Investing in Volatile Times
A Dynamic Approach to Asset Allocation

By Erik L. Knutzen, CFA®, CAIA

Setting an asset allocation policy is, for most investors, the central decision when building a long-term investment program. The recent experience of extreme volatility in markets, however, has raised significant questions about the best way to pursue asset allocation. The precipitous market drop during the credit crisis of 2008 and the equally dramatic subsequent rebound exposed the shortcomings of static, equity-centric asset allocation policies such as the traditional 60/40 stock/bond mix and the private equity-focused endowment model. First, as correlations of risky assets converged, portfolios dominated by equity (both liquid and illiquid) and other growth-oriented assets such as credit and commodities (including hedge funds with embedded exposures to those markets, or beta), showed that they were one-bet portfolios. Second, in the midst of highly volatile markets, many plan sponsors found themselves unable to adjust portfolio positioning, initially to mitigate fast-rising risks and then to take advantage of once-in-a-generation opportunities for excess return available in severely dislocated market segments such as credit.

In a global investment environment characterized by low expected asset returns and amplified risks, a more dynamic approach to asset allocation can provide institutional investors with a framework to manage risks as well as generate additional return. The key components of this dynamic asset allocation process include the following: 1) more frequent review and adjustment of asset allocation using market-driven assumptions, 2) incorporating an opportunistic component into asset allocation policy, and 3) delegating a portion of assets to flexible strategies such as global asset allocation and global macro. We close with a look at how dynamic asset allocation may be incorporated into a liability-driven investing program and a discussion of some of the structural changes investors may have to embrace when implementing dynamic asset allocation.

From Traditional to Dynamic Asset Allocation
The traditional approach to asset allocation is to review policy weights on a periodic basis, perhaps every three years, using assumptions of asset class returns, risks, and correlations derived from long-term historic averages forecast over a 10-, 20-, or even 30-year horizon. Using mean-variance analysis, a strategic portfolio is then identified that has an expected outcome matching the target return with the lowest associated level of risk. Once this strategic asset allocation is set, the various asset categories generally are filled with investment managers using a style-box approach. Allocations are periodically rebalanced to targets, often according to strict rules and within relatively tight bands. The endowment model applies a similar long-term approach to asset allocation, with heavier weightings in alternative asset strategies such as private equity, real assets, and hedge funds.

Such approaches to asset allocation assume that relationships among investment categories are relatively stable over time, i.e., valuations, risks, and correlations do not change significantly. Yet the reality of markets, as the events of the past five years remind us, is quite different. In fact, the structure of the global investment landscape is changing constantly. Investors’ most recent experience highlights the rapidly shifting nature of markets and the importance of becoming more dynamic.

Furthermore, the traditional approach to asset allocation can lead to a misalignment of resources at institutional investment programs between activities that are highly labor intensive but relatively low impact on the overall program results, such as asset allocation. A dynamic asset allocation approach can allow investors to pursue the long-term objectives of an investment program with a clear focus on the most important drivers of risk and return—asset allocation and the opportunity to adjust asset allocation to appropriately position for future market environments.

Incorporating Dynamism into Asset Allocation
We recommend that investors incorporate dynamic asset allocation into their programs by: 1) more frequent review and adjustment of asset allocation using market-driven assumptions, 2) incorporating an opportunistic component into asset allocation policy, and 3) delegating a portion of assets to flexible strategies such as global asset allocation and global macro. A description of each of these approaches follows.

A More Dynamic Annual Asset Allocation Process
The experience of the past several years has provided ample evidence of the dynamism of markets and serves as
a constant reminder of the instability of key relationships driving asset class behavior. Below, we highlight the variability of critical inputs to the asset allocation process.

