the amount of cushion [$250,000] times the equity multiplier [2.5] for an allocation to risky assets (stocks) of $625,000. The formula is: $e = mc$; or, *equity allocation equals multiplier times cushion.*

The risk/reward tradeoff (marginal rate of substitution) that best suits the hypersensitive investor's risk can be calibrated using the floor and multiplier values. For example, a floor of $700,000 with a multiplier of 3.0 results in an initial strategic asset allocation of 90% risky asset / 10% risk free asset.

The floor + equity multiplier asset management approach is a dynamic wealth management strategy. To see this, assume that the $1 million dollar portfolio with a $750,000 cushion and a 2.5 multiplier is worth only $900,000 at the end of the year, and that the investor plans to rebalance the portfolio to target annually. At the end of the year, the cushion over the $750,000 floor value is now only $150,000. Consequently, the risky asset allocation must shrink from $625,000, or 62.5% of the portfolio, to $375,000 or 41.7% of the portfolio (375,000 ÷ 900,000). If, at the end of the following year, the portfolio value decreased further to $800,000, the cushion becomes a scant $50,000, and the equity allocation must

When the goal is in sight, the pain of unexpected losses becomes much sharper.

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adjust to $50,000 times 2.5; or, $125,000. The new allocation is 16% risky assets/84% T-Bills. As the portfolio's dollar value approaches the $750,000 minimum floor, the allocation to the risky asset goes to zero. As the value of the portfolio increases above the floor, the investor becomes more comfortable with risk and uses the multiplier to "leverage" upside returns. Under this wealth management strategy, risk aversion, and thus strategic asset allocation, is presumed to change considerably as wealth rises or falls materially.

Given the empirical characteristics of risky asset returns, even assuming a normal distribution of those returns, it is also possible that it could take hundreds of years for the constant mix strategy to outperform an all T-Bill portfolio, and thousands of years to outperform an all risky asset portfolio.

The Constant Mix Approach

If Jane exhibits average sensitivity to changes in wealth, but still needs to invest in risky capital markets to earn her required return, neither a buy-and-hold asset management strategy nor a floor + equity multiplier strategy may be appropriate. What wealth management strategy is suitable for this investor? To answer this question, imagine a gambler in a game with constant positive odds (probability of a win > 50% for any trial) who wishes to develop a strategy that minimizes the probability of ruin (bankruptcy) and that maximizes the changes of long-term success, where long-term success is defined in terms of a profit and loss metric per unit of elapsed time in the game. Although this problem seems straightforward enough, it is not easy to solve. In fact, it was not solved until J. L. Kelly — a scientist at Bell Labs in New Jersey — published a famous essay in 1956. If the player wishes to generate quick riches, he bets the entire stake on every trial because, for each trial, the odds are in his favor. However, this strategy will inevitably lead to a quick exit from the game. At the other extreme, if he wagers a sufficiently miniscule portion of wealth on each trial, the law of large numbers guarantees that he will eventually win all the money (after an infinite time in the game). Unfortunately, investors with current cash flow problems may not have creditors with infinite patience.

Unfortunately, investors with current cash flow problems may not have creditors with infinite patience.

The problem reduces to solving for an optimal fixed fraction of wealth that should be invested in each trial, under the assumption that the gamble has a positive return expectation (unlike the wagers offered to casino gamblers or lotto players). Although the mathematics of the solution are complicated, an approximating strategy with the best odds for success is:

- Investment of a constant fraction of total wealth for each trial; and,
- Determination of the appropriate fraction. This is accomplished by solving for the maximization of "logarithmic utility" of wealth [the logarithmic function is the inverse of the exponential growth function; and, therefore, optimizes both the time required to achieve a given level of wealth, and minimizes the chance of bankruptcy].

