

# *Thoughts on Strategic Asset Allocation*

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## *Prologue*

The importance of strategic asset allocation is widely acknowledged by those overseeing large pools of capital. Brinson, Hood and Bierbower (1986) found that asset allocation dominated all other decisions within diversified investment portfolios. Over time, the most common approach to strategic asset allocation has come to be based on a 60% equity and 40% bond mix. This approach grew out of Markowitz' positively sloped efficient frontier first presented in 1952. Based on work done in the late 1970's, the 60/40 allocation established itself as the dominant paradigm for strategic asset allocation. It did so based on a perceived ability to deliver sufficient nominal returns while offering a risk-return proposition near the efficient frontier. Over time the original stock-bond mix has been broadened to include additional asset classes, though the risk-return proposition has not changed significantly.

The 60/40 framework employs market capitalization benchmarks that are each assigned capital weights within the overall portfolio. Expected returns for each benchmark are then multiplied by their weights to arrive at a targeted portfolio return. The intention of this portfolio composition is to deliver a diversified asset mix that exists at or near the efficient frontier within a mean-variance context. Additionally, it is assumed that capital weighted benchmarks diversify amongst various investment risks. However, a number of issues exist with this approach to strategic asset allocation. First, utilizing targeted return assumptions mitigates the impact asset volatility and correlation might have on strategic decision-making. Second, the presumption of diversification delivered within capital weighted benchmarks is anecdotal and not borne out by the historical record.

This discussion will demonstrate why the dominant approach to strategic asset allocation creates portfolios with concentrated risk that do not deliver robust diversification across a range of capital market environments. It will illustrate why the process of periodic rebalancing to achieve a return target introduces a series of momentum factors that negatively impact the portfolio. These momentum factors are created by both strategic and tactical decisions, particularly with respect to asset class timing. The result is an increased likelihood that the portfolio will deliver episodic negative returns. Importantly, a focus on return targeting results in the tendency to rebalance portfolio risk to compressed risk premiums and away from expanded risk premiums. The initial goal of this piece is to consider why this approach to strategic asset allocation often fails to generate diversified portfolios capable of efficiently compounding wealth or sustaining annual payouts over the medium and long-term.

The effectiveness of diversification delivered by a 60/40 benchmark portfolio is presumed to be close to optimal based on the individual risk tolerance of the investor. But there exists a series of efficient surfaces well beyond those delivered by the current approach to strategic asset allocation. The gap between the 60/40 model and alternative approaches rests on two elements. The first of these is prioritization of risk diversification as a primary objective above that of a return target. The second is recognition that market capitalization weighted benchmarks do not efficiently deliver the risk premium of an asset class. In combination these represent a meaningful opportunity to improve portfolio efficiency and decrease portfolio drawdown risk. Further improvements beyond these efficiencies are available to allocators systematically integrating non-homogenous Sharpe Ratios across asset classes as a means of capturing countercyclical rebalancing efficiencies.

There are a number of pragmatic reasons why the 60/40 approach to managing large pools of capital persists. The first is resistance to change, in part due to service providers already having a well-established set of deliverables. These service providers as well as staff within the allocating organization are often assessed by way of benchmark relative measures. Each of these reinforces the existing paradigm. Further, the benchmarks create a seamless means of setting capital weights against projected portfolio returns. This results in deterministic expectations for returns that can be used for accounting and actuarial reporting activities. Service provider relationships are easily categorized via the benchmarks by way of asset class buckets. Finally, such a construct facilitates peer comparisons and access to a wide array of benchmark driven investment products. In these ways it has been possible for a sub-optimal strategic asset allocation paradigm to remain the dominant approach within portfolio management.

The resources and skills now exist to improve upon the dominant strategic asset allocation model. Risk technologies and individuals skilled in implementing those portfolio construction tools have come into existence in this century. As with any industry early adopters will generate a meaningful advantage relative to their peers by having employed new and more effective technologies. Nevertheless, organizations implementing a revised strategic asset allocation framework are unlikely to make a single leap from old to new paradigm. They will begin by integrating elements of these improvements into their existing asset allocation framework as well as their service provider universe.

The first part of the discussion that follows will explore structural issues with respect to the existing paradigm. The second part considers attempts to solve the structural shortcomings of that framework. The third part will cover elements of an improved approach to strategic asset allocation.

## ***Part I – Faulty Towers***

*Structural issues exist within the dominant asset allocation paradigm. This approach to strategic asset allocation focuses on capital weights being applied to various asset classes to achieve a targeted rate of return. The pursuit of this target leads to rebalancing portfolio weights in search of higher portfolio returns. These activities do not primarily focus on portfolio diversification as the strategic asset allocation is presumed to deliver an efficient asset mix. In fact the resulting portfolio composition generates a suboptimal risk-return profile, well away from the efficient frontier.*

### ***Genesis of 60/40***

Currently the dominant asset allocation paradigm is a *capital* based approach to asset class weighting and rebalancing. Portfolio balance relies on the monetary weights being assigned to various investments. The starting point within this paradigm is best exemplified by the 60% equity and 40% bond *capital* weighted benchmark. Historically a 60/40 portfolio has generated 80-90% of its daily, monthly, and annual return variation from its equity or equity related holdings. This is primarily due to the higher volatility of equities on average. Risk can be measured using a variety of metrics including price volatility, magnitude of expected loss and loss recovery period. However, by every measure a 60/40 portfolio exhibits a high concentration of risk. Over the past 40 years the resulting portfolio has exhibited a normal distribution of positive returns. However, this 60/40 portfolio has experienced larger magnitude losses than would be expected from a normal distribution for a portfolio with an expected excess return of 4.0% and volatility of 9.8%.

### **60/40 Historical Return Distribution**

<b><i>Standard Deviation</i></b>	<b>Actual Dist.</b>	<b>Normal Dist.</b>
+3	9.1%	8.9%
+2	6.1%	6.0%
+1	2.9%	3.2%
-1	-2.2%	-2.5%
-2	-6.1%	-5.3%
-3	-11.0%	-8.1%

\* 1973 -2013 60% S&P 500/40% Barclays U.S. Treasury Aggregate rebalanced monthly

Losses in the left daily have a debilitating effect on compounded returns over medium and longer time horizons. The high geometric return for equities in relationship to bonds over the past 85 years is assumed to justify the high concentration of risk inherent in a 60/40 allocation.

### Historical Returns 1928 - 2013

	<u>Geometric Return</u>	<u>Volatility</u>
Equities (1)	9.6%	20.0%
Bonds (2)	4.9%	7.8%

(1) NYU Stern School of Business, S&P500, 1928-2013

(2) NYU Stern School of Business, 10-year Treasury, 1928-2013

The 60/40 framework came into broad use in the United States after the Employee Retirement and Income Security Act (ERISA) of 1974. Prior to that time bank trust departments had acted as fiduciaries in overseeing pension assets for many plans. Early in the 20<sup>th</sup> century those trust portfolio's strategic allocation had over 50% in railroad bonds. By the 1960's large capitalization stocks and investment grade bonds dominated the portfolio. After the passage of ERISA, corporations and public entities became named fiduciaries to their pension plans and for this reason found themselves in the asset allocation business. Looking back from 1976 stocks, bonds and cash appeared to generate the stylized upward sloping efficient frontier Harry Markowitz had put forth 20 years earlier. According to John Casey investment consulting practices being formed at that time sought to achieve an expected real return in excess of 4.0%. In that context the historical record for stock and bond returns at that time supported a 60/40 capital weighting.