**Valuation**

Asset class valuations change through time as investors assess the overall economic environment and future prospects. Equity market valuations can be assessed by looking at indicators such as price-to-earnings (P/E) and price-to-book ratios, the relationship of stock market earnings and dividends to bond yields, replacement value of equities, and so forth. The valuation of bond markets can be assessed by considering indicators such as expectations of long-term growth and inflation as well as credit spreads over Treasuries. Even with an alternative asset category such as commodities, investors can gain a sense of relative value and attractiveness by comparing spot prices to forward commodity price curves.

Figure 1 shows the changing valuation of U.S. large company stocks using the P/E ratio over the past 40 years. The significant variation in this factor over time can be explained in part by fundamentals but also by investor fear and greed, i.e., overreaction to market environments. These changing valuation relationships should be reflected in forecasts of asset class return expectations and should inform asset allocation decisions on a shorter time horizon than the traditional “set it and forget it” approach.

**Risk**

Just as market valuations vary through time, risk is not static over market cycles. There are many definitions of risk in markets—volatility, liquidity risk, counterparty risk, systemic risk, and so on. The most commonly cited risk measure is volatility; while this metric has shortcomings, such as assuming normal distributions and valuing downside and upside risk equally, it is easily observable in the marketplace. Figure 2 shows annualized monthly volatility in the stock market since 1990. Over this entire period, the average volatility was 16.2 percent although for the five years running up to 2008 it was a docile 12.5 percent. Entering 2008, it was easy to underestimate the volatility of equities as part of a program’s asset allocation assumptions and, as a result, allocate more heavily to risky asset classes on the eve of a major market downturn. A more-dynamic approach, one that adjusted the forecasts of market volatility to incorporate higher expected risk after a low risk period and moderated projected risk after a high risk period, would have led investors to reduce risk going into the crisis and then be able to seek higher risk and return assets coming out of the crisis.

It is also important to recognize that volatility is only one measure of risk. Investment program sponsors should think carefully about how to measure and forecast risk most effectively in their portfolios while monitoring mul-
tiple risk indicators to gain an understanding of how risk is changing in the current environment.

Correlation
The traditional approach to asset allocation assumes stable correlations of returns among asset classes. Just as with valuation and risk, however, correlations also change through time. Figure 3 shows the relationship of correlations among major asset classes.

This illustration highlights how these relationships can change dramatically over market cycles; often diversification benefits are reduced at the worst time. In the recent credit crisis, for example, risky assets appeared to move in sympathy—that is, their correlations moved to the high end of the historical range. The exception to this phenomenon was U.S. Treasuries, which experienced negative correlations with risky assets. As a result, in this highly volatile environment, a traditional portfolio turned out to be anything but diversified. Adjusting correlations to reflect current market conditions (e.g., increasing expected correlations in a higher-volatility environment), rather than always assuming long-term averages, is an important component of pursuing a more dynamic asset allocation approach.

A Market-Driven Annual Asset Allocation Process
The first step in a dynamic process is evaluating asset allocation on an annual basis, and forecasting asset class return, risk, and correlation over a shorter time horizon using market-priced inputs. We use a five-to-seven-year forecasting horizon incorporating current and forward market pricing of key valuation relationships and drivers of returns, observed and implied risk, and expectations of correlations going forward. While long-term historical relationships should inform forecasts, they should not be the primary drivers of expected outcomes. The informed judgment of seasoned investment professionals is also important in finalizing projections. The resulting annual market return forecasts should be more variable year-to-year than those based primarily on historical relationships and forecast over longer time horizons.

As an example of how this process can generate more dynamic asset class expectations, Table 1 shows five-to-seven-year forecasted geometric returns for major asset categories from 2007 to 2012. The magnitude of change in expected return from U.S. equity and

