Revisiting Risk Management

By Keith Ambachtsheer

Modern portfolio theory (MPT) posits that if investors could specify their reward/risk expectations and risk tolerance, it would become possible to identify their optimal portfolios. The Global Financial Crisis (GFC) reminded us that there is a lot more to risk management than simply applying the rules of MPT. This article identifies three real-world issues that must be resolved for risk management programs to be effective:

1. Who is at risk in our pension or endowment fund, and what kind of risk(s) must be borne?
2. How do we distinguish between long-term and shorter-term risks and the tolerances for bearing them?
3. How do we dynamically manage these exposures and explain what we are doing over time?

Does MPT Need Editing?

Some time ago, I was asked to comment on the assertion that few believe that the GFC rewrote the book on MPT, but perhaps MPT could use some editing. What started out as a few speaking notes to address this question has grown into this article. The more I’ve thought about it, the more I’m convinced that it’s our interpretation and application of MPT that needs editing, rather than MPT itself.

A brief review of MPT’s basic insights is followed by the question of whether these insights remain relevant in light of the GFC and the lessons it taught us about risk and risk management. This examination includes my sense of a growing disconnect between MPT’s strictures and the current practices of many leading pension and endowment funds. This disconnect is described in detail, and it leads to the identification of three steps many pension and endowment funds should take to reconnect their practices with MPT’s timeless principles.

MPT’s Insights

Harry Markowitz’s 1952 article “Portfolio Selection” kicked off a wave of ferment and innovation in investment and finance theory that continues to this day.1 His fundamental insight was that if investors could specify their reward/risk expectations for an investment universe, as well as their tolerance for risk-taking, a unique, optimal portfolio could be identified. A key element of this radically new way of thinking about portfolio construction was the idea that how investments co-varied with each other determined their diversification power.

Other academic thought-leaders (e.g., Black, Merton, Sharpe, Scholes, Tobin, and Treynor) took Markowitz’s basic idea and expanded it in a number of important dimensions. One such expansion was the separation theorem, which combined Markowitz’s efficient frontier of risky assets with a risk-free asset. The investment opportunity set expands as a result, allowing aggressive investors to use leverage (i.e., borrow and invest the proceeds in the risky portfolio), and more risk-averse investors to split wealth between the risky and safe investment alternatives. In this way, the all-important asset mix decision was placed into a structured reward/risk decision framework.

The next expansion followed from the question, “What if all investors do invest-ment analysis the same way using the same information?” Now the optimal risky port-folio becomes the market portfolio, with all investors holding a piece of it, while they are short or long the risk-free asset, depending on their tolerance for investment risk. In this way the efficient market hypothesis (EMH) was born, with its message that the vast majority of investors are best off passively holding some combination of the market portfolio and the risk-free asset. The commercial consequence is that index funds make most economic sense for most investors most of the time. A related implication is that price discovery can be left to a relatively small group of investment experts capable of balancing the marginal costs and benefits of investment information and its transformation into investment decisions.

The final major MPT thrust was a formal framework to apply the broad concept of “optionality” to investment and finance. The dictionary defines optionality as “the potential for making additional choices which are available only after an initial choice is made.” In the investment and finance arena, that potential translates most famously into defining and pricing various types of options. A good risk-management example is a collar option that protects against adverse downside return outcomes at the cost of giving up upside potential. Such an option clearly adds a powerful tool to the risk management tool kit.

From Theory to Practice: How Helpful is MPT?

How helpful are MPT’s insights in the real world? Enormously so, as long as the insights are kept in perspective.

Risk tolerance is a critical element of MPT and of the real world. Our ongoing challenge is to translate the idea of risk
As Simple as Possible, but No Simpler

What does Einstein’s admonition mean in practice? Three important examples come to mind. The first relates to MPT’s stricture to understand investor risk tolerance, and how to respect that understanding in the establishment of a fund’s risk policies. In a pension or endowment context, this requirement raises some very challenging questions, starting with “Who is at risk?” A series of equally challenging questions follows: questions about intergenerational fairness, guarantees, risk buffers, property rights, embedded options, liquidity requirements, and so on.

In my experience, many boards and investment committees have finessed these difficult questions with mantras such as “our liabilities are long-term, so we invest for the long term and don’t have to worry about these kinds of questions.” In my view, boards and investment committees with this attitude have crossed the line from “as simple as possible” into “too-simple” territory.

The second example relates to risk management simplification in the real world. Obviously, we can’t apply the Markowitz formula literally to universes of thousands of risky assets. So we restate the problem to something more manageable by creating asset classes (e.g., domestic equities, foreign equities, emerging market equities, private equity, real estate, high yield bonds, hedge funds, etc.), and factors (e.g., size, value, growth, momentum, volatility, liquidity, etc.). Then we put boundaries on the possible solutions by setting upper and lower limits and handing out investment mandates to multiple managers to further enhance risk diversification. Again, the question arises whether this abbreviated approach to risk management is an appropriate or inappropriate simplification of theory. And again, my view is that these approaches potentially place funds in the too-simple territory.

