

**Harnessing Emerging Markets Diversification
Opportunities:
A Guide for Institutional Portfolios**

June 2011

Ajay G. Jani

Managing Director | Portfolio Manager

+1-203-552-1958

AJ@Gramercy.com

Introduction

During the past ten years, three trends have manifest themselves in large pension plans:

1. Increased international diversification;
2. Greater use of alternative investment strategies; and
3. Pension plan returns consistently failing to keep pace with promised benefits.

With many of the opportunities for international diversification or alternative strategies having been exhausted, the large gap between plan assets and liabilities is likely to continue growing given current asset pricing. As an example, most U.S. pension plans use a 7%-8% discount rate to calculate their liabilities, while long term U.S. government bonds yield 4.5%. In addition, as a result of steep hits to plan assets during 2001-2002 and again in 2008, most plans are unable to tolerate another significant drop in asset prices without jeopardizing their ability to pay benefits as promised. Traditional “tail risk” strategies that can cost 50-150 basis points per annum to protect against extreme “left-tail” events are prohibitively expensive in a world where plan returns have been running at 5%-6%, fully 200 basis points below the growth rate of liabilities.

Absent a significant abrogation in the level of promised benefits, increases in retirement ages or sharply higher personal and corporate taxes in order to fund pension plans, there are very few easy choices left to square the circle. This paper explores some of the remaining choices that plan sponsors have to help close the asset/liability gap without taking excessive risks. We acknowledge that each plan has specific institutional hurdles when choosing investments and that there is no one-size-fits-all solution. We simply highlight the opportunities that still exist, leaving each plan to choose how to best implement the solutions.

International Diversification

The late Sir John Templeton is widely regarded as the modern pioneer in using international investments to increase portfolio returns and improve diversification. He initially made his name with well-timed investments in Japan during the 1960s and eventually extended his reach with a slew of international strategies. Most U.S. pension plans did not begin true international diversification until the 1980s and 1990s, beginning with Europe and Japan, and eventually moving into “emerging markets” as well. The table below shows the benefits of international diversification in both equity and debt investments. The data shows that correlations are well below 1.0 and thus, international investments continue to add value to a well-diversified investment portfolio (See Table 1).

Table 1 – Historical Returns and Correlations for Emerging Markets Investments

| EM Fixed Income Comparisons with Barclays Aggregate | | | | | |
|---|-------------|---------|---------|--------|--|
| Index | Correlation | Start | End | Return | |
| Barclays Aggregate | | Dec.-93 | Dec.-10 | 6.18% | |
| JPM EMBI+ | 0.32 | Dec.-93 | Dec.-10 | 10.56% | |
| Barclays Aggregate | | Dec.-02 | Dec.-10 | 4.98% | |
| JPM GBI-EM Divers | 0.43 | Dec.-02 | Dec.-10 | 12.62% | |
| EM Fixed Income Comparisons with Equity Indices | | | | | |
| Index | Correlation | Start | End | Return | |
| S&P 500 | | Dec.-93 | Dec.-10 | 6.01% | |
| JPM EMBI+ | 0.53 | Dec.-93 | Dec.-10 | 10.56% | |
| S&P 500 | | Dec.-02 | Dec.-10 | 4.57% | |
| JPM GBI-EM Divers | 0.68 | Dec.-02 | Dec.-10 | 12.62% | |
| EM Equity Comparisons with Equity Indices | | | | | |
| Index | Correlation | Start | End | Return | |
| S&P 500 | | Dec.-87 | Dec.-10 | 7.33% | |
| MSCI EM | 0.66 | Dec.-87 | Dec.-10 | 11.21% | |
| MSCI EAFE (Int'l) | | Dec.-87 | Dec.-10 | 3.47% | |
| MSCI EM | 0.68 | Dec.-87 | Dec.-10 | 11.21% | |

Noble Laureate, Dr. Harry Markowitz once described diversification as the only “free lunch” in the investment world. However, this diversification benefit has been declining over time as correlations increase. Slowly but surely, this free lunch is being taken away; what is left is not nearly as valuable and unlikely to bridge the asset/liability gap that pension plans face (See Charts 1 and 2).