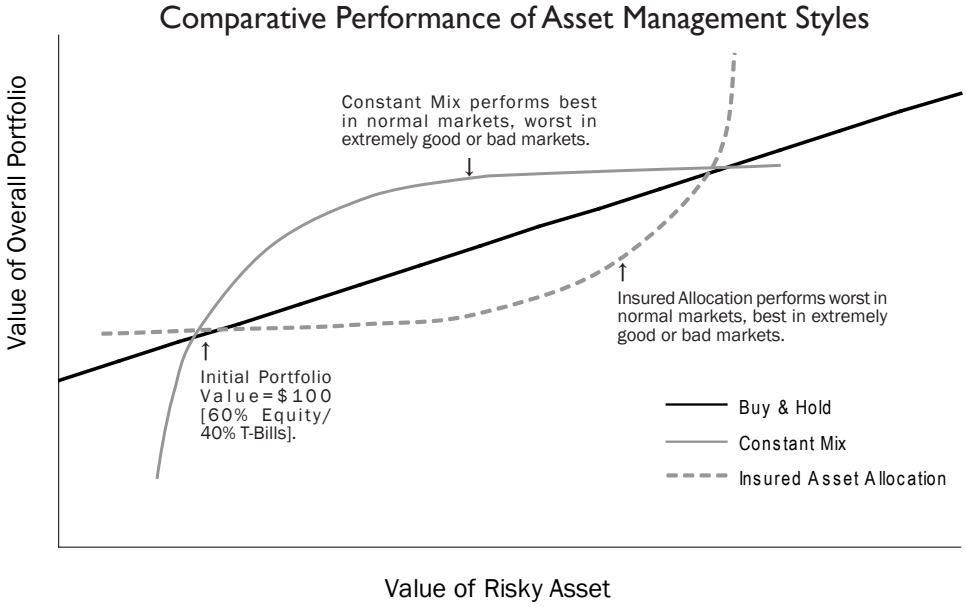
A rough investment equivalent of the constant fraction gambling strategy is a constant-mix asset allocation. Although the constant fraction strategy has many appealing properties, it is most appropriate for investors with longer-term planning horizons and average risk aversion functions. In terms of our earlier discussion, investors electing to maintain a constant asset allocation throughout all future economies and levels of future wealth exhibit CRRA risk aversion functions (at least within a reasonably large "neighborhood" of their risk/return tradeoff point). Thus, a CRRA investor would elect to maintain the 78% risky asset/22% T-Bill allocation throughout all market environments, provided that the wealth level did not change precipitously.

The constant mix asset management approach is, therefore, also a dynamic strategy that requires periodic portfolio adjustments (rebalancing to the strategic asset allocation target established in the IPS). It will, over time, provide greater odds of success than any other investment strategy; and, as time goes to infinity, its odds of success approach 100%, while its odds of bankruptcy approach 0%. However, given the empirical characteristics of risky asset returns, even assuming a normal distribution of those returns, it is also possible that it could take hundreds of years for the constant mix strategy to outperform an all T-Bill portfolio, and thousands of years to outperform an all risky asset portfolio (at a 95% confidence level). In any finite time period, the constant mix strategy may shrink wealth to nerve-shatteringly low levels, with only the cold comfort of knowing that if the game can be

continued infinitely, the player will win. Investors must live with actual results, not theoretical results. This is why actual investors wishing to pursue a constant-mix asset allocation may not select the point on the risk/return spectrum that maximizes results over an infinite horizon, but the point that establishes a more reasonable downside limit on the portfolio — i.e., that minimizes the likelihood that wealth will fall below the inflection point on our risk aversion curve.

the probability of investment policy success. This means that the IPS should not only specify the initial portfolio asset allocation, but — just as important — should specify whether the portfolio's risk will be sustained, or will vary according to changes in investor wealth.

The following graph depicts the value of a portfolio (on the vertical axis) under these three asset management approaches, as the value of the risky



The IPS should not only specify the initial portfolio asset allocation; but, just as importantly, should specify whether the portfolio's risk will be sustained or will vary according to changes in investor wealth.

Summary

To recap, three asset management approaches are available to investors with multi-period wealth accumulation time horizons:

1. Buy-and-hold;
2. Floor + equity multiplier (insured asset allocation); and,
3. Constant mix.

The approaches require different portfolio management tasks, and provide different expected payoffs to investors. Most importantly, investor risk preferences must be calibrated accurately to the selected portfolio management approach to enhance

assets (on the horizontal) changes. Assume an initial 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 Allocation approach assumes a floor value of 70 with a multiplier of two. Therefore, the initial equity investment position of the Insured Allocation 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.

The following table summarizes some important conceptual and practical differences among the three strategies:

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.

WEALTH MANAGEMENT STRATEGIES

	Buy & Hold	Constant Mix	Insured Allocation
Operational Costs	Low	Moderate	High
Management Strategy	Static	Dynamic	Dynamic
Risk/Return Payoff	Linear	Concave	Convex
Rebalance Protocol	None	Based on time, drift	f(Δrisky asset price, floor value, multiplier)
Rebalance goal	Allocation remains unadjusted throughout all future markets	Keep initial allocation proportions constant throughout all future markets	Change initial allocation as a reaction to changes in market value of risky assets
Underlying investment philosophy	"Efficient market"	Buy Low/ Sell High (contrarian)	Buy High / Sell Low (momentum)
"Best Market"	Trending	Oscillating	Trending
Utility match in the neighborhood of the initial strategic allocation	Greater than Average Sensitivity to Changes in Wealth	Average Sensitivity to Changes in Wealth	Hypersensitivity to Changes in Wealth

Each wealth management approach offers distinctive advantages and disadvantages, and each will appeal differently to investors with different risk aversion functions. Furthermore, since investor risk aversion functions shift with changes in wealth, an investor might rationally select multiple approaches, to be implemented as wealth varies in response to market conditions. No approach is inherently better or worse than another; rather, the informed investor should understand the costs and benefits of each approach, so as to optimize the investor's expected utility (satisfaction) from the portfolio.