## Historical Returns 1928 - 1976

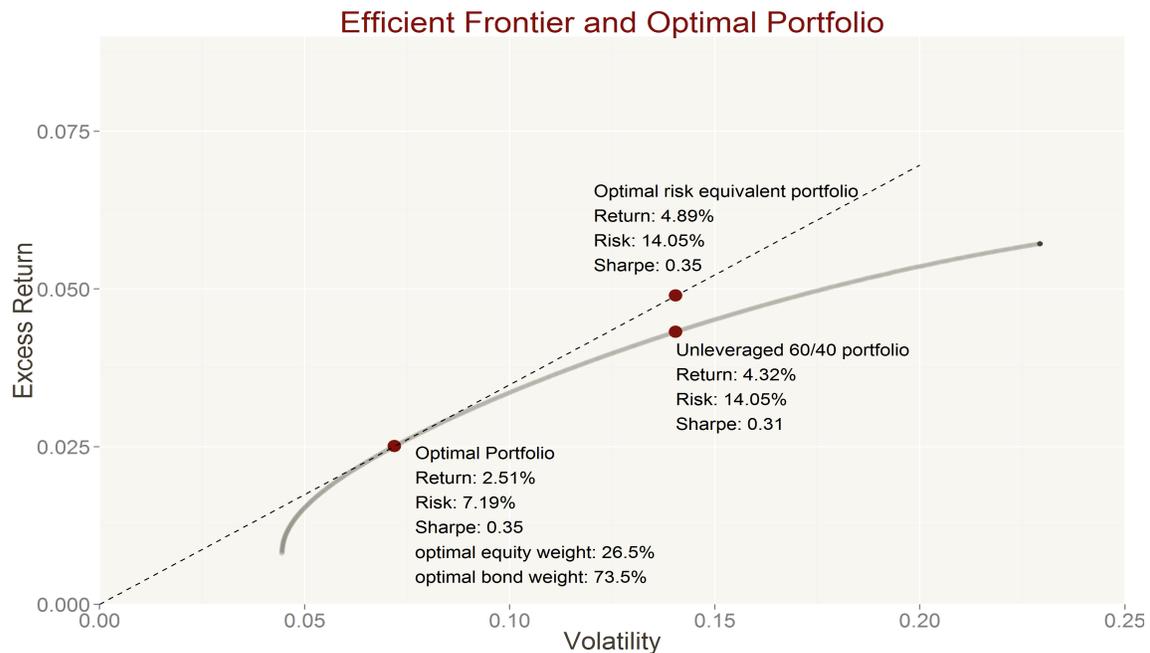
	<u>Geometric Return</u>	<u>Volatility</u>
Equities (1)	8.4%	22.4%
Bonds (2)	3.1%	4.3%

(1) NYU Stern School of Business, S&P500, 1928-1976

(2) NYU Stern School of Business, 10-year Treasury, 1928-1976

During this period the most efficient portfolio of 26.5% stocks and 73.5% bonds generated only a modest Sharpe Ratio advantage relative to the 60/40 portfolio. The tangent line of the Optimal Portfolio leveraged to equivalent risk of a 60/40 portfolio would have generated only a slight increase in excess return of 0.67% per annum. From the perspective of those forming consulting practices or initiating asset allocation strategies during the late 1970's, a 60/40 strategic asset allocation appeared an efficient means of achieving a 4.0% excess rate of return.

## Capital Markets Line 1928 - 1976



One issue that rarely arises is the investment environment in which these returns were generated. Beginning in 1942 a coordinated effort on the part of the Federal Reserve and U.S. Treasury was initiated to repress interest rates on long-term US Treasuries. The Federal Reserve's holdings of Treasuries increased from 3% of GDP to 25% of GDP by 1945. Relying on open market operations the Fed was able to hold nominal interest rates on long-term U.S. Treasuries below 2.5% until March of 1951. From a social perspective one can readily accept the need for financial repression to support U.S. expenditures during World War II and foreign debt forgiveness in the years afterwards. Nevertheless, during the 40-year period between 1942 and 1982 *real interest rates* on long-term treasuries were negative 60% of the time, and averaged negative 1%.

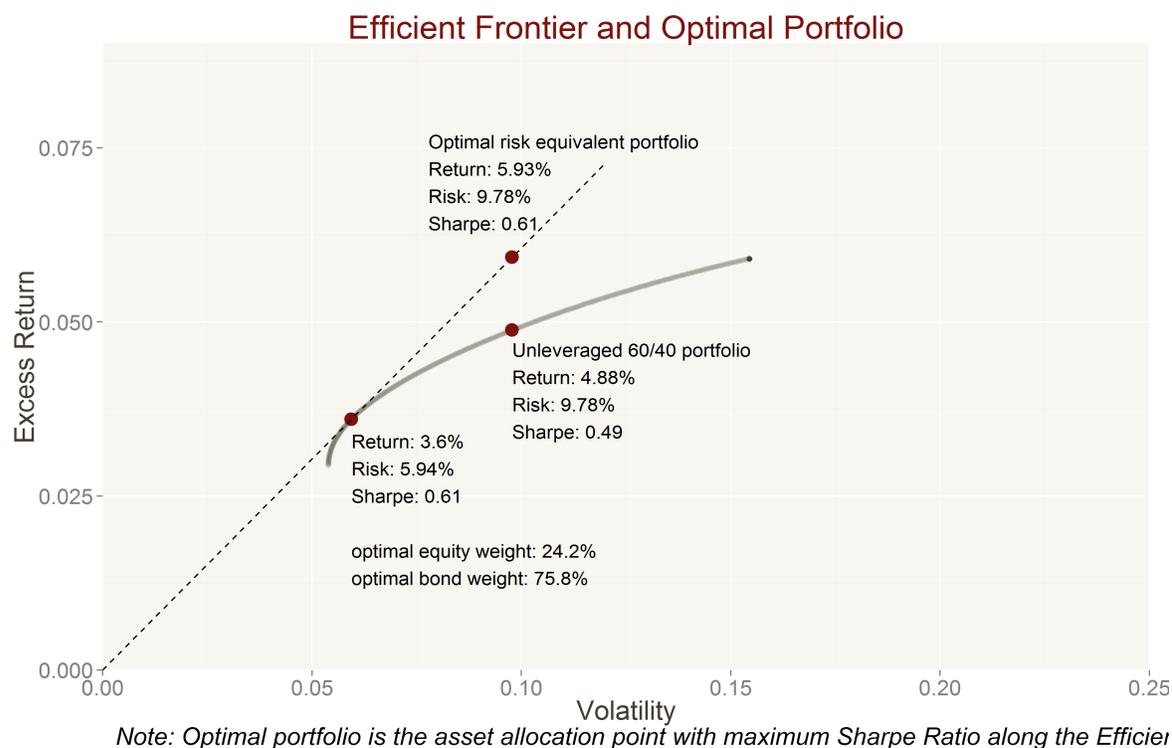
This long period of negative real interest rates culminated in structural inflation by the 1970's, particularly with respect to wages. It is important to keep in mind that a capital markets history experiencing persistent financial repression was integral in establishing the 60/40 strategic asset allocation paradigm. Structural inflation ushered in a disinflationary bias in the reaction function of the Federal Reserve. The higher geometric return that existed for equities during the half-century prior to 1976 has not been available over the past 38 years.

### Historical Returns 1976 - 2013

	<u>Geometric Return</u>	<u>Volatility</u>
Equities (Wilshire 5000)	11.4%	15.4%
Bonds (BarCap US Agg)	7.9%	5.5%

In the absence of financial repression the capital markets has resulted in the 60/40 portfolio existing well off the efficient frontier. The tangent portfolio has offered a 1.05% increase in excess return in relationship to a 60/40 portfolio of similar volatility. In addition the tangent portfolio exhibits a distribution of returns that is closer to normal. The 60/40 portfolio was designed for a capital markets environment in which a strong form of financial repression was present. Environments in which markets determine varying levels of positive real interest rates are suboptimal for the 60/40 paradigm.

## Capital Markets Line 1976 – 2013



### Markowitz and Return Targeting

The most curious element of 60/40 allocations is that it violates the most basic principles articulated by Harry Markowitz, which is the superiority of portfolio diversification. Risk is clearly concentrated in equities. However, the current asset allocation paradigm is not primarily derived from a set of diversification principles. It is based on a practice we will refer to as *return targeting*. It is return targeting based on a series of assumed rates of returns for various asset classes that largely drives the strategic asset allocation process.

The roots of return targeting are deeply ingrained within existing investment management practices. Public and private pools of capital are generally called upon to account for their liabilities on an annual basis. These projections require input assumptions for asset returns. The volatility of such returns becomes an inconvenient complication in projecting the relationship between assets and liabilities for purposes of actuarial and accounting projections. These elements of uncertainty must be simplified or eliminated for reporting purposes. To brook the gap between certainty and uncertainty, a fixed or average portfolio return is assumed. The volatility of that return is either deemed to be zero, or a central case is chosen for returns to project future asset values and funded status. In either case, instances in which return volatility

would generate extreme events are absent. Missing also are possible responses by trustees to extreme variations in funded status.