Chart 1: Debt Correlations (rolling 12 months)

1st half average (Dec. 1994 - Dec. 2002) = 0.23; 2nd half average (Jan. 2003 - Jan. 2010) = 0.58

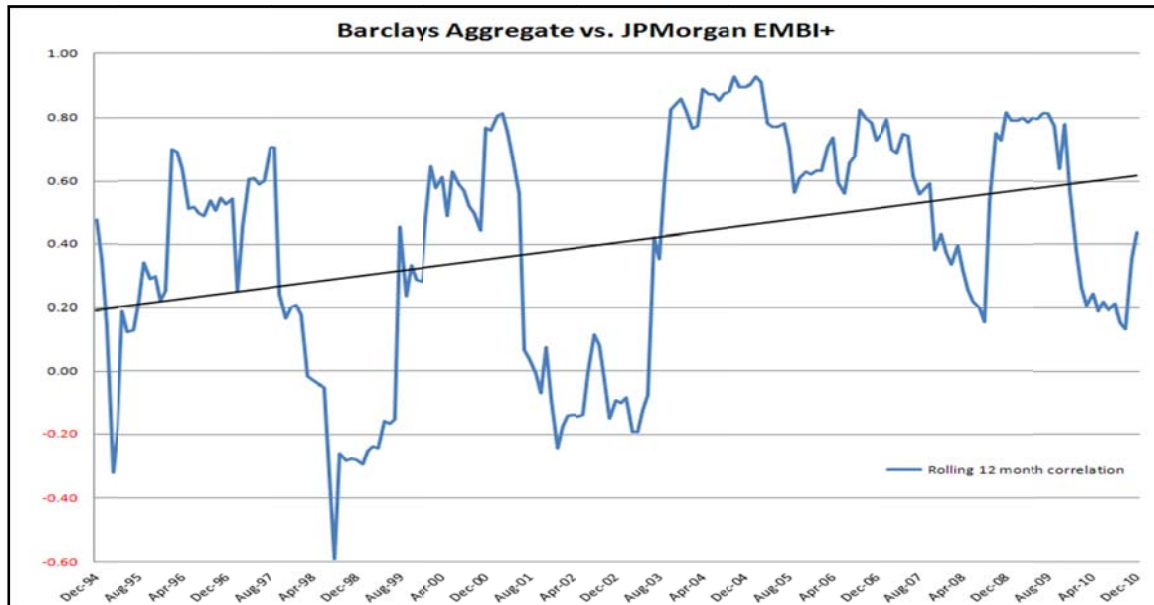
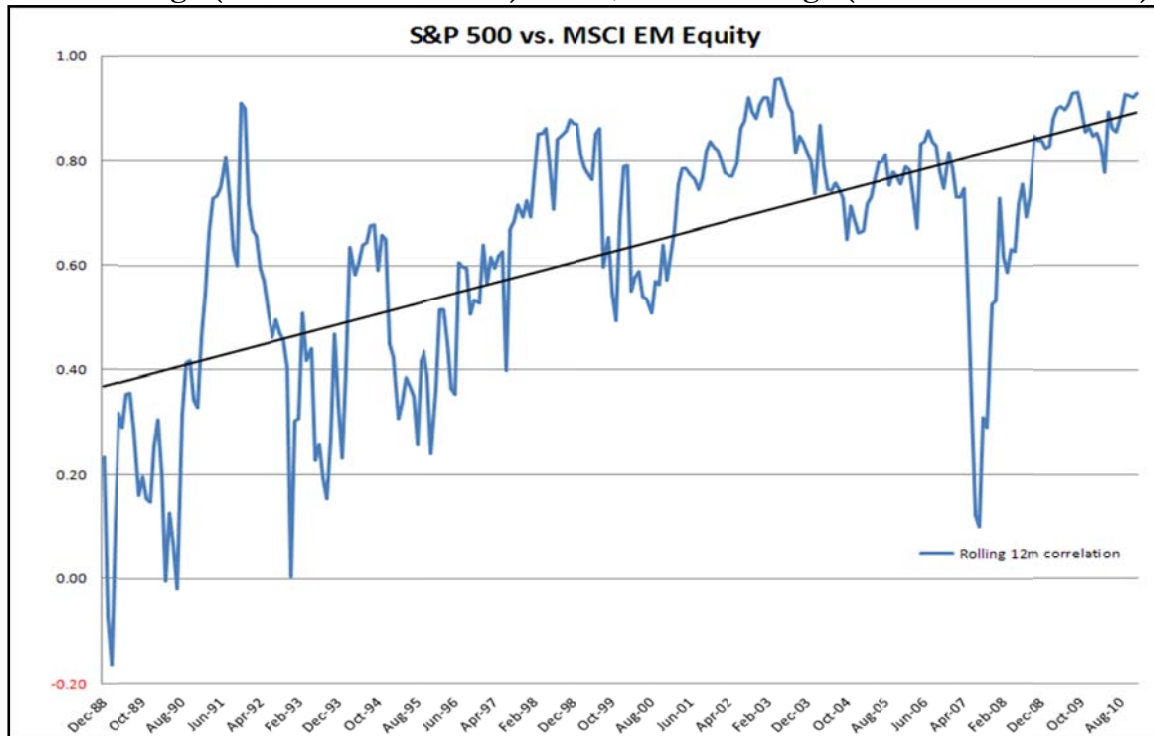


