



OUR PORTFOLIO CONSTRUCTION FRAMEWORK

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A PRIMER ON PORTFOLIO CONSTRUCTION

For context, our Risk-Based strategies utilize multiple asset classes, including a mix of domestic and foreign equity ETFs (including emerging markets), in addition to government and corporate bond ETFs, which include a high-yield allocation. We recently have rebalanced our Risk-Based Core and Risk-Based Opportunity portfolios in order to ensure that they continue to reflect our secular views. Referred to often in our discussions, we label the results of this work as the Secular Tactical Asset Allocation (STAA) to distinguish it from our day-to-day Tactical Asset Allocation (TAA) decisions that are shorter-term or more cyclical in nature. Our STAAs are used as our target allocations within the TAA framework; they are the baseline from which we tactically over- or underweight specific equity asset classes.

In most aspects of our investment process we use a quantitative model combined with a qualitative overlay that allows us to capture the global economic and political environment in a manner that is as inclusive as practicable and practical. That we impart a qualitative note in our work is most defensible: no model can comprehensively incorporate the current context of global macro-investing. The process that begins with a review of candidates for potential investment and ends with the STAA is no different.

Core to the development of the STAA is the estimation of expected return, risk and correlations for different asset classes. Estimates are just that, however...a set of expectations that are firmly grounded in the facts of history, but which by definition require some level of prognostication. Such forecasts, on our part are crucial, however, as we utilize them, in turn, to determine the 'optimal' asset class mix in our portfolios.

The term 'optimal' unfortunately being no less open to interpretation than the job title 'journalist' these days, in our efforts we seek to construct portfolios with the highest possible expected return at the lowest possible expected risk. We look to these as optimal as, the lower the correlations, or co-movement, of performance

series among the asset classes within a portfolio, the lower is the portfolio risk and, in general, the more desirable the portfolio. Hence, asset class correlations are a key input in that they drive the diversification dynamic that underlies portfolio risk.

As lower correlations mean better diversification and higher risk reduction in the overall portfolio, we prefer asset classes that individually have positive expected returns, but which present low correlations among one another. For example, U.S. and Asian equities, though usually viewed as different asset classes, tend to move together; they maintain a strong positive correlation. In contrast, some commodities such as gold or oil have a low (or even negative) correlation with equities, as they tend to move independently from equities or even in opposite directions. By formulating an optimal combination of these various asset classes, we seek to maximize a portfolio's expected return per unit of risk, or maximize its *risk-adjusted return*.

There's no minor bit of math involved, however, in devising that optimal mix of asset classes. Modern portfolio theory (MPT) uses what is known as mean-variance optimization and was first developed by Nobel laureate Harry Markowitz in the 1950s. It is a tool that allows us to compute just such an optimal mix of assets that maximizes a portfolio's expected return for a given risk level, or that minimizes the portfolio risk for a given expected return level. In mathematical terms this framework is a 'constrained optimization' problem.

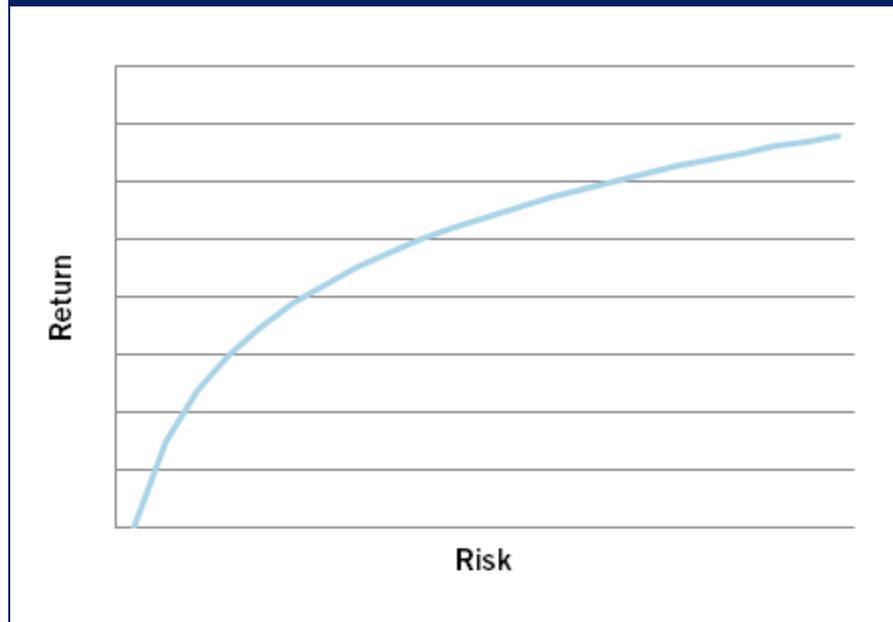
In an effort to make the work more tractable a number of assumptions are made on the course to finding an analytic solution (formulaic solution). As we shall see these assumptions often force meaningful detours from reality.