It is not a question of the utility in estimating funded status, projecting future contributions, or assessing the potential cost of revising payouts. These are each important considerations for those overseeing assets set aside to fund long-term commitments. However, deterministic return projections created to satisfy actuary or accounting inputs have had a profound impact on strategic asset allocation practices. Allocations are structured around the 60/40 starting point towards achieving a specific return target. The contribution of each asset class is based on a predicted or expected return. Asset volatility is left on the cutting room floor primarily due to the fact that it complicates creating a deterministic projection.

The suppression of asset volatility for the sake of cleanliness greatly favors high-risk assets relative to lower risk investments within a portfolio. The value of more efficient risk-return propositions goes unnoticed under such a construct. The diminished role of asset volatility creates an inherent prejudice against diversification within the asset allocation process. As we shall see throughout this discussion, primarily focusing on geometric return ultimately reduces the likelihood that the asset pool will meet its financial obligations.

### *Capital Allocation Dynamics*

Return targeting seeks to deliver the accounting/actuarial inputs and becomes a basis for the *capital* based asset allocation model. **Table I** shows the allocation to stocks and bonds that is required to achieve a nominal return target of 8% over a range of bond yields and assumed incremental risk premiums from equities above bonds. The CRSP/NYU data for 1928-2013 indicates an equity risk premium of 4.7%. This analysis considers a range of risk premiums for equities.

**TABLE I - Return Targeting Allocations**

<i>Equity Risk Premium</i>	<i>4%</i>		<i>3%</i>		<i>2%</i>	
<i>Nominal Bond Yield</i>	<i>Projected Equity Returns</i>	<i>Equity Allocation</i>	<i>Projected Equity Returns</i>	<i>Equity Allocation</i>	<i>Projected Equity Returns</i>	<i>Equity Allocation</i>
<i>1%</i>	<i>5%</i>	<i>100%</i>	<i>4%</i>	<i>100%</i>	<i>3%</i>	<i>100%</i>
<i>2%</i>	<i>6%</i>	<i>100%</i>	<i>5%</i>	<i>100%</i>	<i>4%</i>	<i>100%</i>
<i>3%</i>	<i>7%</i>	<i>100%</i>	<i>6%</i>	<i>100%</i>	<i>5%</i>	<i>100%</i>
<i>4%</i>	<i>8%</i>	<i>100%</i>	<i>7%</i>	<i>100%</i>	<i>6%</i>	<i>100%</i>
<i>5%</i>	<i>9%</i>	<i>75%</i>	<i>8%</i>	<i>100%</i>	<i>7%</i>	<i>100%</i>
<i>6%</i>	<i>10%</i>	<i>50%</i>	<i>9%</i>	<i>67%</i>	<i>8%</i>	<i>100%</i>
<i>7%</i>	<i>11%</i>	<i>25%</i>	<i>10%</i>	<i>33%</i>	<i>9%</i>	<i>50%</i>
<i>8%</i>	<i>12%</i>	<i>0%</i>	<i>11%</i>	<i>0%</i>	<i>10%</i>	<i>0%</i>

One should think of equities within this simplistic two-asset framework as a proxy for risky assets in general, bonds in turn represent low volatility assets. As is evident in **Table I**, in order to achieve the targeted return of 8% it becomes necessary to have a large allocation to the higher risk asset under most scenarios. Note that if the Federal Reserve and Treasury were to hold nominal yields below 2.5%, as they did from 1942 to 1951, it would be necessary to allocate 100% to equities. There is little justification for allocating to bonds or other low risk assets at nominal yields below 5%. Only when return expectations for low risk assets rise dramatically would a reallocation of capital away from risky assets be appropriate.

In practice, when yields on bonds were above 6%, pension plan assumed rates of return were closer to 10%. As bond yields fell, expected rates of return were reduced in concert with these lower yields. In 1991, 70% of all U.S. corporate and public pension plans had expected rates of return between 9% and 11% according to Callan Associates. By 2013, with 10-Year US Treasury rates below 2%, the median assumed rate of return had fallen to 7.7%.

By adopting a flexible return target the asset allocation process veers away from purchasing bonds as yields rise (prices fall), retaining higher capital weights to riskier assets. **Table II** assumes that return targets are increased to 10% once nominal bond yields reach 6%. The bias to higher risk assets is again reinforced, as allocations to risky assets must be maintained to achieve the increased return target.

**Table II - Return Targeting Allocations**

<i>Equity Risk Premium</i>	<i>4%</i>		<i>3%</i>		<i>2%</i>	
<i>Nominal Bond Yield</i>	<i>Projected Equity Returns</i>	<i>Equity Allocation</i>	<i>Projected Equity Returns</i>	<i>Equity Allocation</i>	<i>Projected Equity Returns</i>	<i>Equity Allocation</i>
<i>1%</i>	<i>5%</i>	<i>100%</i>	<i>4%</i>	<i>100%</i>	<i>3%</i>	<i>100%</i>
<i>2%</i>	<i>6%</i>	<i>100%</i>	<i>5%</i>	<i>100%</i>	<i>4%</i>	<i>100%</i>
<i>3%</i>	<i>7%</i>	<i>100%</i>	<i>6%</i>	<i>100%</i>	<i>5%</i>	<i>100%</i>
<i>4%</i>	<i>8%</i>	<i>100%</i>	<i>7%</i>	<i>100%</i>	<i>6%</i>	<i>100%</i>
<i>5%</i>	<i>9%</i>	<i>75%</i>	<i>8%</i>	<i>100%</i>	<i>7%</i>	<i>100%</i>
<i>Revised Target</i>	<i>6%</i>	<i>10%</i>	<i>9%</i>	<i>100%</i>	<i>8%</i>	<i>100%</i>
<i>Return 10%</i>	<i>7%</i>	<i>11%</i>	<i>10%</i>	<i>100%</i>	<i>9%</i>	<i>100%</i>
	<i>8%</i>	<i>12%</i>	<i>11%</i>	<i>67%</i>	<i>10%</i>	<i>100%</i>

Return-targeting effectively reinforces a concentration of capital to asset classes presumed to have the highest geometric return. From an accounting or actuarial perspective the

cost of funding a liability appears to be minimized when capital weights are multiplied by the higher expected returns of these riskier assets. This creates a perceived reduction in the cost of funding liabilities. Voters and shareholders are made to believe in balanced budgets and higher earnings while increased likelihood of negative variance is pushed out into the future. These economics are based on the premise that portfolios have either zero volatility, or consistently deliver the expected rate of return. This stands in contrast to research done by Eugene Fama at the University of Chicago showing that securities prices experience a larger number of extreme returns than would be predicted by a normal distribution of outcomes. The non-normal distribution of returns for the 60/40 portfolio is consistent with Fama's research. Return targeting effectively presumes a lack of outlier events, while in reality they occur more frequently than would be expected, specifically in terms of negative variance of return.

In the absence of asset volatility and its impact on compounding of returns, the concentration of risk delivered by a 60/40 *capital* weighting appears prudent. Bonds, or low risk assets in general simply do not generate enough return per unit of *capital* to achieve the return target assumed by accounting and actuarial projections. Return targeting defaults to the highest possible risk tolerance of the asset owner or trustee committee, not to an efficient portfolio composition.

### ***Allocation Momentum Factor***

In analyzing lower return premiums for equities it is possible to observe an additional flaw in the return-targeting framework. Note in **Table I** as risk premiums fall for equities (moving left to right for the same bond yield) the asset allocation framework seeks to *increase* capital weight to the riskier assets. Capital weights increase for these performing asset classes either through failure to rebalance back to benchmark or additional allocations from lower expected return investments. These actions introduce a momentum factor into the portfolio allocation process. As risk premiums are compressed more capital must be allocated to risky assets in order to achieve the targeted rate of return. Increasing exposures to these compressed risk premiums decreases the forward-looking Sharpe ratio of the overall portfolio. Asset allocators are often aware that market participants "chase returns" but are never certain why they feel compelled to do so; return targeting offers a structural explanation.