The third example relates to organizational competencies and design. Specifically, what kind of organizational competencies and design are required to be able to correctly draw the line between making things as simple as possible and stepping into too-simple territory? Many pension and endowment fund boards continue to underestimate the minimum internal skill/experience set required to manage critical elements such as mission, risk tolerance, investment beliefs, and dynamic implementation of investment policy through time. Once again, this problem leads to funds ending up in too-simple territory. Scale and smart in/outsourcing strategies are critical factors to getting fund organization right.

These three examples lead to action plans for fund boards that are prepared to face the reality that they may not be serving their beneficiaries as well as they could be.

Who Is at Risk?

Many boards would do their stakeholders a great service if they sat down and seriously addressed the question of who is at risk. Many important insights would come out of such a discussion. For example, if we are required to be evenhanded between the current and future generations, can we demonstrate that we are meeting that requirement? What does that requirement imply for our investment and payout policies? A simple thought-experiment demonstrates that these questions are not as easy as they are often made out to be.

Consider the following example:

A donor sets up a $1-million endowment fund in perpetuity with the intent of funding scholarships annually, starting one year from now. The scholarship and its dollar value need to be announced now. Also, the donor insists that the endowment should be managed so that it is intergenerationally fair. Two investment choices are available today: a risk-free investment that pays 2 percent each year in perpetuity, and a risky investment with an expected annual return of 4 percent and a return standard deviation of 10 percent. The questions are (1) At what dollar value should the endowment fund trustees set the scholarship? and (2) How should the $1 million be invested?

The simple answer is that the annual face value of the scholarship should be set at...
$20,000 and the $1 million should be invested in the risk-free investment. Why? Because setting the face value at $40,000 and investing the $1 million in the risky strategy would effectively involve a $20,000 wealth transfer from future scholarship recipients to the first recipient. Why is there a wealth transfer involved? Because the first recipient would be effectively guaranteed a 4-percent return in a 2-percent risk-free world. There is an even chance that the actual risky return will be less than or greater than 4 percent, but the economic values of the upside and downside are not equal. Specifically, the value of an at-the-money put to protect the downside in this example is $50,000, and the value of an at-the-money call on the upside is $30,000.

Is there a way of offering a $40,000 scholarship, investing the $1 million in the risky strategy, and being intergenerationally fair at the same time? Yes. A third-party risk underwriter is required. The original donor could be asked to play this role, the institution may have an unallocated contingency reserve as a hedge against return shortfalls in the endowment fund. The point here is that setting mutually consistent payout and investment policies in endowment funds (or pension plans) should not be based on some simplistic heuristic. Such decisions should be based on a clear understanding of how and by whom risk is being borne.

**What Is Our Risk Exposure?**

It is one thing to decide on the maximum risk an investment fund should be exposed to; it is quite another to assess what the actual exposure is. MPT offers a guide to how the question can be simplified. In MPT’s original formulation, each risky investment was defined to have two types of risk: market (beta) risk and specific (alpha) risk. Most individual investments have lots of specific risk and a modest amount of market risk. The reverse is true for well-diversified portfolios. New empirical ground continues to be covered here. The market risk concept has flowered into multiple beta exposures to such factors as growth, value, size, duration, credit, liquidity, inflation, and currency. It is also taking on more of an integrated balance sheet perspective, rather than assets-only. These are all useful improvements at the margin.

The GFC added an important new dimension to the risk-management framework. The known risks need to be considered and managed, but so do the less-known/unknown risks, especially if they have nasty tails. Understanding these risks and their economic consequences is part of the new normal for at least the larger, thought-leading pension and endowment funds. A related realization is that risk management must be a dynamic rather than a static process. Importantly, it includes understanding how and when to hedge against the normal risks as well as the less-known/unknown tail risks.

**Salient Strategic Advice and Implementation**

The reason so many pension and endowment funds have trouble putting together all the pieces is that they continue to rely heavily on outside agents, most of whom have commercial interests of their own to pursue. This outside advice can result in a fund that is underresourced on the inside and too-expensively resourced on the outside. Funds that have both scale and good governance have a competitive advantage over those with neither. Why? Because they have the internal capability to clearly understand their mission and what must be done to achieve it. Many continue to outsource some activities, but they have successfully insourced the critical ones, including risk management.2

Smaller funds don’t have this option. They do have the option, however, to engage fiduciary managers with scale, offering an integrated package of strategic advice and implementation services. This likely will serve their beneficiaries better than continuing with the underresourced inside/too-expensive outside model.

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**Endnotes**

2. For example, the Ontario Teachers’ Pension Plan employs 50 people in its risk management group.