Asset allocation for non-profits: A fiduciary’s guidebook

Introduction by Bob Collie, FIA
Chief Research Strategist, Americas Institutional
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Introduction

The nonprofit sector comprises over 1 million organizations and $3 trillion of assets in the U.S. alone\(^1\). Those organizations provide tens of billions of dollars a year in research funding, grants, scholarships and other direct support for thousands of good causes. This is a sector whose mission is never far from top of mind.

The success of the nonprofit sector is supported not only by donations and bequests, but also by investment programs designed to protect and grow those assets. Investment practices have moved a long way since courts drew up restrictive "legal lists" in the immediate aftermath of the South Sea Bubble of 1720 and, today, nonprofit organizations are among the world's investment leaders, with fingers in every market pie around the world.

At the heart of any sound investment program is a strategic asset allocation policy. While it can be difficult to define precisely the line between asset allocation policy and its implementation, in general terms asset allocation involves determining how much of an investment portfolio is to be directed to certain broad asset categories—so much to equities, so much to fixed income, so much to real estate, and so on—while implementation then takes that broad policy and puts the money to work.

Helping our institutional clients with their strategic asset allocation policies has been a core part of Russell's service for almost 40 years. And while the underlying question addressed by asset allocation policy has not changed over the years, the approach and the clarity of the picture we can draw have advanced greatly.

This guide sets out the primary principles that drive the asset allocation decision. It consists mainly of papers that have already been published by Russell—most of them within the past four years—but it opens with two previously unpublished pieces. The first is a history of asset allocation as seen through the eyes of Don Ezra. Don is able to tell the story of the development of best practices from firsthand experience, and his paper tracks the changes and the papers that have marked milestones along the path to where we are today—papers discussing practices which may have been superseded by current practices (and which have not been included in this compendium), but which form an important part of how we got where we are.

The other new paper asks the question: Why do the strategic asset allocation policies of nonprofit organizations differ from one another? In a compilation such as this, it is helpful to establish that context up front: to make explicit the factors—risk tolerance, investment beliefs and organizational considerations—that drive the asset allocation decision.

\(^1\) Data from the Urban Institute National Center for Charitable Statistics as of 2010. These figures include public charities and private foundations but exclude other tax-exempt organizations such as credit unions, civic leagues and so on.
Several papers are devoted to the question of spending policy and its interaction with asset allocation. The relationship between spending and asset allocation is a two-way relationship; each decision is affected by the other.

Other papers cover a range of associated topics: inflation; liquidity; portfolio construction and the question of alternative investments; social responsibility; responding to volatility; currency exposure. The compilation closes with papers devoted to two thorny elements of the modeling that lies behind most asset allocation decisions: the question of modeling liquidity, and the interactions between asset classes.

No compilation of papers about asset allocation could ever be complete; there will always be new perspectives to consider or new developments that demand response. So while this is not quite a definitive guide to asset allocation for nonprofit organizations—we cannot claim it is “Everything You Need to Know About . . .”—we hope you will find it to be a solid step in that direction.

Thank you for reading.
Once upon a time

In one sense, the development of asset allocation practices among non-profit organizations is a story of the gradual loosening of regulatory shackles. Another way to tell of the evolution in practices is to look at the development of asset allocation theory and how it has been applied in practice by leading institutional investors across the years. It is this perspective which is taken in the paper that follows. It is a firsthand experience related by Don Ezra, who played a central role in the emergence of best practices at Russell and indeed across the investment industry. Don’s a good observer; George Russell has said of him that “His unique skill is to spot the incoming blips on the horizon, and identify which ones are the important ideas and which are safe to ignore.”

This story of the historical development of asset allocation theory helps to set the context for the rest of this guidebook. It tells us how we got to where we are, suggests a sense of order in today’s world and reminds us that best practice will continue to advance and evolve.

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Once upon a time…
A historical overview of the development of asset allocation for non-profit organizations

The pioneers

Once upon a time there were no principles for portfolio construction. A portfolio was simply a collection of securities, each selected individually for its expected return.

Harry Markowitz introduced two notions in 1952 [16]. One was that the expected return had a range of uncertainty, and this range might be different for each security. The other was that securities didn’t all move together. Therefore diversification could reduce the downside potential of a portfolio to less than the average of the individual security downsides. Risk and covariance: the foundations of modern portfolio theory.