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>4.00%</td>
<td>4.00%</td>
<td>3.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>1.25%</td>
</tr>
<tr>
<td>Core Bonds</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.50%</td>
<td>3.75%</td>
<td>3.00%</td>
<td>2.88%</td>
</tr>
<tr>
<td>Treasury Inflation-Protected Securities</td>
<td>4.75%</td>
<td>4.75%</td>
<td>6.00%</td>
<td>3.50%</td>
<td>2.25%</td>
<td>1.75%</td>
</tr>
<tr>
<td>High-Yield Bonds</td>
<td>6.25%</td>
<td>6.75%</td>
<td>11.00%</td>
<td>8.00%</td>
<td>6.25%</td>
<td>7.00%</td>
</tr>
<tr>
<td>Global Bonds (unhedged)</td>
<td>4.00%</td>
<td>4.00%</td>
<td>4.25%</td>
<td>3.25%</td>
<td>1.75%</td>
<td>1.25%</td>
</tr>
<tr>
<td>EMD External</td>
<td>6.25%</td>
<td>6.80%</td>
<td>8.00%</td>
<td>6.50%</td>
<td>5.25%</td>
<td>5.75%</td>
</tr>
<tr>
<td>Large-Cap Equities</td>
<td>8.50%</td>
<td>8.50%</td>
<td>9.25%</td>
<td>7.75%</td>
<td>7.00%</td>
<td>7.25%</td>
</tr>
<tr>
<td>Small/Mid-Cap Equities</td>
<td>8.75%</td>
<td>8.75%</td>
<td>9.50%</td>
<td>8.00%</td>
<td>7.00%</td>
<td>7.50%</td>
</tr>
<tr>
<td>International Equities (unhedged)</td>
<td>8.75%</td>
<td>9.00%</td>
<td>9.75%</td>
<td>8.00%</td>
<td>7.00%</td>
<td>7.75%</td>
</tr>
<tr>
<td>Emerging International Equities</td>
<td>9.75%</td>
<td>9.50%</td>
<td>10.50%</td>
<td>9.50%</td>
<td>9.00%</td>
<td>9.75%</td>
</tr>
<tr>
<td>Commodities</td>
<td>5.00%</td>
<td>5.00%</td>
<td>5.50%</td>
<td>4.75%</td>
<td>4.50%</td>
<td>4.75%</td>
</tr>
</tbody>
</table>

Source: NEPC (5-7 year forecast horizon)
times of extreme sentiment, judgment can be applied to create more-normalized risk estimates. Likewise, projected correlations should put greater emphasis on recent experience and expected relationships between asset classes going forward in order to avoid assuming greater diversification than is on offer from the marketplace.

The next step is considering how best to assess these inputs at the total program level. Using a risk budgeting framework, rather than a traditional efficient frontier analysis, allows measurement of the contribution of each asset class to overall portfolio risk. Finally, it is important to prepare scenarios to assess how a program will perform in extreme economic conditions such as high and low economic growth, inflation, and volatile interest-rate environments. These tools can provide critical information on the concentration of risks in a program as well as the sensitivity to key economic factors, particularly in tail-risk events.

A Note on the Dynamics of the Global Market Opportunity Set

A key tenet of the capital asset pricing model is that the global market basket represents the most efficient long-term portfolio as defined by expected return per unit of risk, or Sharpe ratio. Within this model, investors’ asset allocations should deviate from that portfolio only to pursue higher return or to reduce risk. The traditional approach to asset allocation, described above, assumes that the composition of the market portfolio is static, whereas in reality it is constantly changing. Figure 4 shows the varying composition of the global market portfolio over the past 40 years. It shows that U.S. equity (the single largest component of most U.S. institutional investment programs) has ranged from 30 percent of the global capital markets in the early 1970s to a low of 12 percent in 1990. In the most recent decade, U.S. equity as a percent of the global market portfolio has ranged from the high teens to the low twenties.

FIGURE 4: THE EVOLUTION OF THE GLOBAL MARKET PORTFOLIO

A naïve approach to asset allocation following the capital asset pricing model would use these weights as a starting point for asset allocation each year. While we believe that additional considerations of valuation, risk, and correlations should come into play when setting asset allocation, as described above, we acknowledge that it is important to be cognizant of the global market composition when establishing asset allocation targets. Maintaining a static weight to U.S. equity, for example, while disregarding its evolving weight in the global market portfolio indicates that the investor is actually making an active but unintentional bet (Sharpe 2010).