Chart 2: Equity Correlations (rolling 12 months)

1st half average (Dec. 1988 - Nov. 1999) = 0.50; 2nd half average (Dec. 1999 - Dec. 2010) = 0.76



Alternative Strategies

Alfred Winslow Jones established the first hedge fund (“hedged fund”) in 1949 and most of the period since then, the alternatives industry has been shrouded in secrecy. Until very recently, Swiss private banks and high net worth individuals globally had been the main investors in “alternative strategies,” with pension funds eschewing these “risky, volatile” investments. Endowments were more forward thinking and became early adopters of hedge funds investments. Notable participants were David Swenson at Yale and his counterpart Jack Meyer at Harvard. For pension funds, the stereotypical “60/40” mix of stocks and bonds was a fair representation of how most pension plans and endowments invested their funds. A combination of stellar returns for the Harvard and Yale plans combined with the severe 2000-2002 bear market led other institutional funds to begin exploring larger allocations to hedge funds – investment strategies that largely sidestepped the equity market decline (See table 2). Beginning in 2003, hedge fund AUM growth went exponential as pension plans began to re-allocate towards alternative strategies (See Table 3). What plans discovered was that not only did alternative strategies help protect against the downside, they also added diversification. One possible fly in the ointment is the observation that many “low correlation” alternative strategies that pension funds have been investing in have, in fact, become much more highly correlated with the traditional portfolio of “60/40” stocks and bonds, and downside correlations have increased even more (See Table 4). Going forward, the current allocation strategy in hedge funds is less likely to insulate pension plans from severe market declines if correlations remain elevated. These higher correlations since 2003 are not well advertised and thus, will likely come as a shock to plans using alternatives as a panacea for downside risk.

Table 2: Asset Class Annualized Performance (2000-2002)

| Long-Only | Return | Drawdown | Volatility |
|------------------------------------|---------|----------|------------|
| S&P 500 (Total Return) | -14.55% | -44.73% | 18.55% |
| MSCI EAFE | -18.50% | -49.03% | 16.00% |
| MSCI EM | -15.81% | -49.66% | 22.94% |
| Barclays Aggregate | 10.10% | -2.01% | 3.35% |
| Alternatives | Return | Drawdown | Volatility |
| HFR Global (Hedge Funds) | 9.16% | -3.92% | 5.81% |
| HFR Equity | 9.18% | -2.57% | 5.95% |
| HFR Event Driven | 4.65% | -9.34% | 6.79% |
| HFR Convert Arbitrage | 12.28% | -1.28% | 2.85% |
| Blends | Return | Drawdown | Volatility |
| “60/40” Stocks/Bonds (Traditional) | -4.91% | -22.82% | 10.77% |
| 75% Traditional/25% Hedge Funds | -1.45% | -14.02% | 8.50% |

Source: Barclays, Bloomberg, MSCI, Gramercy

Table 3: Hedge Fund AUM (1997-2007)

| Year | AUM (Billions) |
|------|----------------|
| 1997 | \$118.2 |
| 1998 | \$143.1 |
| 1999 | \$188.9 |
| 2000 | \$236.6 |
| 2001 | \$321.9 |
| 2002 | \$505.5 |
| 2003 | \$825.6 |
| 2004 | \$1,229.0 |
| 2005 | \$1,360.7 |
| 2006 | \$1,713.1 |
| 2007 | \$2,136.8 |