William Sharpe said: “Markowitz came along, and there was light [3].” Sharpe himself brought a defining clarity to that light in 1963, with the observation that the stock market itself is a factor common to all stocks, and greatly influences the returns of each stock [18]. The relationship between the volatility of a stock and the volatility of the market he termed beta. And from his work emerged the Capital Asset Pricing Model, the notions of diversifiable and non-diversifiable risk—and the notion of an asset class.

Obviously today these concepts have been greatly refined. Mean-variance efficiency now itself sounds like an ancient concept. Yet there is still no standard definition of an asset class—nor will there ever be a precise one. An asset class is a definition of convenience rather than of precision. It simply means a group of assets that have similar characteristics and similar reactions to factors that move markets. Define factors broadly or narrowly, and you have broadly or narrowly defined asset classes. Thus equities could be global or local, large cap or small cap, value or growth, defensive or dynamic, publicly or privately traded—and still leave room for several variations.

Despite the vagueness, there is enough common understanding about asset classes—particularly the three main publicly traded ones that are generally called equities, bonds and cash-equivalents—that the phrase asset allocation has a pretty uniform meaning, regardless of the definition of the asset classes from which the investor will choose.

Over time, these ideas came to shape the views of the defined benefit pension system, a system that grew rapidly from 1950 onwards and whose notion of fiduciary responsibility was codified in 1974 in the Employee Retirement Income Security Act (ERISA), which also essentially enshrined modern portfolio theory as the basis for pension fund investing, and led to the rise of consultants, with Russell (at that time called Frank Russell Company) a prominent pioneer.

What few realize is that the key legislation for non-profits, and the recognition of the total return as the fundamental investment criterion (rather than a separation into income and capital protection), came before ERISA.
1969 was the pivotal year for non-profits. Just as ERISA arose from pension fund activities that disturbed the public perception, and legislators felt that they needed to establish an acceptable set of rules, so too the restrictions on foundations contained in the Tax Reform Act of 1969 arose from much criticism of the unrestricted acts of private foundations. In addition, the Ford Foundation commissioned two studies [5; 12] that were released in 1969 on the investment of endowments. These concluded that, contrary to general perception, personal trust investment laws did not apply to endowments, and recommended that total returns should be the fundamental investment goal. Eventually these thoughts led to the 1972 Uniform Management of Institutional Funds Act (UMIFA) and the 1994 Uniform Prudent Investor Act, subsequently consolidated in most states in a Uniform Prudent Management of Institutional Funds Act (UPMIFA).

The early days of asset allocation
At first consultants mainly researched the ways in which money managers made their decisions, so that their clients could compare the managers and select the ones they considered the most skillful. It was only much later that the importance of asset allocation policy emerged. Managers initially were given the entire responsibility for the fund, including that of asset allocation. Since performance measurement had already emerged as important (pioneered by Peter Dietz, Russell’s first head of research, even before he joined Russell), [9] it made sense that the results achieved by managers were measured and compared.

For managers, this empowered the conventional wisdom that each should hold an allocation not too far from what the others held. This meant that differences in fund returns reflected the managers’ decisions on market timing and security selection. And it gradually emerged that the average allocation across funds stabilized at roughly 60% in equities and 40% in bonds and cash. The expression 60/40 itself became a code-word for pension fund allocations. I remember one wit telling me, “It doesn’t matter what the pension question is, the answer is always 60/40!”

Gradually consultants started doing studies for their pension fund clients that attempted to quantify the amount of risk implicit in 60/40. Funds could then satisfy themselves that there was no other allocation that left them feeling more comfortable. I joined the consulting profession in Canada in the first half of the 1970s and was surprised to see how these studies were done. In the British actuarial tradition, I understood that assets and liabilities were equally important. But I found that in North America, managers and actuaries didn’t talk much to each other; and consultants spoke only to the managers, not to the actuaries.

Asset allocation principles for non-profits were initially based on asset-only considerations, because non-profits don’t have explicit liabilities. Eventually this much greater freedom allowed non-profits to lead the way in taking a different direction from pension funds. More on that score later.

The importance of asset allocation policy
Once these institutions saw the possible consequences, they started (hesitantly at first) to select policies that were comfortable for them, regardless of what other investors held. In so doing, they took back the responsibility for the policy from the managers, and rather than hiring balanced fund managers, they could hire specialists. But that takes the story in a different direction.