Furthermore, the structure of markets is constantly evolving. New investment categories regularly become available to investors through the opening of new markets, disintermediation, financial engineering, and changes in the regulatory environment. In the 1980s, U.S. investors built portfolios primarily of domestic large-company stocks and investment-grade bonds (at that time Treasuries and corporates), but by the 2000s investors routinely were incorporating global asset classes and a panoply of alternative investments. More recently, new investment categories such as bank loans and local currency emerging market debt have become

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common tools available to institutional investors as well as important potential sources of return and/or diversification. It is important to assess new market segments and strategies for inclusion in a program’s investment universe on an ongoing basis and to create the latitude to pursue these newer categories as they grow and attract assets.

**Opportunistic Investing**

Occasionally markets dislocate and valuation moves to extremes—away from any semblance of fair value. Examples of such dislocations include the technology bubble of the late 1990s and the credit market sell-off in 2008. As a representation of the most-recent experience in the credit markets, figure 5 shows the yield spread of below-investment-grade bonds compared to Treasuries since 1990. In late 2008, spreads blew out to record levels, more than two standard deviations from the historical average. At that point, high-yield bonds were being priced as if more than half the issues in the market would default and there would be lower-than-historical recovery levels on defaulted issues—a more disastrous outcome than experienced in the Great Depression. While it was possible that the period after 2008 could have been worse than the 1930s for buyers of credit issues, it was more likely that investors had overreacted to the credit crisis. For investors with the ability to dynamically shift their asset allocations, such radical extremes in valuation, which can persist for several years, represent opportunities to reduce risk (tech bubble) or harvest additional return (credit crisis). Dislocations also can present opportunities to exploit changing market dynamics and participation. For example, the departure of traditional providers of liquidity during the credit crisis created opportunities for excess returns in its aftermath for those able and willing to lock up capital in liquidity-provision strategies.

For most long-term investment programs, some form of opportunistic investing is appropriate, although it is important to recognize that taking advantage of near-term opportunities can be outside the traditional asset allocation process. It is also important to understand that outsized opportunities do not always exist in global markets. Therefore, we recommend that programs establish an opportunistic category with a maximum allocation of 10 percent and a target allocation of 0 percent. We recommend that investments in this category be made with a time horizon of one to three years. Allocations should be made to asset classes that are large enough and at sufficient extremes in valuation that price movements can have a meaningful impact on a program’s risk and return profile. Also, the opportunity must be actionable in terms of investment vehicles and strategies, as well as within an investor’s normal decision-making process.

In the specific case of the credit crisis, we created an opportunistic framework for clients in which we indicated that: 1) the likely horizon for the investment would be two to three years, 2) it would be hard to follow exhaustive due diligence procedures to evaluate the new credit-oriented investment strategies coming to market, 3) it would be difficult to make apples-to-apples comparisons of these products so diversification by strategy was important, and 4) the opportunity may improve after the initial investment (e.g., prices may continue to fall before they rise). We identified, evaluated, and vetted an array of credit products across the liquidity and expected return spectrum from bank loan, convertible, high-yield, and multi-sector liquid credit strategies to credit-oriented hedge funds and longer lock-up distressed vehicles. To measure the relative performance of credit strategies through this period, in table 2 we show the returns from mid-2008 to mid-2010 of three common credit benchmarks as well as common equity benchmarks. Table 2 demonstrates that an allocation to credit strategies added value relative to stocks with less downside risk throughout the period.

The recovery in credit markets beginning in 2009 was remarkably rapid. As a result, a market-driven asset allocation assumption setting process at the outset of 2010 would have identified that liquid credit sectors had appreciated to nearly fair value. Investors following a dynamic approach to asset allocation would have begun to exit the liquid credit allocations in their opportunistic portfolios at that time.