Analysis of the Morningstar database yields some indication of the magnitude this allocation momentum factor has had within the return-targeting paradigm. That database monitors the return of each manager since inception as well as an any one, three, five and ten year period. There is another return series in the database called the '*Investor Return*'. This return adjusts each funds performance for the timing of contributions and redemptions, effectively replicating the dollar weighted return of investors as a whole. One can think of this as a timing factor created by the reallocation of capital into and out of each manager's return stream. In the 10 years ending Dec. 31, 2013 the average return for each asset class and Investor Returns for in each asset class in the Morningstar database were as follows:

**TABLE III - Morningstar Investor Return Gap**

<u>Asset Class</u>	<u>Avg. 10 Yr. Total Return</u>	<u>Investor Return</u>	<u>Gap</u>
U.S. Equities	8.18%	6.52%	-1.66%
Sector Equities	9.46%	6.32%	-3.14%
Balanced Funds	6.93%	4.81%	-2.12%
International Equities	8.77%	5.76%	-3.01%
Taxable Bonds	5.39%	3.15%	-2.24%
Municipal Bonds	3.53%	1.65%	-1.88%
Alternative Funds	0.96%	-1.15%	-2.11%
All Funds	7.30%	4.81%	-2.49%

Source: Morningstar. December 31, 2013 U.S. Registered Investment Fund with total assets of \$16.3 trillion.

The Gap is created by the capital-weighted return of investor's actual allocation decisions against constant capital exposure to each of the manager's performance. The value of the fund universe covered by Morningstar is in excess of \$16 trillion, implying negative allocation costs of \$350 to \$400 billion annually. Morningstar noted in their research that investors on average choose managers that subsequently outperform their benchmarks, but their timing in choosing those managers generates a substantial negative performance gap.

This timing issue is not a field of endeavor unique to registered fund investors; Pension plan allocations have exhibited similar behavior. In the year 2000 U.S. pension plans held a 67% exposure to equities, but only 30% in 1990 and 2009. The 10-year IRR for the S&P 500 was -0.95% beginning in 2000 but 18.21% for the 10-year period beginning in 1990 and 14.47% for the 5 years beginning in 2009. The bond market offered persistently high inflation risk premiums during the 1980's and 1990's. As interest rates declined institutional investors resisted extending portfolio duration, holding out for rates last seen in 1981. Subsequent analysis by Best, Byrne, IImanen (1998) cites an inability by forecasters to anticipate increases in inflation during the 1960's and 1970's for the reduced portfolio duration and persistently high risk premiums offered by bonds over the subsequent two decades.

The risk concentration delivered into portfolios by the 60/40 framework and impact of portfolio rebalancing decisions made to achieve return targets leads to a series of efforts intended to make up for these shortcomings. The next section will explore attempts made to improve the inherent risk return proposition offered by a 60/40 strategic asset allocation.

## ***Part II – Earth at the Center of the Universe***

*Strategic asset allocations have evolved beyond the simple stock/bond mix to include a variety of other asset classes. The broader array of investments retains the risk-return characteristics of a 60/40 portfolio. As a result a series of secondary attempts to improve the risk-return proposition of the portfolio have been undertaken. The primary initiative is that of active management, whose success is measured by way of incremental return relative to a series of market capitalization benchmarks. Additionally, alternative investments that introduce illiquidity, leverage and hedging have been employed towards improving portfolio return and diversification. The results of these efforts have been mixed at best and the magnitude of alternatives required to solve for the sub-optimal risk concentration of the strategic asset allocation is too large for all but a few large pools of capital.*

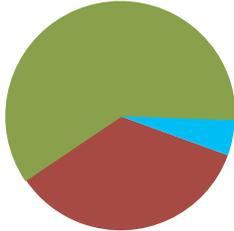
### ***Diversification and Incremental Returns***

Since the 60/40 paradigm came into use in the late 1970's portfolios have steadily broadened their asset class exposures. Interestingly, public and corporate pension plans in the U.S. exhibit slightly different paths in the evolution of their overall portfolio positioning. The following survey data is based on a composite asset allocation for over 2,300 of public and corporate pension plans solicited by Greenwich Associates. Individual plan allocations varied during this migration and these allocations represent the average strategic allocation for corporate and public plans over the past four decades. The pie charts below show the trends across the three generations of strategic asset allocations for both public and private pension plans.

The first generation portfolios were populated with U.S. stocks and bonds, but in a reverse mix, with public plans holding a 60% allocation to bonds. Public plans were also earlier in initiating direct real estate investments, in part due to corporations already having real estate on their own balance sheets. In the 2<sup>nd</sup> generation of strategic asset allocations U.S. equity capitalization was broadened, international equities and high yield bonds added while private equity, venture capital and real estate investments were either initiated or increased. Nearly all of these diversification strategies were funded by a reduction in the investment grade bond allocation.

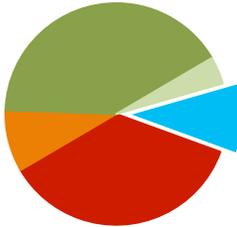
## Evolution of 60/40 Strategic Asset Allocation

1st Public



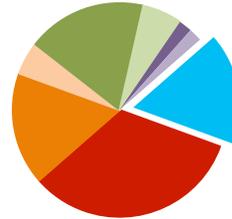
S&P 500	35%
Lehman US Aggregate	60%
Real Estate	5%

2nd Public



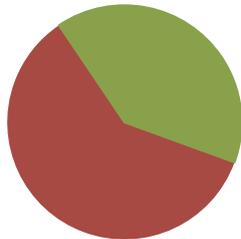
Russell 3000	36%
MSCI EAFE	9%
Lehman US Aggregate	41%
Merrill HY	4%
Others	5%
Real Estate	5%
Private Equity	4%
Venture Capital	1%

3rd Public



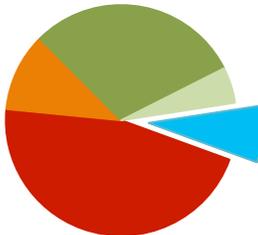
Russell 3000	33%
MSCI EAFE	17%
MSCI EM	5%
Barclays US Aggregate	18%
Merrill HY	6%
FTSE NAREIT	2%
DJUBS Commodity	2%
Others	4%
Hedge Fund	4%
Real Estate	5%
Private Equity	7%
Venture Capital	1%

1st Corporate



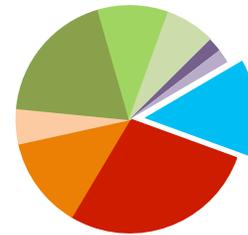
S&P 500	60%
Lehman US Aggregate	40%

2nd Corporate



Russell 3000	46%
MSCI EAFE	11%
Lehman US Aggregate	30%
Merrill HY	5%
Others	8%
Real Estate	3%
Private Equity	4%
Venture Capital	1%

3rd Corporate



Russell 3000	28%
MSCI EAFE	13%
MSCI EM	5%
Barclays US Aggregate	19%
Barclays US Long Treasury	10%
Merrill HY	7%
FTSE NAREIT	2%
DJUBS Commodity	2%
Others	5%
Hedge Fund	5%
Real Estate	2%

Private Equity	6%
Venture Capital	1%

The 3<sup>rd</sup> generation asset allocations have been in place over the past decade. These have added or expanded emerging markets, hedge funds and commodities. Additional increases were also made to illiquid investments including distressed debt, small and mid capitalization private equity, infrastructure, real assets, and various other forms of direct lending. Again, these diversification strategies were generally funded from investment grade bond allocations. There was also a steady reduction in U.S. large capitalization equity into a broader array of equity-like investments. Corporate pension plans reallocated capital to long duration bonds as they sought to increase the interest sensitivity of their asset portfolio to better match that of their liabilities.

The result of these diversification strategies is depicted in Table IV. The excess return above the risk free rate, portfolio volatility, portfolio Sharpe ratio and maximum drawdown for each of the three generations is shown for the 23-year period beginning in 1991. These allocations have been rebalanced monthly back to benchmark weights that appear in the pie charts. These results represent the risk-return proposition of the liquid portion of the portfolios and do not include the blue shaded “Others” category. These investments tend to be somewhat illiquid and idiosyncratic by plan in terms of their risk-return proposition.

