Still River
RETIREMENT PLANNING SOFTWARE, INC.

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Asset Allocation for a New Decade

A new approach

Let's be honest. Achieving the optimal asset allocation is not possible. In fact, asset allocation is so rife with uncertainty that we are probably fools for trying it at all – except that we have no other choice. If we have assets, they are invested somewhere, and therefore are "allocated," whether we wish them to be or not.

To produce optimal results, assets would have to be 100% allocated to the single investment that happens to outperform all others over the entire period of investment. But a strategy that tried to win this gamble would hardly be prudent. In practice, therefore, asset allocation is invariably a hedging strategy. As such, it is guaranteed to produce less than optimal results.

Since we can't predict the future, asset allocation is really a hedging strategy, and is, therefore, guaranteed to produce less than optimal results.

If the "optimal" asset allocation is not possible, what is the best that can realistically be expected? Probably this: an allocation that is *suitable* for the investor, one that gives the investor a good chance of achieving financial goals without taking unnecessary or unpalatable risks.

Just as there is no perfect asset allocation, there is no perfect asset allocation method.

If that is the goal, how can we achieve it? Just as there is no perfect asset allocation, there is no perfect asset allocation method. Each has its strengths and weaknesses. Let's look at the most common asset allocation methods and then consider a new approach – one that takes the best characteristics of existing methods and infuses a healthy dose of realism into the process.

The victories and vagaries of Modern Portfolio Theory

Modern Portfolio Theory (MPT) is the 800-pound gorilla of asset allocation. The most complex and sophisticated technique available, it was applied initially to institutional portfolios, but in more recent years has been adapted to asset allocation for individuals.

The glory of MPT is its concept of the "efficient frontier:" different portfolios embody different expectations of return vs. risk, and it is possible (in principle, at least) to identify those that provide the best investment return in exchange for any given amount of risk. Tell an MPT model

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exactly how much risk you can bear, and it will come back with a mathematically optimal portfolio. All you need in order to construct such a model (other than a PhD in math) is detailed information about the investment funds available: their rates of return, their riskiness (measured by their volatility), and how they correlate with one another.

Unfortunately, MPT has weaknesses and limitations that impair its usefulness to institutional investors and that positively cripple its ability to help individual investors. Specifically:

- Although the mathematics of MPT may be impeccable, the "garbage in, garbage out" rule still applies. Long-term historical rates of return, and correlations between investment options, are simply not available for most investment funds.
- MPT assumes not just that the future will be like the past, but that it will be exactly like the past in important details (same overall rates of return, same levels of volatility, same correlations between asset classes). One thing we can be certain of is that the future will *not* be like the past, particularly at the detail level, and often not even at the overall level.

Modern Portfolio Theory assumes not just that the future will be like the past, but that it will be exactly like the past in important details.

- MPT assumes that we can measure risk tolerance accurately, where risk tolerance means willingness to accept volatility in performance from one period to the next. All the evidence so far suggests, however, that financial risk tolerance cannot be measured with any precision at all.
- MPT is itself highly volatile. Tiny changes in assumptions about rates of return, volatility in rates of return, correlations among asset classes, or risk tolerance measurements can produce radically different "optimal" portfolios. For most people, the consequent instability of the results is at best counter-intuitive, and at worst unnerving.

The results are highly precise but wildly unreliable.

Asset allocation models built on Modern Portfolio Theory are highly precise tools that are being used in an environment of vagueness and approximation. So the results are highly "precise" but wildly unreliable, and of doubtful value to individual investors.

Monte Carlo to the rescue?

Some believe that the Monte Carlo method is a better approach to asset allocation. This technique involves randomly generating an array of scenarios in which different asset allocations can be tried out. Instead of predicting the future, we hypothesize many futures to see what works best most often.

The Monte Carlo approach has promise, but, at least in its purer forms, it also has serious problems. In particular:

- Like MPT, Monte Carlo methods rely on historical performance and volatility data. Such data is often available for such limited periods of time that future performance cannot be extrapolated realistically.
- Because the investment option that performs best under the most scenarios will perform better alone than it will when mixed with other funds, Monte Carlo methods

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have a natural tendency to recommend portfolios comprised of a single fund or investment. In addition, the single most favored option is often a high-risk one.

- Monte Carlo methods have a similar problem to MPT models in quantifying risk tolerance. A small change in risk tolerance level can lead to completely different results in the allocation.

As a tool for asset allocation, Monte Carlo analysis cannot stand alone.

As a tool for asset allocation, the Monte Carlo technique is useful, but it cannot stand alone. It needs to be part of a more comprehensive (and more comprehensible) model.

The Canned Portfolio Approach

The most common, and in some ways the best, approach is having a financial professional identify several (maybe three, maybe a dozen or more) pre-set portfolios, then determining which portfolios suit which investors. The match is based sometimes on a single criterion (usually risk tolerance or age), other times by the investor's answers to lengthy questionnaires.

This "Canned Portfolio" approach recognizes that it is futile to make broad portfolio recommendations on anything other than broad criteria. Furthermore, a well-designed set of canned portfolios can reflect human expertise that goes beyond fancy but limited mathematical models. They can reflect, for example, which markets are overpriced or underpriced, where interest rates are trending, and whether the economy is heating up or slowing down. While the canned approach looks simpler, it relies on the most sophisticated power of all: the human mind.

However, for the Canned Portfolio method to work, the portfolios themselves have to be updated frequently (daily would be nice, monthly perhaps would be acceptable). Otherwise, they become stale and generic, and in some markets wildly inappropriate. Unfortunately, this kind of updating rarely occurs.