WORLD MARKET SURVEY

It was a financial catastrophe unlike any since the Great Depression. The bursting of the U.S. residential real estate bubble and ensuing credit crunch, triggered by defaulting "subprime" mortgages, caused institutional investors to jettison assets in a mad dash to preserve liquidity. The resulting crisis spread like wildfire, leaving no market unscathed. As asset prices crashed and credit markets seized up, consumer spending and business investment plummeted, exacerbating a severe global recession.

As the graph on page 1 demonstrates, world stock markets expererienced precipitous declines last year. In the U.S., the Dow Jones Industrial Average was off 33.8% for the year, the S&P 500 fell 38.5% and the Russell 2000 Index of smaller U.S. companies dropped 34.8%. Over just a few months (primarily October and November), an unprecedented amount of capital fled the markets, in the worst year for U.S. stocks since 1931. Shares of General Electric declined 56% in 2008. Financial stocks were particularly hard hit, with Bank of America (down 63%) and Citigroup (off 75%) each losing more than $100 billion in market value. Even technology star Google was not immune: down 55%, a $120 billion market value loss for the year.

In this toxic environment, iconic financial firms required government bail outs or disappeared entirely. Mortgage giants Fannie Mae and Freddie Mac suffered stock price declines of roughly 98%. The world's largest insurance company, AIG, fell 97%. Wall Street firms Bear Stearns and Lehman Brothers declared bankruptcy, while Merrill Lynch was subsumed into Bank of America, and Wells Fargo swallowed Wachovia.

International Markets Decline More than U.S.

While losses in U.S. equity markets were profound, foreign stock markets, which had outpaced the U.S. over the past several years, fared even worse. Every major market in the world sustained deep losses, with Germany, France, Australia, and Japan all down more than 40%. The Dow Jones World Index, excluding the U.S., fell by nearly half -- 46% -- in U.S. dollar terms. Stock markets in the world's emerging economies, including Mexico, China and India, fell by 54.5%.

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SURVEY OF INDICES & FUND AVERAGES

PERIOD AND ANNUALIZED COMPOUND RETURNS IN PERCENT

	Fourth Quarter 2008	Total Return Calendar 2008	3 Years Ending 12/31/2008	5 Years Ending 12/31/2008	10 Years Ending 12/31/2008
Inflation Index & Risk Free Rate					
Consumer Price Index	-2.66	1.01	2.42	2.87	2.65
U.S. 3-Month Treasury Bills	0.25	1.80	3.76	3.10	3.30
U.S. Stock Market (Large Companies)					
Standard & Poor's (S&P) 500 Index	-21.94	-37.00	-8.36	-2.19	-1.38
S&P/Citigroup Large Cap Growth Index	-20.24	-34.92	-7.62	-3.13	-3.15
S&P/Citigroup Large Cap Value Index	-23.83	-39.22	-9.19	-1.31	-0.25
Average Large Cap Blend Fund ‡	-22.07	-37.79	-9.03	-2.47	-0.84
U.S. Stock Market (Small Companies)					
Russell 2000 Index	-26.12	-33.79	-8.29	-0.93	3.02
Dimensional U.S. Micro Cap Fund	-26.98	-36.72	-11.35	-2.71	6.44
Russell 2000 Growth Index	-27.45	-38.54	-9.32	-2.35	-0.76
Russell 2000 Value Index	-24.89	-28.92	-7.49	0.27	6.11
Average Small Cap Blend Fund ‡	-26.34	-36.56	-10.07	-1.30	4.39
Real Estate					
DJ Wilshire REIT Index	-39.95	-39.20	-12.00	0.65	7.65
Fixed Income (Bond) Markets					
BarCap Government Bond Index	8.05	12.39	8.11	6.06	6.16
Avg. Intermediate Gov't Bond Fund ‡	3.42	4.76	4.74	3.84	4.66
BarCap Municipal Bond Index	0.74	-2.47	1.86	2.71	4.26
Average California Intermed/Short Muni Bond ‡	-1.72	-3.59	0.66	1.43	3.17
Credit Suisse High Yield Bond Index	-18.79	-26.17	-5.34	-0.58	2.87
Average High Yield Bond ‡	-18.48	-26.41	-6.59	-1.84	1.12
Citigroup World Gov't Bond Index	8.81	10.89	9.30	6.05	5.90
Average World Bond Fund ‡	1.33	-1.57	3.34	3.17	4.74
International Stocks					
MSCI EAFE Foreign Stock Index	-19.95	-43.38	-7.35	1.66	0.80
Average Foreign Large Blend Stock Fund ‡	-20.94	-43.99	-7.67	1.21	0.90
MSCI Europe Stock Index	-22.79	-46.42	-6.56	1.53	0.37
MSCI Pacific Stock Index	-13.87	-36.42	-9.10	1.85	1.86
MSCI Emerging Mkt Index (excl. dividends)	-27.94	-54.48	-7.07	5.07	6.61
Average Emerging Markets Fund ‡	-29.45	-54.44	-6.38	6.13	8.74