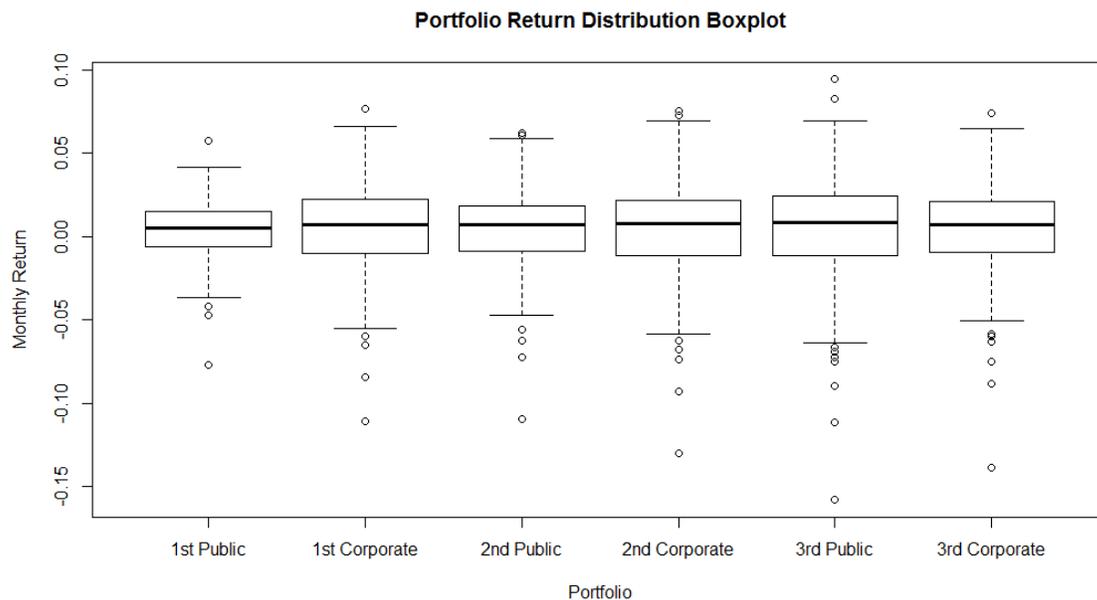
**Table IV - Portfolio Risk & Excess Returns for Liquid Assets (1991-2013)**

<i>Portfolios</i>	<i>Excess Return</i>	<i>Standard Deviation</i>	<i>Sharpe Ratio</i>	<i>Max. Drawdown</i>
<i>1st Public</i>	4.72%	6.03%	0.78	-21.0%
<i>2nd Public</i>	5.18%	7.92%	0.65	-30.5%
<i>3rd Public</i>	5.62%	10.99%	0.51	-43.1%
<i>1st Corporate</i>	5.52%	9.03%	0.61	-33.8%
<i>2nd Corporate</i>	5.57%	9.61%	0.58	-37.1%
<i>3rd Corporate</i>	5.64%	9.11%	0.62	-35.8%

Over subsequent generations public pension plans have increased their tail risk exposure with drawdowns in the 3<sup>rd</sup> generation portfolio nearly doubling relative to the 1<sup>st</sup> generation. This increased risk is reflected in a nearly 50% increase in portfolio volatility. In exchange, public portfolios generated an increase in their excess return of 0.74%. The result was a Sharpe that fell from 0.78 to 0.51 in relationship to the 1<sup>st</sup> generation strategic asset allocation. Corporate pension plans have seen little change in their risk return proposition from the original 60/40 portfolio.

Interestingly, the 10% allocation to long duration bonds in the 3<sup>rd</sup> generation portfolio has been instrumental in avoiding deterioration of the current portfolio's drawdown and Sharpe Ratio.

It is possible to observe the increasing asymmetry for each generation of strategic asset allocation in the Portfolio Return Distribution Boxplot. As noted the median return for the corporate portfolio has not changed while the public portfolio has improved somewhat. However, the left tail distribution increasingly stretches out in terms of both frequency and magnitude in relationship to positive returns or the right tail. The structural tail risk issue has become more pronounced as additional asset classes have been added to the strategic allocation.



Notes :

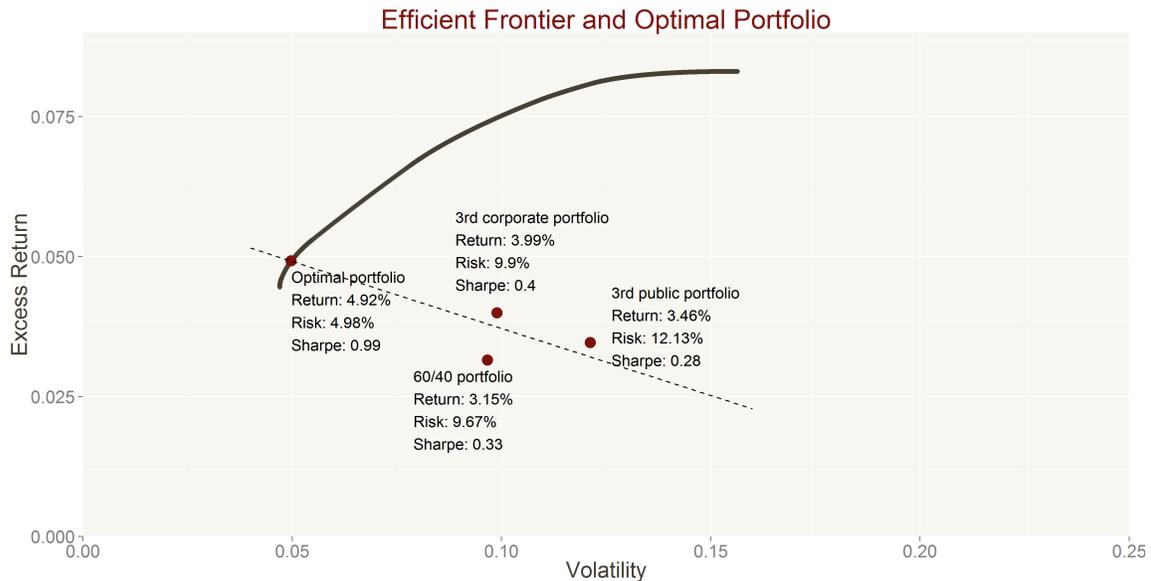
1. Bottom and top of the box are the 1<sup>st</sup> and 3<sup>rd</sup> quartiles.
2. Dark band inside the box is the median.
3. The lower datum is the 1.5 IQR (Interquartile Range,  $Q_3 - Q_1$ ) below the 1<sup>st</sup> quartile. Upper datum is 1.5IQR above the 3<sup>rd</sup> quartile.
4. Data outside the lower and upper datum are plotted as an outlier with small circle.

The presumption has been that the broadening of asset classes within the 60/40 asset allocation framework has led to improved diversification. It is likely that the investments have introduced variable liquidity factors into the portfolio composition. Highly variable flows of liquidity into and out of emerging markets, commodities and real estate have resulted in increased variability of risk premiums and a reduction the Sharpe Ratio of the overall portfolio. These variable capital flows are not being sufficiently diversified away within the portfolio, specifically during periods of stress. The perception that the 60/40 portfolio's risk-return proposition in terms of liquid investments has not been born out in reality.

The issue faced by asset allocators since the turn of the millennium has been a convex risk-return environment. Work done by DeRosa-Farag (2013) indicates that since 2000 the capital markets have been characterized by a quadratic equation representing two distinct lines. For assets below 10% annual volatility there is an upward sloping risk return line. Assets above

10% risk can be fitted with a downward sloping line that approaches a 0% excess return for the highest risk assets. Derosa-Farag shows that this capital markets line can be represented a quadratic equation that has a convex shape. This stands in contract to Markowitz stylized upwardly sloping efficient frontier. It has not been necessary to move up the tangent line by employing leverage given that sufficient excess returns have existed for an unleveraged Optimal Portfolio.

### Capital Markets Line 2000 - 2013



Note: Optimal portfolio is the asset allocation point with maximum Sharpe Ratio along the Efficient Frontier. Dash line is the line passing through optimal portfolio and regressing on the other 3 points.

Portfolio	Weight							
	Russell 3000	MSCI EAFE	MSCI EM	Barclays US Aggregate	Barclays US Long Treasury	Combined Constrained High Yield	FTSE NAREIT	DJUBS Commodity
60/40 Asset	60%			40%				
3rd Public	33%	17%	5%	18%		6%	2%	2%
3rd Corporate	28%	13%	5%	19%	10%	7%	2%	2%
Optimal				50%	19%	25%	4%	2%

Constraints of optimal portfolio: Summation of weights equals to 100%. Weights of all assets are non-negative. Weight of any asset is less than 50%.

The classic upwardly sloping risk-return environment generated during the 1926 to 1976 experience is quite different from the capital markets environment over the past 38 and 14 years. A strategic asset allocation meant to provide diversification in one environment has been sub-

optimal for the other two environments. A strategic asset allocation must consider each of the three states for the capital markets line to achieve diversification. These include the upwardly sloping line characterized by Markowitz' stylized efficient frontier. The second is the line that has been in place for the past 37 years where only small incremental premiums have existed for owning risky assets. And lastly the convex efficient frontier which has existed since 2000 wherein high-risk assets have generated little if any excess return.