And, it can be risky to rely completely on human judgment. As we all learned (or were reminded) in recent years, even the experts are subject to irrational exuberance. Powerful as it is, the human mind can produce deeply, sometimes fatally, fallible judgments.

Still River weighs in

Can we build a better model? We think we've done it. We call our approach the Econometric Monte Carlo (EMC) method. It incorporates some of the best of the existing techniques, and avoids some of their worst pitfalls.

By testing asset allocation against specific financial goals, we can let the investor determine where the trade-off should be: more risk, or more realistic goals?

The Econometric Monte Carlo method is based on the following principal techniques:

- ***The EMC method asks the investor to specify real financial goals:*** what are the existing fund balances, the expected fu-

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ture contributions, and the expected periodic or lump sum withdrawals (for education, retirement, bequests to heirs, or other needs)? By testing asset allocation against specific financial goals, we let the *investor* determine where the trade-off should be: more risk, or more realistic goals?

- ***The EMC method treats investment performance as an economic phenomenon***. If returns for two investments are correlated, it is rarely because of any direct relationship between the investments, but rather because both investments have similarly relationships to underlying economic factors. If we focus on the real economic relationships rather than mere mathematical correlation between funds, we can simulate the future without assuming that the past will repeat itself.

If we focus on the real economic relationships rather than mere mathematical correlation between funds, we can simulate reality without assuming that past results will simply be replicated in the future.

- ***The EMC method uses scenario testing and Monte Carlo analysis to generate a range of future economic scenarios, and evaluates the ability of different allocations to meet the investor's financial goals within an investor-specified margin of error.*** There is no need, therefore, to try to measure the investor's risk tolerance in the abstract.
- ***The EMC method also creates a variety of lifespan scenarios so that it measures a retirement fund's ability to last as long as necessary.*** The investor does not have to guess when he or she will die (or when a spouse will die); the EMC model uses actuarial methods to include mortality risks in the scenarios that are tested.
- ***When the EMC method identifies more than one allocation that can achieve the desired results, it further selects an allocation that provides higher expected returns, greater diversification, lower volatility, and lower risk of permanent loss of principal.*** The weighting of these factors is a matter of judgment, not pure mathematics, and can be adjusted over time.

The EMC model builds on the strengths of existing methods. It takes into account the analysis of long-term historical trends, relationships, and deviations from those trends and relationships, as does Modern Portfolio Theory. It uses Monte Carlo scenario-testing as one means of risk analysis. And it incorporates the human element in balancing return vs. risk factors, in testing potential outcomes against goals, and in making adjustments on the fly.

Why the EMC model is not just different, but better:

- ***Regression to the mean.*** Recent events have reminded us that the more a market or investment diverges from its long-term trend, the more it is due for a correction. Although we cannot reliably predict *when* major corrections will occur, we can predict with a high level of confidence *that* they will occur. When the old models continue to push the most recent market miracle, the EMC model gradually moves assets out of those investments – and into others that are closer to their cyclical lows.
- ***Buy low, sell high.*** Because the EMC model tends to enforce a strategy of moving out of a sector when the price goes way up, it encourages selling at a higher price than the purchase price. Allocation models built strictly on analysis of past performance are implicitly employing a "buy high, sell higher" strategy, which can produce spectacular returns at certain times, and huge losses at others.

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- ***Realistic expectations from newer investments.*** The EMC model looks at each available investment's relationship to the market and the economy as a whole. Therefore, if a certain fund has been in existence only during a bull market (or a bear market), it is not rewarded (or penalized) because it has only gone up (or down). The EMC model projects appropriate rises or falls in that fund because it is projecting rises and falls in the entire economy and the financial markets.

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- ***The many facets of "risk".*** Other mathematically sophisticated models tend to equate risk with volatility. To individual investors, risk does *not* mean volatility. It means: Will I lose my money? *and* Will I get what I'm expecting to get out of my investment? Volatility is only a part of the answer. The EMC model looks directly at the main question: How likely is it that a given allocation will allow me to meet my financial goals?

- ***Intolerant of risk tolerance.*** Most other asset allocation methods require precise measurement of risk tolerance, despite clear evidence that it can be measured only very broadly (if at all). They then have to translate this unrealistically specific risk tolerance into an allocation that supposedly reflects it. Both of these steps are suspect, if not patently invalid. The EMC model does not measure risk tolerance. It asks about specific goals, and about an investor's willingness to compromise on those goals, if necessary. Results of the analysis are compared directly to the goals.

Does the EMC method have limitations? Of course. As with other complex models, the method can be somewhat opaque to investors. Also, the EMC model does not pretend to give us a mathematically "optimal" allocation, only a "suitable" allocation. And the EMC approach remains fallible, because it incorporates some judgment factors and, most of all, because it is dealing with the future. Still, we believe that EMC's limitations are less serious than those of the alternative methods.

What have we learned?

There is no magic key to asset allocation. In the end, we all take our chances. We can help ourselves a little by using the tools (both simple and complex) that are available. The value of the tool is not necessarily related to its complexity, however, or its cost. You can get wonderful mathematical models that rely on assumptions that fly in the face of basic investment truths.

We have presented the concepts behind the Econometric Monte Carlo alternative in the hopes that it will be seen as a conceptual step forward in the search for the best possible asset allocation tools – or, at least, as a viable alternative for those who have (with reason) been dissatisfied with the existing alternatives.

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