‡ Source: Morningstar Principia 12/31/2008

continued from page 10.

The Dollar Gains Ground . . .

Bucking a decline in relative value dating back to 2002, the dollar strengthened in 2008, as investors fled risky assets and purchased U.S. Treasuries. According to the Wall Street Journal, the dollar appreciated 4.5% against the Euro, 36% against the British pound and 22% against the Canadian dollar. The dollar soared against emerging market currencies, gaining more than 30% relative to the Brazilian real, the South Korean won and the Turkish lira. Of course, a strengthening dollar subtracts from the returns U.S. investors receive from foreign stocks, a factor that contributed to their poor showing last year.

Real Estate Still Problematic

The residential real estate market remains at the epicenter of the current crisis, with no sign yet that problems are abating. Home prices fell 23% from the July 2006 peak through October of 2008, the latest data available from the S&P/ Case-Shiller Home Price Index. According to the Mortgage Bankers Association, as of last month one in ten homeowners with a mortgage are either delinquent on payments or already in foreclosure. Commercial real estate, which held steady in the first part of the year, saw the bottom fall out, as prospects for shopping centers, office buildings, and hotels declined in line with consumer spending. The FTSE NAREIT Index dropped 39% in the fourth quarter.

Bonds, a Tale of Two Categories

Government and corporate bonds carved disparate paths last year. As the subprime mortgage debacle gained momentum, and indications of a severe recession mounted, prices of mortgage backed securities and corporate bonds plunged. Investors who expected positions in investment grade corporate bonds to offset stock losses were disappointed, as high grade corporates declined 7% for the year. Conversely, Treasury notes, bonds, and bills performed extremely well. A Merrill Lynch aggregate Treasury bond index gained 14% for the year. The "flight to safety" increased demand for Treasuries, such that at one point, investors accepted negative yields on short-term bills, in return for assurance that they would get their money back. Recession worries also affected municipal bonds, which were off 4% for the trailing twelve months. Meanwhile, the Federal Reserve cut its key interest rate seven times in 2008, from 4.25% to a target rate of 0.00% to 0.25%, a historic low.

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Individual Country Returns 2008

	U.S. Dollar	Local Currency
North America		
United States	-38.61	-38.61
Canada	-49.08	-36.31
Latin America		
Brazil	-57.00	-43.67
Chile	-43.59	-27.81
Mexico	-39.81	-23.62
Africa		
South Africa	-42.77	-22.58
Europe		
Austria	-64.76	-62.93
Belgium	-52.57	-50.11
Denmark	-51.64	-49.23
Finland	-56.43	-54.17
France	-45.46	-42.63
Germany	-46.28	-43.49
Great Britain	-51.21	-32.45
Ireland	-68.68	-67.06
Italy	-52.45	-49.99
Netherlands	-55.62	-53.32
Norway	-66.19	-56.40
Portugal	-53.83	-51.44
Spain	-43.43	-40.50
Sweden	-53.15	-42.68
Switzerland	-30.98	-34.95
Asia		
Australia	-54.50	-42.70
Hong Kong	-53.87	-54.15
Indonesia	-63.04	-57.11
Japan	-29.31	-42.64
New Zealand	-52.44	-37.37
Philippines	-55.49	-48.72
Singapore	-53.08	-53.04
South Korea	-55.64	-40.31
Taiwan	-47.56	-46.94
Thailand	-49.86	-48.23

Source: Dow Jones Global Indexes