MPT assumes that investors are risk averse; when comparing two investments with the same expected return, investors will always choose the less risky. Hence investors are only willing to bear higher risk if they are compensated by higher expected returns. In investment terminology, they are *rational* and *risk averse* (departure from reality #1: MPT expects a bit too much from real-world investors, who by many manners often prove irrational and risk-hungry). MPT also assumes that asset returns follow a joint Normal distribution, so risk can be measured by the return variance or standard deviation (departure from reality #2: asset class returns are not normally distributed). While these assumptions are unrealistic the process offers a disciplined framework to build portfolios as long as the user thoroughly understands its limitations.

Under these assumptions, it can be shown that all efficient combinations of risky assets lie on the so-called *efficient frontier*, an example of which is shown in Figure 1. The efficient frontier is the location of all portfolios that, for a given level of risk, have the highest expected return achievable, or that, in other words, for a

given expected return have the lowest risk achievable. They represent an optimal or most efficient return/risk trade-off. They are thus deemed 'efficient'. Together, these efficient combinations produce the Mean Variance Efficient Frontier (MVEF).

FIGURE 1: EFFICIENT FRONTIER OF RISKY ASSETS



Again, MPT makes broad assumptions in order to create analytical relationships between expected return and risk. Unfortunately, the real world often fails to live up to those assumptions. And, yet, the elegance of the models and the ease with which they (too often mistakenly) can be implemented lulled so many practitioners into believing that finance was more a hard science than a social science. It is our opinion that theoreticians, following years of abusing¹ these concepts, finally realized that the 'social' part of the science needed to be addressed. That is, they recognized that the primary assumptions driving the models are well removed from reality. The resulting area of research has become known as Behavioral Finance. That said, when thoughtfully implemented the methodology remains a foundational tool for the construction of multi-asset-class portfolios.

¹ An implication of the MPT/MVEF is that investors operate within a single-period buy-and-hold universe. Over and above the use of estimations as fact, practitioners often misuse this approach by applying it frequently within the investment period and effectively taking active bets, thereby unknowingly violating the theory that underlies the approach. This is far too common an occurrence in our opinion.

Further extensions of the MPT/MVEF—the CAPM

If we add a ‘risk-free’ asset along with a few additional assumptions we can easily derive the Capital Asset Pricing Model (CAPM).² The CAPM is a linear relationship between expected return and risk as measured by a variable popularly known as *beta*. It is an equilibrium model (the importance of which we will discuss later). For now, readers simply should be aware that the CAPM is an extension of the MPT.

The CAPM implies that the optimal portfolio is a combination of the risk-free asset and the market portfolio that contains all tradable assets.³ As a result, like MPT, the CAPM advocates a passive buy-and-hold strategy. There is thus no scope for active investment management under the CAPM. On the contrary, we believe that there is added value to be gained over and above a passive market portfolio. This, however, doesn’t mean that the CAPM is worthless. We can still use the mean-variance optimization framework for our purposes by simply using our own return and risk expectations as inputs. Thus, to reiterate, MPT and portfolio optimization remain useful tools for active portfolio managers.

THE LIMITATIONS OF MODERN PORTFOLIO THEORY

Checking in...by now, readers should hopefully be getting that, while our methodology might be steeped in the academic literature and thought, it is informed by and adapted to the considerations, limitations and opportunities of real-world investing.

A practical measure of any purely objective optimization approach is the sensitivity of its output to small changes to the inputs. In the case of portfolio optimizations, small changes in risk and return assumptions can have grand impacts on the result. Worsening matters, standard portfolio theory (portfolio optimization) suffers from another major problem: it assumes that we have perfect expected return, risk and correlation estimates for different assets. This is clearly unrealistic. Even superior portfolio managers do not have such precise foresight. Therefore, despite the effort and critical thought we apply to the work, risk and return expectations still might be deemed at best guesstimates; indeed, we know in advance that they are subject to a wide range of potential error. It is with full knowledge of this drawback that we direct the math.

² These assumptions include that all investors have the same information at the same time as well as the same risk and return expectations for different assets; that they (individually) cannot influence asset prices; that investors can borrow and lend at the risk free rate in unlimited quantities; and that they don’t pay taxes or transaction costs, etc.

³ The optimal proportions in the risk-free asset and the market portfolio depend on an investor’s individual risk preferences.

For example, suppose we expect domestic large-cap equities to outperform small-cap equities (a highly correlated asset) by a small margin (even as small as a basis point). Since the portfolio optimizer treats the return and correlation numbers as if they were known with certainty, it might overweight large-cap stocks and underweight small-cap stocks in an extreme manner, as one has slightly higher expected returns than the other though both are highly correlated. The optimizer attempts to maximally exploit this apparent ‘opportunity,’ ignoring the fact that the small expected return difference may not be meaningful, perhaps simply due to noise or measurement error. In reality chances are that our two return expectations are roughly the same and therefore our portfolio allocations to domestic large and small cap equity should be much more similar.