Source: BarclayHedge

Table 4: Hedge Fund Correlations with Traditional “60/40” Portfolios (2000-2002 and 2003-2010)

| Hedge Fund Strategy | 2000 - 2002 | | 2003 - 2010 | | Changes | |
|--------------------------|-------------|----------|-------------|----------|--------------|--------------|
| | Correlation | Downside | Correlation | Downside | Correlation | Downside |
| HFR Global (Hedge Funds) | 0.21 | 0.11 | 0.71 | 0.63 | +0.49 | +0.52 |
| HFR Equity | 0.46 | 0.38 | 0.77 | 0.65 | +0.30 | +0.27 |
| HFR Event Driven | 0.60 | 0.49 | 0.79 | 0.74 | +0.19 | +0.24 |
| HFR Convert Arbitrage | 0.21 | 0.08 | 0.63 | 0.58 | +0.42 | +0.50 |

Source: Bloomberg, Gramercy

A Possible Solution

The quantitative data suggests that institutional pension plans are not fully protected against any future market crisis. The alternative strategies that pensions have been using to help diversify the portfolio have become highly correlated to the S&P 500 and other global equities and this remains especially true during down markets. The ideal asset class/strategy for these pension funds to invest in would offer low correlations to both stocks and alternatives, optimally have lower correlations during the months when stocks are down and yet, be able to participate in upside markets and provide a strong “return engine” to reduce the cost of “tail risk” hedging. Based on our data analysis, pension plans would be well advised to begin evaluating macro strategies and Commodity Trading Advisors (CTAs), which are often described as “quantitative macro” or “systematic” (See Table 5). These two strategies offer everything that a globally diversified pension plan could ask for – high positive expected returns, low correlation to existing investments, liquidity and the ability to profit from both right-tail and left-tail events.

Table 5: Comparisons Between Traditional “60/40” Portfolio and Macro/CTA Strategies (2000-2002, 2003-2010 and 2008)

| 2000-2002 | | | | | |
|------------------------------------|--------|----------|------------|--------|--|
| Strategy | Return | Drawdown | Volatility | Correl | |
| “60/40” Stocks/Bonds (Traditional) | -4.91% | -22.82% | 10.77% | | |
| HFR Macro | 11.59% | -9.40% | 9.85% | -0.05 | |
| HFR Systematic | 4.03% | -5.50% | 7.32% | 0.65 | |

| 2003-2010 | | | | | |
|------------------------------------|--------|----------|------------|--------|--|
| Strategy | Return | Drawdown | Volatility | Correl | |
| “60/40” Stocks/Bonds (Traditional) | 6.29% | -32.54% | 9.32% | | |
| HFR Macro | 2.90% | -18.12% | 9.85% | -0.05 | |
| HFR Systematic | 11.01% | -5.83% | 7.32% | 0.65 | |

| 2008 | | | |
|------------------------------------|---------|----------|--|
| Strategy | Return | Drawdown | |
| “60/40” Stocks/Bonds (Traditional) | -22.06% | -23.69% | |
| HFR Macro | 5.61% | -11.67% | |
| HFR Systematic | 18.06% | -4.38% | |

Source: Bloomberg, Gramercy

Performance Simulations

Recently, several clients have asked us to examine their portfolios and evaluate various options to hedge “tail risk,” specifically “left-tail risk”. As part of this work, we were provided with historical return and portfolio composition data. The data suggests that clients have less international diversification than might be appropriate and that they are all relying on similar types of alternative strategies to help bridge the gap between long-only asset class returns and promised benefits. We ran simulations that combined their “core portfolio” with various blends of macro, CTA, and short-bias strategies. We were able to construct portfolios that generated similar to slightly higher returns, but with much less downside risk. Lower volatility portfolios decrease the risk of ruin, which in this case, would be a depletion of plan assets before all liabilities are paid. The tables below show the results of these simulations (See Table 6). In all cases, returns were improved, drawdowns reduced and Sharpe ratios increased compared to the “60/40” benchmark. Even a portfolio test where 5% was allocated to short-sellers (a negative expected return for the cumulative period since 1999) showed the ability to enhance a traditional “60/40” portfolio (See Table 6, Portfolio 4). We also examined how pension plans that may already have an allocation to hedge funds would benefit from

additional exposure to macro strategies and again, found that investment plans can achieve a gain in performance while reducing drawdowns and volatility (See Table 7).