### ***In Pursuit of Incremental Returns***

One task, which consumes a good deal of effort on the part of asset allocators is to seek incremental improvements to the returns generated by their asset class benchmarks. Compensation incentives are often structured around such objectives. These efforts are exemplified by traditional long-only active management practices or alpha seeking processes.

#### **Active Funds Underperforming Benchmark Return (1)**

<u>Benchmark</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>
S&P 500	60%	86%	79%
MidCap 400	69%	86%	82%
SmallCap 600	64%	80%	78%
Government Long Bonds	11%	97%	96%
Inv. Grade Long Bonds	5%	88%	90%
High Yield Bonds	65%	84%	94%
Developed Int'l S&P 700	54%	59%	66%
EM Equity S&P/IFCI Comp.	55%	56%	75%

(1) Source: Standard & Poor's – S&P Indices Versus Active Fund (SPIVA) ,June 30, 2013

Performance results from Standard & Poors Indices Versus Active (SPIVA) measures the likelihood of achieving success in these endeavors. Over the most recent 3 and 5-year time period there has not been a better than even chance on average of improving returns via active process for any asset class. More importantly the data indicates that the likelihood of underperformance increases over longer time horizons.

The search for active return diverts investment activities away from absolute portfolio risk and return considerations. In this context risk is viewed relative to the benchmark as ‘tracking error’ or ‘active risk’. Considerations with respect to the overall portfolio diversification are assumed to exist based on a broad list of asset classes. The search for relative return reduces time and effort spent on the effectiveness of the strategic asset allocation. Yet as was stated at the outset, Brinson, Hood and Bierbower (1996) found that strategic asset allocation decisions dominated the portfolio’s risk-return proposition.

Active process investing will often involve concentrated exposures to higher equity Beta, various forms of imbedded or explicit leverage, or riskier credit exposures. Work done by Fifi Li at Research Affiliates has identified high correlations between active-risk components during periods of stress. This creates a short volatility profile within the portfolio that in turn increases portfolio drawdown risk. The result of these efforts is that the asymmetric tail risk profile of the 60/40 portfolio is further magnified by the active portfolio elements.

The non-normal left tail distribution of the 60/40 allocation is further compounded by the liquidity issue imported in broadening asset class exposure as well as by active return pursuits. In periods of extreme market stress losses not considered possible based on a normal probability distribution occur. Trustees are caught unaware, and are often compelled to spend time questioning or firing managers who have significantly underperformed benchmarks during these difficult market environments. This time and effort might be better spent on the strategic asset allocation considerations. The risk concentration a priori often occludes the possibility of allocating more risk capital to the then expanded risk premiums then being offered within selected asset classes.

*“Indeed, nobody seems to even recognize that a crime has been committed—nor to realize that until they examine the evidence and recognize their own active roles, however unintentionally performed, the crime of underperformance will continue to be committed.”*

Charles D. Ellis

**Murder on the Orient Express: The Mystery of Underperformance (2012)**

### ***On Seeking Diversity***

Over time asset allocators have become aware that the 60/40 paradigm delivers an unbalanced risk profile. The result is that organizations have sought a broad array of ‘*alternative*’ investments to diversify the 60/40 allocation. Given the 80-90% concentration of risk to equities, the magnitude of diversification required from these alternative allocations is substantial. Meaningful diversification can only be effected through significant allocations. The magnitude of capital involved would leave most investment committees exposed to reputational risk were they to shift sufficient amounts of capital to alternative investments so as to meaningfully re-balance the portfolio’s risk profile. Such a reallocation of capital is, ironically, considered “*too*

*risky*". The strategic asset allocation is caught in a trap set by the risk concentration delivered within the 60/40 *capital* allocations. The basic foundation of the portfolio allocation process is flawed and cannot be dealt with through a garnish of alternative investments.

Nevertheless, alternative asset classes are worthy of a place within a diversified portfolio. They are necessary in fact, and are more worthy of receiving an allocation if they have attracted little interest for a period of time. Within the existing paradigm alternatives are sought as relief from a starting point of highly concentrated risk. They have been embraced as diversifiers to solve for an episodic return profile. Pursued in this context there tends to be a capital clustering effect. Asset allocations are made to a specific investment strategy based on low correlation to risky assets in the recent past.

The observed low correlations to risky assets are often based on cyclical events that will not be sustained in the future. A recent example would be the growth of fixed asset investments within China that appeared to generate sustainable and counter-cyclical price appreciation in a number of commodities. That demand was sustained by negative real interest rates in China. This created the appearance of low correlation for commodities during 2005 to 2010. In response asset allocators shifted capital into commodities, doubling exposures according to Barclays Capital research. A reduction in China's credit growth rate has left investors holding an ill-timed cyclical investment, not a strategic diversification strategy.

The clustering effect insures the reallocation process stays true to **Table I**, as capital weights increase in concert with a compression of risk premiums. The commonality of positioning all but insures higher correlations to these diversifying alternatives and a reduction in their low or negative correlation to the portfolio. Once the cyclical factors wane, the alternative investment experiences an expansion in risk premiums and higher than anticipated correlations. Each of these degrades the portfolio's overall Sharpe ratio. Again, these actions arise due to a constant pressure to flee an overwhelming concentration of risk.

The unbalanced risk profile delivered by the 60/40 asset allocation framework results in a need to pursue a series of secondary portfolio adjustments. These efforts to improve return and portfolio diversification require a significant time commitment on the part of the asset allocator. However, there is little evidence that these efforts have consistently delivered meaningful improvements to the portfolio's risk-return proposition, particularly with respect to the liquid asset allocations. An alternative approach to strategic asset allocation would need to solve for these observed shortcomings, and must do so across an array of capital environments.

*"I myself also began to meditate upon the mobility of the earth. And although the opinion seemed absurd, yet because I knew the liberty had been accorded to others before me of imagining whatsoever circles they pleased to explain the phenomena of the stars, I thought I also might readily be allowed to experiment whether, by supposing the earth to have some motion, stronger demonstrations than those of the others could be found as to the revolution of the celestial sphere."*

Nicolaus Copernicus

**On the Revolutions of the Celestial Spheres, 1543**

## ***Part III – Diversification as the Principal Objective***

*An alternative approach to strategic asset allocation would prioritize diversification over targeted rates of return. The portfolio composition is intended to balance risks while minimizing return dispersion, and specifically portfolio drawdown risk. The primary differences from the existing paradigm will be a revised weighting mechanism and the utilization of more efficient components for each asset class. Active process, if it is pursued by the asset allocator, will shift to increasing or decreasing risk exposures when asymmetric Sharpe ratios are believed to exist for any given asset class based on unsustainably high or low levels of realized risk. There is no singular path by which such a strategic asset allocation is achieved. The discussion that follows lays out the principles upon which such an asset allocation paradigm is predicated.*

### ***Presumed Diversity***

The 60/40 capital weighted framework was a logical means of achieving a 4.0% real return based on historical data from 1928 to 1976, a time frame that included a long period of financial repression. Based on that historical record the risk return proposition offered by the 60/40 allocation was not far from an optimal portfolio at similar levels of risk. Since that time bonds have offered positive real returns on average, and the 60/40 allocation has existed well away from the efficient frontier. The introduction of a broader set asset classes has not materially changed the risk-return proposition of the 60/40 portfolios and in fact has increased tail risk. Subsequent attempts to improve returns or seek incremental diversification within the liquid markets allocations have had limited impact and in many instances indicate a high probability of negative return contribution. This has been true in terms of both asset class timing and securities selection activities.

A revised approach to strategic asset allocation begins by stepping away from the capitalization-weighting scheme. Asset class weightings would be balanced in terms of marginal risk contribution to the portfolio. Risk is commonly measured using price volatility, though there are a number of other metrics that should be considered as well. The integration of drawdown risk for any asset class is also important to consider. The reason is that severe loss events contain information regarding the non-normal distribution of each asset class in terms of changes in correlation patterns. This would in turn be used to seek more effective diversification techniques for the variable liquidity risk discussed earlier.

For purposes of risk weighting averages of historical volatility can be employed, as can more recent trailing levels of volatility. In a multi-asset class portfolio the covariance matrix under a variety of capital market conditions is critical in developing robust diversification strategies. The reason is that these state dependent correlations impact the marginal risk contribution of any asset class to the overall portfolio, particularly as they have a tendency to change specific sources of market stress.