This is a more general drawback of the method: standard portfolio optimization often leads to extreme portfolio weights that no reasonable investor would hold. It ignores the discussed uncertainty associated with each of the inputs—expected returns, risk and correlations. Standard portfolio optimization is too powerful a tool for inputs that typically include large potential standard errors. This failing is exacerbated by the single-period, buy-and-hold framework. In many common applications of MPT an investor is faced with a very long period and asked to construct a portfolio. Are we really confident that our expected return and risk inputs are that accurate? After all, if we had such clairvoyance and forecasting ability we wouldn’t need to diversify at all. This is almost paradoxical in nature.

CONSTRAINING THE OPTIMIZATION

Implausible or extreme portfolio weights can be prevented by using additional constraints within the mathematical framework. For example, one might run a portfolio optimization with the constraint that a certain asset class might not exceed a 10% weighting in the optimal portfolio—an individual position constraint. One also can put a constraint on combinations of assets: for example, the aggregate weight of all equities is not to exceed 35% of the portfolio. Managers might also constrain portfolios to have positive weights in order to avoid short exposures.

While some portfolio constraints are clearly necessary and desirable, we have to be careful to keep the number of constraints to a minimum and to avoid overly limiting model flexibility.⁴ Although we want to avoid extreme and unintuitive

⁴ In our products some constraints are unavoidably ‘forced’ upon us, including a minimum position constraint of 5% for each asset class to avoid small positions that would be prohibitive from a transaction cost and an administrative point of view. The 5%-constraint, together with illiquidity of some ETFs, force us in some cases to constraint certain asset classes to a zero-weight. One example, as we see later, is Canada which we might have liked to include in our Risk-Based portfolios, but at a weight lower than 5%.

portfolio weights, we also need to give the optimizer sufficient leeway to determine the most desirable combination of assets from a return/risk point of view. Overly constrained scenarios defeat the purpose of the exercise. Unfortunately, too many users of this approach liberally use constraints and effectively dictate a solution. We do not want a portfolio that is dominated by the constraints we impose. Still, it is important to understand that, while useful if applied wisely, our constraints are potentially subjective and mathematically and financially suboptimal from a purely return/risk point of view.

MASSAGING THE INPUTS

So we started with the MPT, which we found wanting for its overly simplistic worldly assumptions. We then moved to the CAPM, evolved from MPT, which makes similar assumptions that leave it still too-limited in real-world applicability, given much-too-definite assumptions in regard to risk and return inputs. We next layered in constraints as a potential answer to those limitations, but are still left with a delicate balance between the pressures to assume reasonable, defensible return/risk expectations, to constrain optimization results to address the reality of the inaccuracy of forecasting and to fit real-world portfolio management limitations.

To address, inasmuch as we can, the limitations in the methods of optimization discussed so far, we incorporate into our process the Black-Litterman (BL) approach, a very flexible way to come up with expected asset returns that are consistent with our risk and correlation estimates as well as with any additional views or expectations that we might maintain. These views most often come from a combination of our quantitative modeling and our qualitative overlay; together, they for sure a true blend of science and art. If all the inputs are consistent (and meet the mathematical properties implied by the MPT/MVEF framework), a portfolio optimizer will come up with more balanced portfolio weights even if fewer or no constraints are imposed.

Being very flexible, the BL model allows us to incorporate any types of views we have about expected returns and risk, both for individual and for combinations of assets. Our views can be absolute or relative in nature. For example, we may have a view that high-yield bonds will return about 8% over the next 12 or 24 months. This is an example of an absolute view. Alternatively, we might expect Asian equities to outperform a basket of North American, European and Australian equities by 5% over the same period—a relative view on a multi-asset level.

As we will discuss in more detail later, we currently have a bearish view on Europe that isn't fully captured by our quantitative model. Rare events such as the sovereign solvency crisis, which particularly affects Europe, tend to be difficult to capture using only historical and quantitative relationships. The BL

model allows us to easily incorporate this bearish view into the portfolio construction process. It thereby helps us to integrate different types of information into one unified framework, enabling more disciplined and objective decision making.

Crucially, the BL model also allows an uncertainty to be specified for a particular view. So, for example, we could specify within the BL framework that we are 30% confident that our relative return view from above will materialize.

Once the views have been specified, the BL model can be used to compute expected returns based on a blend of those details and the values implied by aggregate market holdings, the so-called equilibrium condition. Equilibrium values are generally obtained from an asset pricing model such as the CAPM, which we discussed above. Hence if we have no personal views on asset-class return and risk, or if our own views do not deviate from the values implied by the asset pricing model, BL simply comes up with the same expected asset returns as the asset pricing model. Otherwise the BL model computes expected asset returns based on a blend of the equilibrium condition and our views. The weight that the BL methodology puts on our own views depends on the level of confidence that we specify for our views. This is what econometricians refer to as a Bayesian approach.