Since 2010, the dislocation in the credit markets has evolved toward a longer-term distressed cycle presenting investors with attractive opportunities in structured products, geographically focused strategies, and various direct lending approaches. In the increasingly complex global investing environment, it is important for investors to have an opportunistic component of their asset allocation policy to be able to take advantage of such market dislocations.

**Incorporating Flexible Strategies**

Market prices fluctuate constantly. Most short-term changes represent noise and do not represent realloca-

### TABLE 2: CREDIT VERSUS STOCKS; RETURNS JULY 2008–JUNE 2010

<table>
<thead>
<tr>
<th>Index</th>
<th>2nd Half 2008</th>
<th>2009</th>
<th>1st Half 2010</th>
<th>Total Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barclays US Credit</td>
<td>−3%</td>
<td>16%</td>
<td>6%</td>
<td>19%</td>
</tr>
<tr>
<td>Barclays High Yield</td>
<td>−25%</td>
<td>58%</td>
<td>5%</td>
<td>24%</td>
</tr>
<tr>
<td>S&amp;P LSTA Lev Loan</td>
<td>−28%</td>
<td>45%</td>
<td>3%</td>
<td>12%</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>−29%</td>
<td>19%</td>
<td>−7%</td>
<td>−16%</td>
</tr>
<tr>
<td>MSCI EAFE</td>
<td>−36%</td>
<td>29%</td>
<td>−13%</td>
<td>−27%</td>
</tr>
</tbody>
</table>

Source: Bloomberg

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The Macro-Driven Nature of Markets

For several years, markets for risky assets have tended to move in unison, driven by major macro-economic factors. Examples include the collapse of major financial institutions in 2008, the massive stimulus programs that began to take effect in 2009, and, most recently, the European debt crisis. As an example, figure 6 shows the ebb and flow of these macro events through calendar year 2011 and their impact on the U.S. stock market, which resembled a roller-coaster ride even as it opened and closed the year at nearly the same level.

In this climate, cross-correlations among securities rose as the overall flow of capital mattered more than differentiation among securities. This risk on/risk off market environment continued through 2012 and, with policy makers being forced to make politically challenging decisions to address global imbalances, appears likely to remain with us for some time.

When markets are being driven by such top-down forces, active managers focused exclusively on security selection struggle to add value, and overall investment program performance is driven by aggregate levels of risk exposure and allocations among risky asset classes. Programs that are not positioned to adjust to changes in the overall environment, either at the total program level or by incorporating managers with the ability to adjust their portfolios across asset categories and markets, will be at a distinct disadvantage.

Global Asset Allocation and Global Macro Strategies

It is often said that it’s impossible to time the market. We agree that the vast majority of investors (including ourselves) does not have the investment experience, tools, and decision-making framework to pursue true tactical asset allocation. A small number of investment management firms, however, has been able to add value (by increasing return, reducing risk, or both) through a combination of building more-efficient starting portfolios and then shifting assets among markets based on shorter-term trading opportunities. These strategies include global asset allocation, risk parity, and global macro.
As an example of how these strategies can improve investment program returns, figure 7 shows the risk and return of representative global asset allocation (GAA) and risk parity strategies over the five years ending June 30, 2012. Nearly all the managers represented (11 of 12) have provided superior performance relative to a passive 60/40 blended stock/bond benchmark. Most commonly, we work with clients to build a team of managers in this category, each applying different approaches to these strategies. The green triangle in figure 7 represents the average outcome of a simulation of three-manager teams. Over this time period the incorporation of such global flexible strategies has added significant value by increasing performance as well as by moderating risk relative to a passive allocation to stocks and bonds. Furthermore, these strategies, particularly those pursued by global macro managers, historically have demonstrated additional positive diversification benefits such as low or negative correlation to other risky strategies in times of market stress and positively skewed return patterns.