Table 6: Various Traditional (“60/40” Stock Bond) and Alternative Blends (2000-2010)

| 2000 - 2010 | | | | | | | | | | |
|-------------|-------------|-------|-----|-------|--------|----------|------------|--------|----------|--------|
| Strategy | Traditional | Macro | CTA | Short | Return | Drawdown | Volatility | D. Vol | M Sharpe | Correl |
| Portfolio 1 | 100% | 0% | 0% | 0% | 3.11% | -32.54% | 9.84% | 11.23% | 0.28 | - |
| Portfolio 2 | 65% | 35% | 0% | 0% | 4.04% | -21.16% | 7.20% | 7.75% | 0.52 | 0.90 |
| Portfolio 3 | 30% | 35% | 35% | 0% | 6.09% | -8.80% | 6.45% | 6.34% | 0.96 | 0.61 |
| Portfolio 4 | 30% | 30% | 35% | 5% | 6.06% | -7.40% | 5.60% | 5.43% | 1.12 | 0.58 |

Table 7: Blend of Traditional (“60/40” Stock Bond) Portfolio with Alternative and Macro Exposure (2000-2010)

| 2000 - 2010 | | | | | | | | | |
|-------------|-------------|-----------|-------|--------|----------|------------|--------|----------|--|
| Strategy | Traditional | HFR Index | Macro | Return | Drawdown | Volatility | D. Vol | M Sharpe | |
| Portfolio 1 | 80% | 20% | 0% | 3.45% | -30.95% | 8.60% | 9.93% | 0.35 | |
| Portfolio 2 | 70% | 20% | 10% | 3.71% | -27.52% | 7.79% | 8.67% | 0.43 | |

Source: Bloomberg, Gramercy

Utilizing Emerging Markets Opportunities

Having established that certain alternative strategies can help improve the risk return profile for traditional long-only portfolios, we now examine specifically how emerging markets investments can also help investors achieve their goals.

During the past decade, emerging markets have undergone a dramatic transformation. Prior to the last round of currency devaluations in the late 1990s and early 2000s, most emerging markets investments involved either long-only equities or distressed sovereign debt. Now, the environment is much richer in opportunity. In fact, virtually any alternative or long-only strategy that is run in the G-10 is now available for investment in emerging markets. The main difference is less capacity (which favors early adopters) and less competition for the opportunities (which also favors early adopters). At Gramercy, we have done further research on the advantages of using a diversified basket of emerging markets alternative investment strategies and how they might help traditional portfolios. We used our distressed, macro and equity trading strategies in this research. For the purposes of this analysis, we used the following weightings (see Table 8).

Table 8: Weighting of Gramercy Alternative Strategies in Portfolio Simulations

| Sub-Strategy | Weight |
|------------------------|-------------|
| Distressed | 30% |
| Macro | 35% |
| Equity | 35% |
| Total Portfolio | 100% |

The returns are quite attractive as a standalone fund, offering equity-type returns with less than equity volatility. The return stream is also a nice complement to a traditional “60/40” plan. We also break down the performance into three distinct market regimes: 1999-2007, 2008 and 2009-2011. The data indicates that in a variety of market environments, the emerging markets blended portfolio has attractive risk/return characteristics that can augment a traditional institutional portfolio. Another attractive feature of the emerging markets blended portfolio is the low correlation with a traditional “60/40” portfolio, especially during months when traditional portfolios are suffering losses. The intra-strategy correlations within the emerging markets blended portfolio are also low and similarly, drop during periods when the portfolio is under pressure. Volatilities also display a similar characteristic (See Tables 9-15).

Table 9: Return Characteristics of the Emerging Markets Blend Portfolio and the Underlying Strategies (April 1999 - March 2011)

| Sub-Strategy | Return | Volatility | Downside Volatility | Return/Downside Vol. |
|--------------|--------|------------|---------------------|----------------------|
| Distressed | 9.39% | 13.39% | 15.26% | 0.62 |
| Macro | 12.77% | 11.21% | 9.32% | 1.37 |
| Equity | 20.06% | 14.37% | 12.16% | 1.65 |
| EM Blend | 14.77% | 8.70% | 7.51% | 1.97 |