While the precise mechanics behind the BL model are beyond the scope of this commentary, it is a convenient tool for any portfolio manager to come up with expected asset returns that are consistent with personal expectations—risk, correlation or otherwise. The expected returns from the BL model can subsequently be used in a portfolio optimization, which is then likely to generate more balanced portfolio weights. The BL procedure thereby helps to avoid ‘corner’ solutions in the portfolio optimization (or those forced upon by various inputs), unstable optimal weights as well as poor out-of-sample performance of the optimized portfolio. This is how we employ the BL approach.

RESAMPLING TO SOFTEN THE CERTAINTY

Resampling is another useful tool that helps circumvent extreme portfolio weights. It can be used in combination with the BL model or in its place.

We know already that standard portfolio optimization treats inputs (expected return, risk and correlation estimates) as if they were known with certainty. It therefore ‘over-interprets’ any small differences in the inputs, which may simply be due to measurement error or limited insight. Resampling addresses this problem by allowing the amount of uncertainty or error associated with expected return, risk and correlation estimates to be incorporated into the portfolio optimization.

In a way, resampling allows us to make the portfolio optimizer ‘realize’ that any tiny differences in expected asset returns should not be relied upon too heavily as they might simply be due to uncertainty or measurement error. In other words, resampling is akin to making the optimizer incorporate the imperfections or inaccuracies of the real world.

How does resampling come up with a measure of ‘uncertainty?’ Again, the exact mechanics of this approach are beyond the scope of this commentary. Broadly speaking, we come up with expected returns, risk and correlations based on a quantitative model or any qualitative insights that we may have garnered from the MPT and/or BL frameworks. We then use these estimates in order to randomly generate asset return paths that are consistent with these estimates and the underlying mathematical properties imposed by the MPT. To do this we run so-called Monte Carlo simulations, drawing random asset returns sampled from a joint Normal distribution with means equal to our expected asset returns and standard deviations equal to the square root of our expected asset variances. Moreover, the random asset returns are also drawn from distributions with correlations equal to the asset return correlations we obtained from the quantitative model and/or our qualitative insights.

We generate simulated random asset return paths over a sample period of our choice for the STAA (e.g. over a two-year period using a specified frequency, such as daily returns). We then compute optimal portfolios based on these return paths using an optimizer. If we go through this exercise many times (hundreds or thousands of times), we are able to compute average optimal portfolio weights over all of these iterations. These average weights incorporate all kinds of different scenarios and are therefore ‘more robust’ in the sense that they provide more diversified portfolios that are less prone to extreme weights.

To illustrate the methodology, let’s consider a simple example. Suppose we would like to come up with an optimal portfolio mix of three assets: domestic equity, foreign equity and domestic bonds. Based on our investment process we have expected returns, variances and correlations for these three assets. We then use these metrics to generate three daily asset return paths over a simulated two-year period to compute optimal current portfolio weights in these three assets given the return paths generated. After that we retain these portfolio weights and regenerate random asset return paths for the three assets considered and based on those we compute optimal portfolio weights again, and so on.

Once we run this procedure many times (again, several thousand), we have many sets of portfolio weights for our three assets. We can then compute means and standard deviations over all these sets of portfolio weights in order to obtain the portfolio weights that give us the best ‘compromise’, or average under many

different scenarios. The standard deviation gives us a measure of uncertainty associated with this compromise solution which allows us to compute confidence intervals around the mean portfolio weights obtained.

The intuition behind this procedure is that, while one particular iteration of the above procedure may result in extreme portfolio weights, it is unlikely that many iterations cause *the same* extreme portfolio weights. In other words, any potential inconsistencies between the inputs tend to average out if we run many iterations of the above procedure and hence stabilize the asset class allocations that are outputted from the optimization procedure.

This feature is also useful to avoid overreacting to extreme market conditions such as the technology boom around the end of the 1990s or the recent credit crisis. While incorporating these events into the analysis is obviously important, it is equally important to put things into perspective to avoid losing the bigger picture. Resampling helps to achieve that end.

WHICH SOLUTION IS OPTIMAL?

This depends on the problem. In some cases BL is better-suited, while in others resampling is preferable. In our investment process we have found that a combination of the two procedures is the best safeguard against extreme and unintuitive portfolio weights that are unlikely to be robust. We combine these procedures in an effort to minimize the weaknesses of the theory and maximize the practical aspects of it.

Hence, we use the BL model first in order to come up with ‘reasonable’ asset return expectations that are consistent both with our risk and correlation estimates as well as our views. The resulting expected returns are then used as inputs in a portfolio resampling procedure to come up with the final portfolio weights we subsequently implement. The combination of these two procedures gives us maximum assurance that our resulting portfolio weights are balanced and robust and are an optimal reflection of our quantitative inputs as well as our qualitative views.

This formal framework instills a significant level of discipline within our portfolio construction process.