In order to achieve the dual objective of reducing risk concentrations to high volatility assets while maintaining a similar overall portfolio risk expected delivered by a 60/40 allocation, it would necessary to increase exposure to lower risk assets. This principle can be seen in the linear extension of the Optimal Portfolio shown in Part I. James Tobin developed this concept as an extension of Markowitz' work on portfolio efficiency. Increasing notional exposure will generally require the use of leverage. Increased asset class exposure can be achieved for bonds and other low risk assets through use of repurchase agreements (Repo), swaps, or futures contracts. By incorporating leverage to create an increased risk exposure to low risk assets the portfolio avails itself of efficient frontiers unavailable within the 60/40 paradigm. This would essentially replace many of the active processes currently sought to improve portfolio returns in order to approach the efficient frontier. The path by which that frontier is achieved shifts from incremental return generation to diversification.

Asness, Frazzini, and Pederson (2011) suggest an aversion to leverage results in the mispricing of financial assets and the observed flatter capital markets line over long time horizons. That is to say, investors will expose capital to high-risk assets rather than introduce leverage on low risk asset into their portfolio composition. The supposition is that this leverage aversion across a sufficient number of market participants has resulted in excess demand for high risk or equity-like assets. It would logically follow that this excess demand would systematically driven down risk premiums on these high-risk assets in relationship to low risk assets. The result would be that low-risk asset would systematically offer investors higher Sharpe ratios on average over long periods of time.

Whether this inefficiency exists or not on average, the balancing of portfolio risk remains a 'free lunch' available to investors. If it is also true that low risk assets offer a more efficient risk return proposition than do high risk assets, then the pursuit of true portfolio diversification will deliver further improvements to the portfolios overall efficiency. However, that this supposition holds does not change the improvements available from better portfolio risk balancing.

Consider the liquid market portfolio allocations of the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> generation asset allocations identified previously. In the exercise that follows the two, four and eight asset classes are allocated balanced risk profiles. The two-asset portfolio balances risk equally between stocks and bonds. The four and eight asset portfolios allocate one-third of the risk to each of stocks, bonds and inflation sensitive assets. Within each of these three asset groups the risk weight is equivalent to the relative capital weights present in the Greenwich Associates surveys. The risk weight of each asset class or group is based on the inverse of its 2-year trailing volatility.

## **Risk Balanced Portfolio Analysis (1992-2013)**

<i>Risk Allocation</i>	<i>Nominal Return</i>	<i>Volatility</i>	<i>Maximum Drawdown</i>	<i>Sharpe Ratio</i>
<i>2 Asset Balanced</i>	<i>10.1%</i>	<i>10.0%</i>	<i>-15.9%</i>	<i>1.01</i>
<i>4 Asset Balanced</i>	<i>9.7%</i>	<i>10.0%</i>	<i>-21.1%</i>	<i>0.82</i>
<i>8 Asset Balanced</i>	<i>8.3%</i>	<i>10.0%</i>	<i>-31.8%</i>	<i>0.78</i>
<i>60/40 Portfolio</i>	<i>6.0%</i>	<i>9.8%</i>	<i>-33.8%</i>	<i>0.61</i>

While the historical return record does not exist across all eight of the asset classes for periods earlier than 1992, it does for U.S. stocks and bonds. Asness, Frazzini and Pederson (2011) show an excess return of 3.34% for a portfolio of stocks and bonds rebalanced periodically to equal risk contribution in relation to a 60/40 portfolio of equal volatility for 1926-2010. This was true despite the geometric return advantage for equities of 4.0% annually over that same 84-year period. The improvement in diversification coupled with the higher Sharpe ratio of the low risk asset created this return advantage. That excess return advantage is consistent with the three risk balanced portfolios shown here. Note also the improvement in the drawdown risk, or left tail for each of these portfolios.

*“A good portfolio is more than a long list of good stocks and bonds. It is a balanced whole providing investors protections and opportunities with respect to a wide range of contingencies.”*

Harry Markowitz

**Portfolio Selection, Efficient Diversification of Investments (1959)**

### ***Asset Class Efficiency***

A strategic asset allocation based on capital weighted benchmarks accepts the risk and return proposition offered by the markets at face value. Yet benchmarks representing the various asset classes have in no way been assembled with diversification in mind. They are anecdotally thought to be diverse in the sense that they include all of the available securities in a given asset class. However, their proportions in terms of constituent weights, overall riskiness and correlation to one another are not considerations in the benchmark's construction. They are meant to represent the universe of available investments, the market for those assets as it were. A series of capitalization-weighted benchmark does not represent building blocks targeting diversification as the primary objective.

Increasing portfolio efficiency and decreasing drawdown risk across capital market environments requires rethinking market capitalization weighted benchmarks. The goal of this endeavor is to develop asset class compositions that reliably capture the available risk premium while improving the *expected diversification*. The result should deliver improved efficiency primarily by balancing factor risk exposures within an asset class. This in turn allows for greater retention of high-risk asset class premiums within the risk balanced allocation framework. Note there is no explicit intention to outperform the asset class rather the goal is to capture its risk premium with a high degree of confidence in the greatest proportions possible within the overall asset allocation.

This exercise is not meant to mimic the factor risk profile of the benchmark but seek diversification within the asset class. The result is avoidance of risk concentrations often delivered by capitalization-weighted benchmarks. The benchmarks exhibit elements of the allocation momentum factor that resulted in the performance gap evident in the Morningstar data. Examples of this would include Nortel’s 31% weight in MSCI Canada in 2000. Similarly, the addition of Agency Hybrid ARM securities to the Lehman Aggregate index in 2007 and removal of fixed rate Home Loan ABS in 2009 from the Barclays Aggregate Index. Nortel and Agency Hybrid ARMS achieved their highest weight or were added to the index when their risk premiums were significantly compressed. Conversely, Nortel was subsequently bankrupted and removed from the index altogether while Home Loan ABS securities were removed from the Aggregate at peak spreads to U.S. Treasuries.

A highly simplistic approach to achieving improved balance can be found in equal capital-weighted equity indexes. Such an approach reduces the capitalization weight bias of the benchmarks and as such represents a preliminary step towards improving asset class efficiency. More evolved approaches to efficient asset class replication would seek to minimize volatility, drawdown risk, or improved factor risk diversification within the asset class. The following is an example of a minimum volatility portfolio in relationship to the standard market capitalization weighted indexes for the U.S. and EAFE equity markets.

#### **MSCI U.S. & EAFE Standard & Minimum Volatility Indexes (1988-2013)**

1988.06 ~ 2013.12	<b>Geometric Excess Return</b>	<b>Volatility</b>	<b>Sharpe Ratio</b>	<b>Maximum Drawdown</b>
<b>MSCI USA</b>				
Standard	6.0%	14.7%	0.41	58.7%
Min Vol	6.1%	11.6%	0.52	43.5%
<b>MSCI EAFE</b>				
Standard	1.7%	17.5%	0.10	57.5%
Min Vol	4.3%	13.8%	0.31	43.3%

“Standard” indices are the MSCI Standard (Large+Mid Cap) Net Total Return Indices.

“Min Vol” indices are the corresponding MSCI Minimum Volatility (USD) Indices.

This is but one approach to achieving higher levels of asset class efficiency, combining elements discussed above offers even greater levels of efficiency in capturing asset class risk premiums. Improvements such as these in Sharpe ratios and drawdown risk will allow for retention of a higher equity exposure than would be possible in a risk balanced approach that relies on inefficient capitalization weighted asset class exposures.

The diversification of these more efficient asset class bundles can be expected to remain robust under most circumstances due to the risk balancing having been sourced within the asset class itself. This approach to diversification will not be as effective in environments where selling pressures render all but liquidity factors irrelevant. To reduce drawdown risk in these extreme moments it is necessary to hold investments that exhibit high negative correlation during periods of stress. The effectiveness of such tail risk protection must perform in capital market environments where the slope of the market line is meaningfully negative.

In the wake of the financial crisis, asset allocators added tail risk protection to their portfolios. Similar to the clustering effect observed earlier in regards to alternative allocations many of these allocations subsequently generated negative returns and have been abandoned. The clustering effect resulted in the investments being made when risk premiums for hedges were quite high. Due to a lack of inherent diversification in the core of a 60/40 portfolio the asset allocator is forced to purchase substantial notional hedges that are not that far out of the money. Improved asset class exposure construction and balanced risk weighting change the nature of tail risk protection required. Despite the recent experience with tail risk protection, reduction of drawdown risk in liquidity panics remains quite relevant as part of an overall diversification strategy.