Incorporating global flexible strategies into an investment program is also consistent with an overall theme of loosening constraints on managers who have demonstrated strong active management skill (i.e., departing from style-box thinking). Such an approach can be implemented more broadly across investment programs with global equity managers, “go-anywhere” fixed income managers, and hedge fund strategies with broad opportunity sets and limited restrictions. By incorporating these types of strategies, investors can seek to take advantage of as many sources of excess return as possible while ensuring that components of their program are able to respond to global macro events to seek additional return, mitigate risk, or both.

**Implementing Dynamic Asset Allocation**

To implement a more-dynamic approach to asset allocation, investment programs can take the specific steps described above. This may require some changes to program governance such as an expedited committee decision-making process, delegating specific authorities to staff, or structural changes to include opportunistic and global flexible components of the strategic asset allocation policy. From a rebalancing standpoint, broadening policy bands can be an important part of allowing for more dynamic asset allocation, as well as ensuring that rebalancing is less mechanistic and more flexible to allow for adjusting allocations based on changing market relationships.

In rebalancing discussions, investors should consider the impact of transaction costs compared to the relative valuation of the affected categories. For those programs that are able to employ derivatives, working with an overlay manager can provide the flexibility to implement a more-dynamic approach to asset allocation quickly and efficiently while minimizing the impact on underlying portfolios. For those programs that are not able to employ a dedicated derivatives overlay manager, implementing a more-dynamic approach to asset allocation can be facilitated through the use of index vehicles for a portion of the portfolio.

**Applications of Dynamic Asset Allocation: Liability-Driven Investing**

An important application of dynamic allocation strategies can be in the area of liability-driven investing (LDI) for corporate pension plans. In the past several years, many corporate pension plans have faced deteriorating funded statuses due to bad markets combined with low interest rates as mark-to-market accounting rules were implemented (the “perfect storm”). Restoring funded status can result from a combination of contributions, higher interest rates, returns of risky assets, and excess returns from active management. Some programs are establishing planned stages of liability-hedging at progressive levels of funding status, or creating a glide path toward a fully hedged or near-fully hedged position. While a typical glide path might specify a calendar-based increase in the size of the liability hedge (essentially dollar-cost averaging), dynamic strategies can be built around the glide path to respond to market movements.

For example, increased funded status can be captured dynamically using rules based on the cause of any improvement, such as:

**FIGURE 7: REPRESENTATIVE GLOBAL FLEXIBLE STRATEGIES—RETURN AND RISK**

Source: NEPC (five years ending June 30, 2012)
• if funded status improvement came from the performance of risky assets, reduce the allocation to risky assets along the glide path;
• if the improvement came from higher interest rates, increase liability-hedging assets;
• if the improvement came from outperformance of Treasuries in the hedging portfolio relative to the corporate credit-based liability (i.e., credit spread widening), trade into long corporates; and/or,
• if the improvement came from contributions, consider putting the additional assets entirely in liability-hedging assets.

By using these sorts of dynamic rules, corporate pension programs can protect funded status even if rates decline. The high-volatility environment for both interest rates and risky assets has created the opportunity for a dynamic approach to glide path management to capture short-term improvements in funded status.

Conclusion

A dynamic approach to asset allocation represents an opportunity for long-term investment programs to increase return and manage risk more effectively. More-frequent review and adjustment of asset allocation, incorporating opportunistic investing, and employing flexible strategies such as global asset allocation and global macro managers, allows investment programs to pursue these important objectives. Applying this approach would have led to reducing risk in portfolios going into the credit crisis, followed by a re-risking of portfolios in 2009 and a moderation of that risk in 2010. A more-dynamic approach to asset allocation also can serve to focus investment committees and program staff on important, but often overlooked, drivers of risk and return for investment programs without engaging in short-term market timing.

In the challenging current global investment environment characterized by muted expected capital market returns and outsized potential risks, it is critical for investors to employ every possible tool in the investment toolbox. As markets continue to evolve, we expect that dynamic asset allocation will become an increasingly important component of investment program management.

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Reference