PRACTICAL CONSIDERATIONS

So far we have explained the quantitative and theoretical framework involved with the portfolio construction of our risk-based strategies. While the portfolio construction process is steeped in the theory of mathematical optimization and finance, it is also largely guided by practical implementation considerations. This

is the mingling of expertise, experience and an understanding of the strengths and weaknesses of the different frameworks.

This process presents many issues, both mathematical and practical, with which we have grappled over the past few months. An additional layer of considerations presents when attempting to implement the allocations produced by the optimization procedures. In this section, we illustrate in greater detail the process through which we construct our risk-based products, this time focusing on the practical aspects of the implementation, highlighting several of the most important decisions we faced in the effort. We are very confident in the changes we have made to the portfolio. However, in the spirit of getting smarter each day, we also recognize that we must seek and embrace opportunities to improve our products.

As noted earlier, though mean-variance optimization is mathematically eloquent, it frequently produces extreme portfolios no sane investor would consider holding. The Black-Litterman approach and statistical resampling procedures are useful tools that help circumvent the extreme portfolio weights frequently obtained through mean-variance optimization. It is important to highlight, however, that this process is not a hard science, and in fact the work is laced with subjective decisions that must be made while estimating the model inputs and when interpreting the output of these statistical models. For this purpose, the investment committee often refers to this effort as, “more of an art than a hard science.” It is our hope that by presenting the details of the process we can convey our sense of conviction in the methodology and thereby bolster client comfort in our work. Too, we hope this discussion highlights that a significant portion of our value added comes through this channel: the determination of the target risk-based allocations.

After employing the various portfolio optimization tools, the committee arrived at well diversified portfolios that we believe leave them well positioned for the next several years. After exhaustive iterations and discussions, the solutions at which we arrived have both practical and intuitive appeal, produce reasonable expected excess returns and result in broadly diversified portfolios that are implementable in a practical manner. We highlight the output of the portfolio optimization analysis in the context of the several important trends which are reflected in our new risk-based STAA:

- Reduced U.S. equity exposure in favor of international equity exposures
- Reduced U.S. small- and mid-cap relative to U.S. large-cap equities
- Tilted international equity heavily towards Asia Pacific and emerging markets

- Increased exposure to investment-grade and high-yield corporate bonds at the expense of U.S. Treasuries
- Replaced Credit exposure with Corporate Bond exposures of various tenors
- Reduced real estate exposure within the fixed income allocations

The investment committee is well comfortable with the optimization procedure output, as it is consistent with our forward looking expectations and secular views, many threads of which have been the subject of previous monthly commentaries. Practical considerations, however, influenced the final design in several meaningful ways.

CONSIDERING ADDITIONAL ASSET CLASSES

The statistical optimization procedure outlined earlier requires return measures for each asset class. Our approach, consistent with the industry standard, employs benchmark indexes to measure the returns to individual asset classes. An implicit assumption in this approach is that the benchmarks are investable and provide close proxies for the risk and return dynamics of their respective asset classes. While this assumption may be reasonable for large-cap U.S. equities, it is less straightforward for less-liquid asset classes, such as the high-yield segment of the fixed income market. Moreover, exhaustive empirical evaluation (presented in previous commentaries) is required to ensure that the ETFs selected properly represent each benchmark and, in turn, each asset class.

Hopefully not lost of regular readers of these pages, the Risk-Based portfolios capitalize on one of the most significant financial innovations in recent years: Exchange Traded Funds (ETFs). ETFs present the opportunity for accessing diversified, passive, low-cost exposures to a continually increasing array of asset classes. Since we achieve our asset class exposures via ETFs, our products depend critically on the ETF product space and the ability of ETFs to replicate the exposure of their respective benchmark indexes. Since the empirical methods of our STAA model the investment characteristics of the benchmark indexes, a critical step in the portfolio construction process involves monitoring and screening of the ETF product space to verify that each product offers our portfolios the desired exposure (i.e. tracks the benchmark index with sufficient precision) and is sufficiently liquid to support the scale of our portfolios. Often noted on these pages, the ETF product space has evolved extensively since introduction of the first ETF is the 1990s. Contemporary ETFs track indexes of domestic and international equity, domestic and international fixed income, real estate, commodity, currency, diversified and many other asset classes. Within these asset classes, providers introduce more granular or otherwise innovative

exposures on a regular basis. As the ETF product space expands, so does our opportunity for diversification in the risk-based products.

From the stand point of STAA, the introduction of exposures to additional, non-redundant asset classes expands the efficient frontier, offering opportunities for further diversification across asset classes and enhancing the return-to-risk possibilities in our portfolios. Thus, the continuously increasing ETF product space presents new opportunities for our portfolios, and the periodic construction of the Risk-Based portfolios presents a fine time to incorporate new asset class exposures.