Table 10: Performance of Traditional “60/40” and Emerging Markets Blended Portfolios (April 1999 - December 2007)

| Sub-Strategy | Return | Volatility | Downside Volatility | Return/Downside Vol. |
|---------------------|--------|------------|---------------------|----------------------|
| Traditional “60/40” | 4.55% | 8.01% | 8.53% | 0.53 |
| EM Blend | 16.58% | 7.45% | 6.78% | 2.45 |

Table 11: Performance of Traditional “60/40” and Emerging Markets Blended Portfolios 2008

| Sub-Strategy | Return | Volatility | Downside Volatility | Return/Downside Vol. |
|---------------------|----------------|------------|---------------------|----------------------|
| Traditional “60/40” | -22.06% | 13.07% | 16.14% | -1.37 |
| EM Blend | 3.97% | 9.06% | 8.46% | 0.47 |

Table 12: Performance of Traditional “60/40” and Emerging Markets Blended Portfolios (2009-2010)

| Sub-Strategy | Return | Volatility | Downside Volatility | Return/Downside Vol. |
|---------------------|--------|------------|---------------------|----------------------|
| Traditional “60/40” | 15.22% | 12.19% | 14.68% | 1.04 |
| EM Blend | 12.85% | 12.13% | 9.19% | 1.40 |

Table 13: Correlation Between a “60/40” Stock Bond Allocation and the Emerging Markets Blended Portfolio (1999-2010)

| Correlation | |
|-------------|------|
| Overall | 0.49 |
| Downside | 0.24 |

Table 14: Intra-Strategy Correlations within the Emerging Markets Blended Portfolio (April 1999 - March 2011)

| Intra-Strategy Correlations | | | Intra-Strategy Downside Correlations | | |
|-----------------------------|------------|-------|--------------------------------------|------------|-------|
| | Distressed | Macro | | Distressed | Macro |
| Distressed | - | 0.08 | Distressed | - | 0.01 |
| Macro | 0.08 | - | Macro | -0.23 | - |
| Equity | 0.05 | 0.36 | Equity | -0.35 | 0.31 |

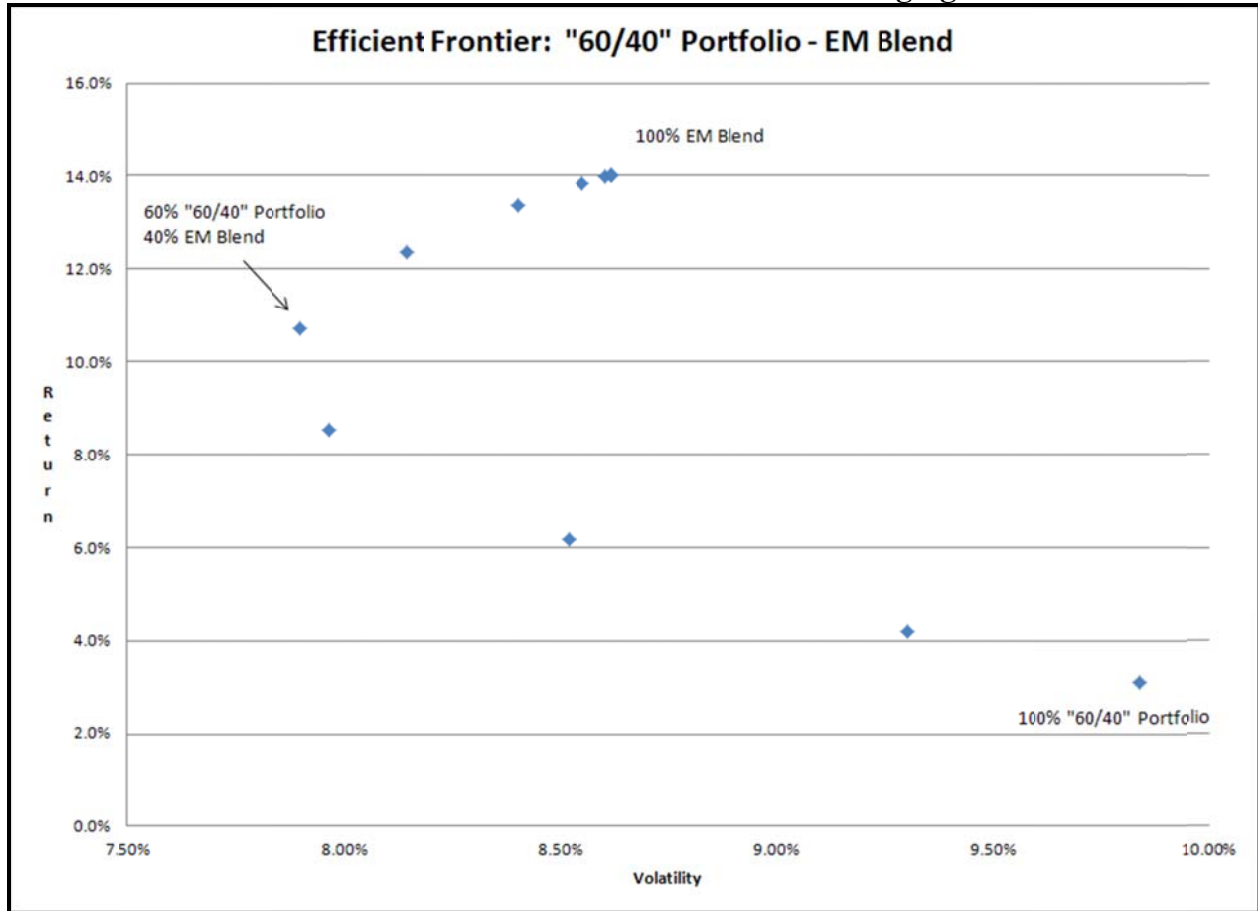
Table 15: Volatility Comparisons Between a “60/40” Stock Bond Allocation and the Emerging Markets Blended Portfolio (2000-2010)