If investors had different policies, how important was the policy decision? The pioneering paper on this aspect was written by Brinson, Hood and Beebower (BHB) in 1986 [2]. They looked at a number of pension funds (but of course the principles applied just as
much to non-profits) and found that they had different returns and different volatilities. BHB examined the volatilities of the funds’ returns (not the returns themselves—a subject that is still hugely misunderstood today), and said that asset allocation policy explained roughly 94% of the average fund’s volatility, market timing (or tactical changes in allocation) less than 2% and security selection differences less than 5%. Instantly their paper became a classic—as it deserved to be, for the first-ever measurements of an important aspect. But the mantra became “asset allocation policy is responsible for 94% of a fund’s return.”

Some of us liked the approach, but were uncomfortable with their methodology. They measured the impact of market timing by comparing the actual allocations held with the policy allocation: fair enough. They measured the impact of security selection by comparing the actual securities held with the passive alternatives: fair enough. But in measuring the impact of asset allocation policy, they didn’t make a comparison with a neutral or naïve policy, such as the average policy held by all funds. Instead, their neutral policy was effectively to place the fund’s money under a mattress. So Chris Hensel, John Ilkiw and I finally published, in 1990, a corresponding study using two different points of departure [13]. One was of course the average of all funds’ allocations (that was our naïve allocation); the other (somewhat ahead of its time) was the minimum risk portfolio for the plan’s liabilities, that is, the nearest matching portfolio available.

What we found was that the minimum risk portfolio explained very little of a fund’s return variance. Virtually all of variance was explained by the naïve allocation (which today we would characterize as the decision to mismatch the assets relative to the liabilities); less than 1% was explained by the actual policy held by the fund (in today’s terms, the specific degree of mismatching). In other words, taking the average amount of policy risk was a big step; customizing the risk stance had hardly any impact—at least in those days, when most funds’ policies were very similar.

Years later, in 2000 and again in 2010, Roger Ibbotson resolved the whole issue by looking not only at volatility but also at return, and saying that the answer you use depends on the question you are asking [14]. Our papers (and others) were effectively asking different questions. I like Ibbotson’s analysis!

In any event, today the whole premise of asset allocation has changed, in two ways that I will outline near the end of this piece.

What about uncertainties in the inputs to asset allocation studies?

Garbage in, garbage out: a well-known principle. It is very relevant to asset allocation studies, since the results are sensitive to the inputs. Today we recognize that there is not just risk (in the sense that outcomes are unknown, and we model them by assuming some distribution of possible outcomes and some parameters in those distributions). There is also pure uncertainty, in the sense that we really don’t know what the models and parameters ought to be. Today, therefore, we are much more cautious about making predictions, and we talk of fat tails, and so on.

In the early days, before the current appreciation of risk, the area we all wanted to understand better was: how sensitive are the results to errors in specifying the parameters? And so Vijay Chopra and Bill Ziemba did a study and in 1991 published some fascinating results, in a series of three papers. These are still relevant today, I think, because you still have to choose inputs, regardless of how sophisticated your approach: there are no natural inputs to be found. Here I’ll mention only their first paper [6].
Consider mean-variance optimization. It requires inputs for expected returns, variances and covariances. Suppose an input is wrongly estimated. How damaging does that turn out to be? Are errors in each of the three kinds of input equally damaging?

To measure the damage, they used what is called cash equivalents. A cash equivalent is the amount of cash that would give as much utility to the investor as a risky portfolio. (And therefore it depends on the investor’s risk tolerance. Of course, they used a 60/40 investor as their benchmark. Well, strictly speaking their investor had a risk tolerance of 50—close enough to the same thing.) A cash equivalent is obviously smaller than the size of a risky portfolio.

Suppose you make an error in an expected return input. Then you may think you’re choosing an optimal allocation, but obviously it’s sub-optimal because your inputs are wrong. What’s the loss in utility caused by the error? And what’s the reduction in the cash equivalent?

Summarizing their work, here’s the answer. For a 60/40 investor, errors in expected returns are roughly 10 times as significant as errors in variances, and roughly 20 times as significant as errors in covariances.

Their two other papers in the series dealt with near-optimal mean-variance portfolios and with massaging inputs to mean-variance exercises.

Since then the notion of an optimizer also being an error-maximizer has become well known. (This means that whenever you make errors in your inputs, the optimizer selects a portfolio that maximizes the impact of your original error, and makes you regret it hugely.) Richard Michaud in 1998 published an excellent book on how to make the efficient frontier itself a statistical variable rather than a cleanly defined curve [17]. But I like to think that Russell’s papers pre-dated one aspect of it by close to 10 years.