During the latest portfolio review, the investment committee sought to include several new asset class exposures. Of particular interest were the preferred stock and convertible bond asset classes. After conducting extensive research, the committee determined that we were not comfortable with any of the current ETF product offerings for these asset classes. For example, the preferred stock ETFs predominantly hold shares issued by financial companies. Uncomfortable with this level of concentration in shares of financial companies, we chose not to include preferred shares in the risk-based products. Although one ETF offers a preferred stock ex-financials ETF, we felt that the conjunction of low liquidity and relatively high fees more than offset the benefits to including this exposure. This is an example of an asset class that, based on its index return characteristics, might be an intriguing addition to the fixed income portion of the Risk-Based portfolios, but one yet without a suitable ETF for achieving the exposure.

Splitting the EAFE Exposure

Over the past year, the European sovereign debt crisis has dominated headlines, guided movements for many investible markets and has been a running focus of the investment committee's attention. The output of our quantitative model and our views outside the quantitative framework have fostered a consistently bearish stance towards European equities as an asset class. Historically, as is a common approach to international equity allocation, our Risk-Based portfolios have lumped together developed market European and Asian market equities, as measured by the MSCI EAFE index. The European crisis highlights to the committee the need for a more granular developed-market non-U.S. equity exposure, one that allows for separate tactical moves between European and Asian markets. To achieve this goal, we separated the international developed equity markets exposure into separate European and Asian allocations.

But we did not stop there. When dividing the international developed markets into separate European and Asian pieces, we found that the portfolio optimization procedure favored a sizeable allocation to Asian equities. For example, the procedure suggested, for the aggressive risk-based portfolio, a 23%

allocation to international developed equity markets split between European (8%) and Asian (15%) stocks. This split is not surprising given the recent poor performance of European equities, which reduces the asset classes' appeal to the optimizer. However, we realized quickly that there exists a practical limit to this allocation. To illustrate, we considered the Vanguard MSCI Pacific ETF (VPL) for this exposure. A 15% portfolio allocation to VPL corresponds roughly to a 9.5% allocation to Japan (the VPL is approximately 62% Japan and 24% Australia exposures). Based on global market capitalization, an 8% allocation to Japan as a fraction of the equity piece is neutral. To clarify: our concern is that the 15% allocation to Asian Pacific equities through the VPL, the low-cost choice with suitable liquidity, resulted in a sizeable overweight to Japanese equities. Given our interpretation of the quantitative model's forecast for Japan, we were not comfortable with this large of an overweight.

To address this concern, we envisioned two possible remedies: redistribute a portion of this allocation or look for alternative ETF products that would produce a less-concentrated exposure. We determined the second choice is most ideal: it is in keeping with the modeling results produced by the optimization procedures and we were able to identify alternative Asian-Pacific equity ETFs to ameliorate the Japan overweight in the VPL. To this end, we next considered splitting the Asian position 50-50 between the VPL and the EEP (iShares MSCI Pacific ex-Japan Index fund). To our satisfaction, this combination results in a reduced Japan concentration to 4.65%, but at the same time, since Australia comprises 65% of the EEP, the combination produced an overweight in Australia of 6.6% relative to Australia's market neutral capitalization weight of 3.5%. After lengthy analysis and deliberation, the committee gained comfort with the allocation resulting from the 50-50 split between VPL and EEP for a number of reasons: First, the 50-50 split reduced the Japan overweight to a comfortable level; second, adhering to the allocations produced by the optimization procedures is the most defensible and logically appealing path; third, re-distributing that exposure to other equity exposures was no more appealing; and fourth this allocation is consistent with the committee's current tactical and secular views as reflected in our TAA model and the inputs to the optimization process, respectively.

An Evolving Wish List

While we have made several changes to the portfolios to reflect the current model framework and the investment committee's secular views, in some cases we deferred further changes until the ETF product space catches up with our desired allocations. For example, it is a natural extension to split the emerging markets equity exposures into more granular slices by geography. More specifically, the committee has interest in a Latin American and/or South American exposures,

separate from the bucket Emerging Market position, but at the moment the ETF product space does not offer this level of granularity. While these exposures are in part wrapped up in our considerable emerging markets exposure, we will watch closely as ETF product offerings evolve with the expectation of incorporating more granular exposures over time. We understand that specific, relevant ETFs are set to launch even this month, but it likely will take time for us to gain comfort with their tracking, size and liquidity.

Oh Canada! The 5% minimum position did not leave quite enough room for a Canada or North America—ex U.S. exposure. This implicitly forces our portfolios to a net underweight of other North American economies. That said, these markets historically are correlated highly with the U.S. markets, limiting the diversification benefits in comparison to the other product enhancements. The relatively strong correlation between the equity markets of Canada and Australia also ameliorates some of this concern.

Of course in some cases, certain ETF exposures are too granular for our product design: individual country funds exist, but the exposures are too fine given the minimum position size. Again, the committee must perpetually balance the desire to enhance the products by diversifying into new exposures against the transactions costs and practical issues associated with portfolio management.