One outcome of constructing improved asset class exposure is expanded capital exposures to attractive equity risk premiums. Tail risk protection investments should be sized so as to mitigate the magnitude of drawdowns in extreme market events. Doing so a priori creates an opportunity for the asset allocator to maintain or increase exposure to then expanded risk premiums. This rebalancing dynamic is generally not considered in advance within a return-targeting framework. Note that the increased equity exposure made possible by more efficient asset class construction is still lower than would have been the case within a 60/40 allocation. There is no contemplation of leverage applied to equities within such a strategic asset allocation framework.

Once improvements in the equity and other high-risk asset compositions have been determined the bond portfolio composition can be addressed. Again, the goal is not to replicate the risk profile of the predominant indexes but to capture its risk premium in a more efficient manner across capital market environments. Importantly, high-grade duration sensitive assets have exhibited positive returns and negative correlations to risky assets during periods of stress. This was instrumental in keeping the 3<sup>rd</sup> generation corporate portfolio allocation's drawdown risk increasingly markedly, as was apparent in the 3<sup>rd</sup> generation public portfolios. This implies that fat tails are not increased despite the use of leverage for this low-risk asset class. Increasing

the notional exposure to certain asset classes can reduce the likelihood of forced reallocations within the portfolio when risk premiums have expanded under stress.

### ***Weighting Mechanisms***

A question arises as to what ‘risk weight’ each asset class deserves within the overall portfolio composition. Some have sought to answer this question with the existentialist view that asset classes must have equal risk exposure to achieve maximum diversification. However, liquidity considerations are of equal concern and would result in more limited risk allocations to smaller asset classes. It is reasonable for an asset allocator to initially set bands around their existing capitalization weights to establish a targeted range of risk for each asset class. In fact it is preferable to have ranges for risk exposures to avoid reducing exposure too frequently or in too great a magnitude when volatility levels have changed in relationship to one another.

The stability of a given asset classes risk characteristics also need be considered. Any measure of risk for a given asset class also has an associated variance. This variance will influence the weighting in terms of the range of risk that could be realized as well as any potential non-normal features of that distribution. By adopting a range of overall targeted risk it creates an opportunity to implement countercyclical weights based on the notion that volatility has a mean reverting tendency. Such an approach would create a value discipline within the portfolio rebalancing process, given that higher levels of volatility are generally associated with expanded risk premiums.

The resulting portfolio would also be rebalanced periodically when the portfolio have drifted sufficiently away from the then best available *expected diversification* portfolio. However, rebalancing transactions have a cost and it is necessary to create a cost/risk metric that would be met prior to incurring rebalancing costs. This is in large part due to the fact that estimation errors for expected risk and correlation would need to be taken into account when determining rebalancing frequency.

### ***Peer Comparisons***

One important issue a number of organizations will face in shifting away from the existing paradigm will be reduced clarity of peer comparisons at the portfolio level over short time horizons. Corporate pension plans that have extended the duration of their fixed income portfolios already experience this issue to some degree. Trustees and staff would continue measure the performance of asset classes against market indexes, but they would need to be aware that the overall portfolio is not designed to track portfolios constructed within the 60/40 framework. Extreme returns will be less frequent though organization can be expected to suffer some underperformance during significant bull markets. The reason is the expected distribution of returns will have been reduced.

As was discussed earlier, the existing paradigm results in high-risk concentrations, allocation momentum factors and short volatility exposures. The result is a pro-cyclical portfolio that is more closely related to economic cycles. Risk allocations and more efficient asset class exposure will reduce the pro-cyclical characteristics of the portfolio. This in turn results in a reduction in underfunding during stressful market events, and more limited overfunding after periods of exceptionally strong market performance. This should be desirable for both public and private entities given that funding tends to be expensive during periods of stress and acquired at low cost during constructive market environments.

Allocations made to alternative investments can generate improvements in diversification and portfolio efficiency. These would include alpha generating processes, illiquid investments in real estate, private equity, growth & venture capital, distressed debt, real assets and various forms of private credit extension. For purposes of strategic asset allocation this illiquid/alpha allocation needs to be considered outside of the liquid Beta allocation. The rationale for separating the two is both their liquidity profile and the nature of the returns they are expected to deliver. With respect to stand-alone alpha processes, asset allocators will seek these based on their risk-return efficiency and portfolio diversification characteristics. They are generally processes applied to liquid securities and as such do not seek to primarily expose capital to an asset class risk premium. These alpha oriented investments are thus defined by their investment processes and less so by the assets underlying the portfolios. As such their risk return proposition and diversification characteristics are outside the context of what markets offer.

Investments in private placement funds and direct investments also offer the portfolio an expanded universe of asset allocation opportunities. Illiquid investments requiring multiple years of capital commitments are only limited by the capital pools tolerance for illiquidity in light of periodic cash needs. Beyond that the asset allocator must balance their ability to source sufficiently high illiquidity premiums from these investments with investment opportunities in their liquid market allocations. It is believed higher risks can be taken in these investments based on longer time horizons. This is true so long as the incremental risk premiums are sufficient to expose capital to both increased levels of risk and decreased liquidity.

Organizations that are proficient in sourcing alpha and illiquid investments will likely exhibit a higher risk tolerance for these allocations. Interestingly, an improved strategic asset allocation strategy applied to the liquid allocations will raise the bar in terms of the illiquidity premiums required to reallocate capital to less liquid investments.

### ***Tactical Diversification***

Within an investment process that prioritizes diversification tactical decision-making remains a very real possibility. The genesis of these tactical considerations would shift to asymmetries for the risk of a given asset class. Such tactical allocations have less to do with a return seeking pursuits than it does with an improvement or deterioration of the Sharpe ratio by way of the risk component. While an improved portfolio Sharpe Ratio is ultimately a risk-return

driven consideration, the primary driver is perceived asymmetry in the forward-looking risk of the asset class. That there is a fairly reliable correlation between increasing volatility and expanding risk premiums does imply there is a second order connection to forward looking asset class returns. Reducing risk exposure to asset classes exhibiting compressed levels of risk potentially avoids both expansion in the risk-premium for that asset class and increased intra-asset class correlations normally associated with that expansion. Within a portfolio prioritizing diversification, resources spent investigating such extremes moments in asset class risk would replace time spent on traditional active return processes.

A second tactical weighting approach would involve assessing the likelihood of the forward-looking capital markets environment. Currently some asset allocation models rely on a four- quadrant world defined by growth-recession and inflation-deflation. The critical flaw in this approach is that specific asset classes are presumed to be effective in each quadrant. In practice these asset classes can be more heavily influenced by factors other than growth and inflation. Use of the three states of the capital market line offers a relatively robust alternative in seeking effective tactical risk balancing strategies. The allocator would assess the likelihood of each of the three environments over the relevant investment horizon. Risk weightings would favor asset classes offering higher Sharpe Ratios, lower than average correlations and reduced drawdown risks for a given environment.

### ***Conclusion***

Diversification is the only free lunch, or so it thought. It is clear from the historical record that the 60/40 asset allocation framework does not fully participate in this feast. As was discussed earlier there are a number of pragmatic issues that lead to the persistence of this paradigm. Not the least of these is the difficulties presented for a named fiduciary to pursue pioneering initiatives. To a large degree they must rely on the products and service providers available to them at any given point in time. In this way the asset management and consulting industry leads their ability to implement an alternative approach to strategic asset allocation.

Asset allocators must begin to view their strategic asset allocation decisions through a diversification lens. At present it is uncertain how much longer financial repression will continue, or if it will continue only in select countries and economic blocks. The capital markets environment framework allows decision makers' sound footing in engaging these issues. They can comfortably embrace the realities offered by the capital markets rather than hoping for the idealized efficient frontier year after year. In pursuing this path for their strategic asset allocation they will have formed an alliance with improved technology and skills that will serve them well in the decades to come.

The transition to a more effective strategic asset allocation is likely to be led by large pools of capital whose needs can justify commercialization of such an approach within the asset management industry. Their size and visibility will allow for such an initiative's acceptance both by service providers and other allocators. Until that time the knowledge base required to implement such improvements to strategic asset allocation will continue to evolve within various organizations. There comes a tipping point where resources and demand come together to begin a long slow migration away from the old paradigm. That process has likely already begun.