There’s uncertainty, and then there’s more uncertainty

Having dealt with the impact of errors in the modeling basis, we really weren’t home yet. There are publicly traded assets, like the traditional asset classes, and then there are illiquid assets which are traded infrequently. And that means that their valuation in between trades is subjective rather than market-based. And in turn that means that their returns are based on those subjective estimates. And so we are even less sure about those asset classes than we are about the traditional asset classes.

Yet they all have to be modeled together, in selecting an asset allocation policy. And both intuition and experience tell us that the illiquidity premium, combined with the lower volatility that comes from infrequent trading, will favor those illiquid asset classes in mean-variance optimization. And (yes, this is an inevitable series of steps) since an optimizer is an error-maximizer, we will end up holding too much in those asset classes, and will experience regret.

The traditional way to deal with this issue was to limit the maximum exposure to these asset classes. To what extent? Well, frankly, to whatever extent the investor felt comfortable with. That’s an arbitrary and unsatisfactory approach. Surely we can do better?

Yes, wrote John Ilkiw and Steve Murray in 2002, capturing an approach that Russell had been developing over the previous decade [15]. Use a two-step process.

Start by developing an asset allocation policy to broad, liquid asset classes using robust inputs (well, as robust as we can make them). Within the context of the allocation established in this first stage, consider replacing some of the broad asset class exposures by exposure to investments whose future performance is forecast with less confidence. For example, private real estate, private equity and hedge funds.
This two-stage process is more satisfactory for two reasons. First, investors understand
exactly why they expect Stage II asset classes to outperform Stage I asset classes;
it’s not all mixed together in a magical answer. Second, this improved understanding
focuses investors on the factors most critical to realizing their Stage II expectations:
manager selection, portfolio construction and risk management.

Words of wisdom, even today.

Multi-period asset allocation: mean-variance is too restrictive
In 1997 David Cariño and Andy Turner published a paper explaining a technique that
overcame two of the most serious limitations of standard mean-variance optimization [4].

One limitation is that there is implicitly assumed to be a single time horizon. In other
words, you set the allocation, and examine the results at the end of the period. There’s
no allowance for rebalancing in the interim, or for changing your allocation if the interim
experience is particularly favorable or unfavorable—and in practice at least one of
those is exactly what institutional investors do. So Cariño and Turner explicitly used a
technique that permitted multiple intermediate points, at each of which the allocation
decision could be revisited in a pre-specified framework.

The other limitation is that risk is measured symmetrically. In other words, any departure,
whether upward or downward, from the expected path is deemed to be bad. In practice,
of course, an upward departure is just fine, and it’s only a shortfall that hurts. So Cariño
and Turner used “penalized shortfall” as their downside risk measure, the shortfall being
the directly measured component and the penalty function attached to various levels of
shortfall being a reflection of the risk tolerance of the investor.

Actually Cariño and Turner introduced a third feature. With symmetry gone from the
risk function, there was no need for symmetrical return distributions. So they permitted
asymmetrical distributions too—and in turn that permitted the use of options in the
decision framework.

They called their model MAAM—the multi-period asset allocation model. Yes, ma’am,
this was a big advance conceptually. The paper arose from pioneering work they had
done with an insurance company, for which they were awarded a 1993 Franz Edelman
Award for achievement in operations research.

The human element: don’t bail out!
In all of this the same decision process is assumed. We describe the problem, create
inputs, run the model, and use a formula to define the investor’s risk tolerance, thus
identifying the most appropriate of all the feasible allocations. A beautiful theory—but
one that is more mechanical than the behavior of most investors.

I remember being invited to contribute reflections to the 20th anniversary meeting of
the Institute for Quantitative Research in Finance (colloquially known as the Q Group)
in 1986. One point I made is that the weakest link in the optimization chain is the
assessment of risk tolerance. The human element has remained a fascinating subject
for me. In 2007 I assisted Bob Collie in writing a piece we called “Resist the Amygdala!”,
explaining many of the behavioral impacts on institutional decision-making [8]. So
it’s fitting that I now draw attention to a piece by Ernie Ankrim in 1995 [1], exhorting
investors to stay the course. It is one of my favorite pieces.

Ernie wrote at a time when the equity market had reached an all-time high—not exactly
the time when you’d think an exhortation would be necessary. But he anticipated that
the next serious decline would cause committees to doubt their commitment to equities.
And he maintained (quite correctly, as I think we all recognize) that the best strategy for responding to market adjustments is developed, not in the frantic pressure of a market decline, but in the confident calm of a market advance. He explained the value of a disciplined investment philosophy, drawing on the past to make his points, and particularly showing the cost of bailing out.