| Volatility | Overall | Downside |
|------------|---------|----------|
| “60/40” | 9.84% | 9.54% |
| EM Blend | 8.62% | 7.38% |

Finally, results indicate that the efficient frontier optimal allocation shows that allocations up to 40% can be chosen before the risk/return trade-off starts to deteriorate, offering significant scope for pension plans to increase their returns without taking undue risk (See Table 16 & Chart 3).

Table 16: Traditional Portfolio (“60/40” Stocks/Bonds) Blended with Various Exposures to an Emerging Markets Blended Portfolio (2000-2010)

| “60/40” | EM Blend | Return | Drawdown |
|---------|----------|--------|----------|
| 100% | 0% | 3.11% | -32.54% |
| 90% | 10% | 4.20% | -30.14% |
| 80% | 20% | 6.16% | -25.67% |
| 70% | 30% | 8.52% | -20.03% |
| 60% | 40% | 10.72% | -14.75% |
| 50% | 50% | 12.37% | -11.60% |
| 40% | 60% | 13.36% | -10.04% |
| 30% | 70% | 13.82% | -9.31% |
| 20% | 80% | 13.98% | -9.06% |
| 10% | 90% | 14.02% | -9.01% |
| 0% | 100% | 14.02% | -9.00% |

Chart 3: Efficient Frontier Illustration of Various “60/40” – Emerging Markets Blend Portfolios


Source: Bloomberg, Barclays, Gramercy

Summary and Conclusions

Large U.S. and global pension plans are facing unprecedented challenges. Their historical returns have fallen short of the growth rate in liabilities and the gap continues to widen. Current asset pricing, with long dated U.S. Treasury bonds yielding below 5% and equity market P/E ratios at 15, does not offer obvious opportunities to take risk and close the asset/liability gap. The best option will be to find strategies that offer low correlations to existing investments, lower portfolio volatility and especially those that perform well during adverse market events. Analysis of the data demonstrates that using select alternative strategies (macro, CTA, & short-selling) can bring all of these attractive characteristics to traditional investment portfolios and that plan sponsors would be well served to explore larger allocations to these strategies. The ability of macro and CTA strategies to profit from extreme market outcomes on both sides of the return distribution allows them to serve as the “insurance plans that pay you the premium” and help pay for the short-bias strategies that provide exceptional protection during down markets.

Further analysis shows that a blend of emerging markets alternative strategies can be used to fill part of the re-allocation to a macro/CTA bucket. Before pension funds begin running towards “tail

risk” strategies that are expensive and offer highly volatile return streams, they should learn to walk by further diversifying their portfolios towards strategies that offer high returns under a variety of market conditions and that have low correlations while being managed in a “tail risk aware” manner.