The Cost of Diversification

The discussion highlights an important facet of our portfolio management process: minimizing transactions costs and fees. This is a particularly important consideration in the SMA framework where, unlike mutual funds that often have the luxury of rebalancing by utilizing fund flows, we concern ourselves with efficient management of the separate accounts. We recognize that every exposure we add to the portfolios increases the required number of transactions. These transactions come in the form of tactical shifts, periodic rebalancing and portfolio initiation. We must ensure that our tactical shifts are meaningful enough (constitute a significant portion of the portfolios) and are cost effective (the value added exceeds the transactions cost).

Transactions costs are both direct (commissions) and indirect (price impact). We recognize that the direct costs rise in line with the number of individual exposures, increasing the costs associated with tactical trading and periodic rebalancing. When evaluating potential new ETFs, the committee additionally considers the indirect costs associated with transacting in the securities. The liquidity characteristics of the ETF play an important role in this process. We mentioned earlier that, despite interest in the asset classes, the committee declined to add preferred stock or convertible bond ETFs to the Risk-Based portfolios. This decision was made in part by extensive study of the available

ETFs' liquidity characteristics. Among the many factors the committee considers are the average trading volume, bid-ask spread, size of the funds and various measures of the price impact of trades.

Fixed Income Updates

The results of the portfolio optimization highlight a shift entirely from U.S. Treasury securities (with the exception of the TIPS allocations) to corporate segments of the fixed income market. The key drivers of this shift are the historically low Treasury yields, combined with the relatively attractive yields in both the investment-grade and high-yield segments of the corporate-bond market. By favoring corporates over Treasuries, we recognize that corporate balance sheets remain cash rich and default rates continue to be low by historical standards. The bottom line is that we believe that duration risk is currently best rewarded within the U.S. corporate bond market.

Another important change to note is the removal of the iShares Credit Bond Fund (CFT) in favor of Vanguard Corporate Funds of various tenors (VCSH, VCIT, and VCLT). This shift results from two considerations. First, the new STAA includes the significant change of eliminating the U.S. Treasury positions and replacing it with investment-grade credit exposure. Along these lines, we want to have the flexibility to divide this sizeable allocation along the maturity spectrum. Additionally, we view the U.S. corporate bond space to be relatively attractive compared to the various other components comprising the credit funds (bonds of Supranational, Agencies, Local Authorities and Sovereign issues). For these reasons, we chose the corporate funds over the credit funds.

Additionally, the real estate position has outperformed admirably since its reintroduction during the last STAA rebalance back in 2009. We took this as an opportunity to bleed down that exposure in the risk-based products. The committee is comfortable with this move, especially in light of regulatory concerns on the horizon.

DIVERSIFICATION AND PRODUCT DESIGN

At the core of the portfolio optimization process we used to arrive at our rebalanced targets lays diversification: we seek to allocate our portfolios across different asset classes to produce portfolios containing the optimal expected return per unit of risk. It is worth noting that the risk-based product design, itself, imposes a certain amount of diversification. To illustrate, equity is generically considered to be riskier than fixed income. The Risk-Based portfolios force us to certain solutions along the MVEF since they directly specify the equity and fixed income split (e.g. 40/60, 60/40 and 80/20). In this way the products,

themselves, impose a certain amount of diversification between the two traditional major asset classes.

During the STAA process, at certain times the constraint imposed by the product design forced the optimization solutions into a corner, producing impractical allocations: scenarios that were not well diversified across equities or were too heavily concentrated in any one equity asset class. This is precisely where the ability to specify potential risk and return views and our degree of confidence in those views through the Black-Litterman framework enabled us to produce practically implementable allocations.

OPPORTUNITY FUNDS

Turning to the Risk-Based Opportunity Funds, a variety of additional opportunities and restrictions are worth highlighting. First, the changes made to the risk-based STAA carry over to the opportunity funds. One restriction, however, is the notable dearth of leveraged ETFs providing separate exposures to Developed Europe and Asia equity markets. As the product design requires that we utilize leveraged ETFs for the equity exposures, in the Opportunity Funds we were not (yet...) able to split the EAFE exposure into separate European and Asian exposures.

Turning to another asset class, real estate, we were able to add an additional leveraged exposure, which is most notable as the first use of leverage in the non-equity portion of the portfolios. Previously, the real estate exposure was unlevered (VNQ). We have replaced the VNQ, after extensive research into the liquidity and index tracking performance, with the Direxion Daily Real Estate Bull Fund (DRN). This addition frees up collateral for deployment elsewhere. Previously, the leveraged positions were concentrated on the equity side. That concentration meant that during periods where the model framework suggests underweighting the equity asset classes, less collateral is available for deployment opportunistically. Since the product design includes real estate in the non-equity asset classes, the exposure increases during times of equity underweighting, thus the leveraged position here mitigates the equity-related collateral reduction. We look forward to the addition of additional leveraged fixed income ETFs to further expand our ability to enhance returns through the use of leverage.