Later, at a Russell conference, he used the need for discipline to develop an analogy of the consultant as a personal trainer: being there to help the reluctant investor to do what he or she knows is right, but may temporarily lack the will-power to do. I have used Ernie's analogy many times since I first heard it. It is a timeless truth.

**Alternatives and risk management**

David Swensen, the Chief Investment Officer for Yale University, published a book in 2000 [19] that explained the approach that he and his board had taken for many years, leading to a return stream that was far superior to what most other institutions had achieved. At the risk of over-simplifying his principles, the two I remember most powerfully are a heavy reliance on private equity and other so-called alternative asset classes, and an inclination to passive (and much smaller) exposure to the traditional institutional asset classes. Both of these flew in the face of what was then common wisdom; but it's difficult to argue with success, particularly when the reasons are as clearly explained as in Swenson's book. Essentially: doing what is unconventional gives you a great competitive advantage. And struggling to add value through active management is a negative-sum game, after fees, that isn't worth the effort, unless you have access to "incredibly highly-qualified professionals". In addition, although non-profits want to be able to preserve the real (that is, inflation-adjusted) value of the support they are providing to their various causes, they don't have a defined liability, and this gives them much greater flexibility than a defined benefit pension fund has.

The “Yale approach” was much debated, found to contain wisdom, and has been the direction in which both non-profits and pension funds moved. While this contributed to illiquidity problems during the global financial crisis, it remains true that exposure to alternatives remains the driving force for change among the largest funds today.

The second major change also followed from the global financial crisis.

Investors discovered that cherished inputs into their asset allocation calculations, such as the normal distribution of asset class returns and the constancy of correlations, no longer held under the extreme capital market conditions that they encountered. In practice, distributions had fat tails, meaning that extreme outcomes occurred with much greater frequency than the models predicted. And correlations were not only not constant, but had fat tails too [7]; they rose to almost +1, the theoretical maximum possible, doing away with a presumed source of risk protection.

Much study revealed that asset classes are not fundamental entities. They are themselves each a collection of exposures to different return drivers; and when return drivers that are common to multiple asset classes turn out to be the dominant ones in any period, then the asset classes move together, to a greater extent than previously believed possible.

And so today attention among the most sophisticated funds is turning to return drivers, and the fund’s aggregate exposure to each type of return driver. Risk management is becoming the name of the game, and asset allocation, though important, is now seen as only one aspect of risk management.
Other aspects, along the way

In this historical perspective I have deliberately chosen to focus on a few important issues rather than say: “And then we published XYZ in which we said ….”

But as you can imagine, there were many other aspects that we wrote about.

- There were case studies and reviews of current practice: I think particularly of John Ilkiw in Canada and Robert Ross in the UK.
- There were numerous papers explaining the characteristics of specific asset classes.
- And also on specific issues of implementation.
- We produced several pieces on endowments and foundations, applying the same principles as for DB funds but recognizing the different mind-set and different legislation that applies to not-for-profit organizations. We even considered whether, over time, the asset allocation policies of DB plans and of endowments and foundations might converge. (In a word, no.)
- In particular, we studied the impact of treating a non-profit entity’s spending policy as if it were a liability, and examined history to see if the typical “5% annual real return” goal had ever been feasible, in practice [11].
- And of course more recently we have written about the issues facing individual investors, both in the accumulation stage and in decumulation.

Even before all of that, in the years 1986-1988 we had the privilege of working with Sharpe as he created Sharpe-Russell Research, to provide research and consultancy on asset allocation to a select group of Russell’s pension fund and foundation clients. I was Russell’s designated contact, and those years were both great fun and enormously instructive.

Conclusion

I am so pleased that, following the terrific reception among our clients of our compendium of Russell’s writing over the years on risk management, we have now decided to do the same thing on asset allocation. But on asset allocation our output has been far more voluminous, so we can’t possibly publish it all. It seems a shame, though, to simply bypass a huge chunk of it. The compromise is this historical overview of the development of the profession’s thinking on the subject and of Russell’s early contribution to it. It has been my privilege to write this personal review. I have been amused to remember how new some of those ideas seemed at the time. Happy days!

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Dimensions of difference in nonprofit investing

That investors are different from one another is often taken for granted. But while bold generalizations such as “every nonprofit organization is unique” may be true at some level, they do not get us very far in identifying the meaningful differences, or in casting light on how those differences lead to different investment choices.