The Committee continually looks for opportunities to deploy the capital made available through the use of leveraged ETFs. At the moment, much of the capital is shifted to the high-yield bond sector. The combination of cash-rich corporate balance sheets, relatively low default rates and attractive spreads (by historical standards) to comparable U.S. Treasuries make this an attractive asset class. For risk management purposes, the portfolios impose a maximum of 25% allocation to high yield. With the collateral made available through leveraged fund and the

current high-yield allocation in the STAA, all tactical regimes achieve that 25% maximum allocation. Presently, the remaining collateral is split between aggregate bond exposure and gold. The committee continues to monitor developments and look for opportunities for deploying the capital produced through the use of leveraged funds in these portfolios.

CONCLUSIONS

In summary, as a result of these updates and enhancements, we believe the Risk-Based portfolios are soundly positioned on the defensive end of the risk spectrum as we head into the New Year, one marked with at least as much global macro-economic and –political uncertainty and unrest as we've experienced over the past four. Most developed economies remain, at best, on meager trends of improvement, while Europe stagnates in a quagmire the only course out of which most seem blind to see or otherwise incapable of plotting. Meantime, the developing world, when not otherwise rocked by regime change, is shouldering an enhanced burden of supporting global macroeconomic growth. Shaky, too, are those foundations.

We remain hopeful that 2012 will present a year of great opportunity: foremost for a return to healthy global growth and, in turn, for expanding investment opportunity. That said, we don't manage our portfolios based on hope...only a realistic view of potential reward for the risk we assume in our allocations. The tenuity of the current state of global capital markets and macro-economies offer Innealta and its client's the potential for great investment opportunities in the coming year. We are excited by these prospects. We are bullish on our investment strategies and agnostic on what investment exposures offer the best risk-return for our investors.

We wish all of you a grand start to 2012 and very much look forward to continuing to meet your investment needs as we progress into the New Year.

IMPORTANT INFORMATION

The information provided comes from independent sources believed reliable, but accuracy is not guaranteed and has not been independently verified. The security information, portfolio management and tactical decision process are opinions of Innealta Capital (Innealta), a division of Al Frank Asset Management, Inc. and the performance results of such recommendations are subject to risks and uncertainties. For more information about Al Frank Asset Management please visit afamcapital.com. Past performance is not a guarantee of future results.

Any investment is subject to risk. Exchange traded funds (ETFs) are subject to risks similar to those of stocks, such as market risk, and investors that have their funds invested in accordance with the portfolios may experience losses. Additionally, fixed income (bond) ETFs are subject to interest rate risk which is the risk that debt securities in a portfolio will decline in value because of increases in market interest rates. The value of an investment and the return on invested capital will fluctuate over time and, when sold or redeemed, may be worth less than its original cost. This material is not intended as and should not be used to provide investment advice and is not an offer to sell a security or a solicitation or an offer, or a recommendation, to buy a security. Investors should consult with an investment advisor to determine the appropriate investment vehicle. Investment decisions should be made based on the investor's specific financial needs and objectives, goals, time horizon and risk tolerance. All opinions and views constitute our judgments as of the date of writing and are subject to change at any time without notice.

Sector ETFs, such as Real Estate Investment Trusts ("REITs") are subject to industry concentration risk, which is the chance that stocks comprising the sector ETF will decline due to adverse developments in the respective industry.

The use of leverage (borrowed capital) by an exchange-traded fund increases the risk to the fund. The more a fund invests in leveraged instruments, the more the leverage will magnify gains or losses on those investments.

Country/Regional risk is the chance that world events such as political upheaval or natural disaster will adversely affect the value of securities issued by companies in foreign countries or regions. Country/Regional risk is especially high in emerging markets.

Emerging markets risk is that chance that stocks of companies located in emerging markets will be substantially more volatile, and substantially less liquid, than the stocks of companies located in more developed foreign markets.

Securities rated below investment grade, commonly referred to as "junk bonds", may involve greater risks than securities in higher rating categories. Junk bonds are regarded as speculative in nature, involve greater risk of default by the issuing entity, and may be subject to greater market fluctuations than higher rated fixed income securities.

Diversification does not protect against loss in declining markets.

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Innealta is an asset manager specializing in the active management of portfolios of Exchange Traded Funds. Innealta's competitive advantage is its quantitative investment strategy driven by a proprietary econometric model created by Dr. Gerald Buetow, Innealta's Chief Investment Officer. The firm's products include Tactical ETF Portfolios, a U.S. Sector Rotation Portfolio and a Country Rotation Portfolio. Innealta aims to beat appropriate benchmark performance by tactically managing portfolios utilizing a proprietary econometric model. By harnessing the benefits of ETFs, Innealta is able to provide investors with exposure to multiple asset classes and investment styles in highly liquid, low cost portfolios.

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