So the paper that follows examines where the differences lie, and asks: “Why do the asset allocations of nonprofit organizations differ from one another?” We find that those reasons generally fall into three categories: differences in risk tolerance, differences in investment beliefs and differences in organizational considerations.
Dimensions of difference in nonprofit investing

Endowments, foundations and other nonprofit organizations based in the U.S. account for some $3 trillion in endowment and other investment assets. The returns earned on those assets are an important source of funding for thousands of programs, supporting goals related to education, health, social services and any number of other good causes.

For a variety of reasons, not all nonprofit organizations go about earning those returns in the same way, and the asset allocations they adopt differ. It is that variety of reasons that is the subject of this note.

There is, in practice, no single “endowment model”

Nonprofit organizations generally do not follow the same investment approaches taken by their counterparts in the retirement world. A discussion of why the asset allocation strategies of nonprofit organizations differ from those of pension plans is provided by Ezra (2007) which highlights, for example, the different objectives of the two sectors (with pensions being more focused on well-defined liabilities and nonprofits tending to place greater emphasis on diversification) but also acknowledges the influence of culture and history in shaping investment behavior.

Hence, people now speak of the “endowment model,” which refers to a strategy of seeking returns from a wide range of sources, including significant exposure to illiquid or other alternative strategies beyond the traditional institutional mainstream of listed equities and investment-grade fixed income securities.

It would be inaccurate, however, to characterize nonprofit organizations as having adopted en masse either a single philosophy or a single approach. For example, the 2011 NACUBO-Commonfund Study of Endowments finds that asset allocation varies materially for large organizations compared to small.

Size is not the only way in which organizations differ. While nonprofit organizations generally differ from each other less than the nonprofit sector as a whole differs from the typical pension plan in terms of objectives, regulation, culture and history, significant differences do nonetheless exist.

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1 A pension plan knows what it must pay in the future, when, and to whom. In practice, most pension plans do not currently have enough assets set aside to be sure of meeting these known commitments. Over time, the shortfall will need to be made up by additional contributions from the plan sponsor. Hence the strong focus on liabilities in the investment policies of that sector. In contrast, the typical endowment or foundation has far greater flexibility in determining what it will do with its money; it would be unusual for more than a small portion of the corpus to be committed at any point in time.
How much risk to take? A question of both capacity and appetite

The relationship between risk and return is central to investment. A part of an investment portfolio's return is simply compensation for the deferral of consumption. But to earn more than the risk-free rate, investors must take some form of risk. Thus, just about every nonprofit organization takes some investment risk and explicitly or implicitly targets a return above the risk-free rate. Some organizations will adopt a higher return target than others, and hence will choose to take more risk.

There are at least two distinct considerations that might drive differences here: one is the capacity of an organization to tolerate risk, and the other is its willingness to do so. The capacity to tolerate risk is affected by, among other things, the flexibility of an organization's spending program. The interaction of investment decisions and spending decisions is explored in Murray (2000). If, for example, a foundation has multi-year spending commitments that cannot easily be cut back, then that organization would be less able to tolerate investment volatility than one whose spending can more easily be adjusted from year to year.

New assets (for example, those flowing from fund-raising activity) can also affect risk tolerance. New assets can serve as a cushion to protect spending commitments from the direct impact of variations in investment returns. For organizations aiming for intergenerational equity, the sharing of investment risk and return between current and future recipients of distributions is an important component of both spending policy and investment policy. See Murray (2000) and Chapter 3 of Swenson (2009) for further thoughts on this point.

Even if two organizations have the same structural capacity to take risk, they may still make different choices. A brief look at the history of trust law serves to illustrate the spectrum of choice.

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2 The risk-free rate might be proxied by, for example, the return on cash or short-dated Treasury bills. Historically, this return has run slightly above the rate of inflation. At the present time, it does not appear to be even that high; the return available on a 90-day T-bill as of July 17, 2012, is around 0.10%—more than 1.5% below the current CPI growth rate—and the real yields on 5-year Treasury Inflation-Protected Securities are likewise below zero, at –1.16%. Source: U.S Department of the Treasury.

3 For organizations aiming for intergenerational equity, the sharing of investment risk and return between current and future recipients of distributions is an important component of both spending policy and investment policy.
Over the years, there has been significant evolution in trust law as regards investment risk. The prevailing attitude was dominated for centuries by a definition of prudence built on legal lists of what the courts considered to be suitable investments—an attitude whose origins lie in the impact on trust funds of the bursting of the South Sea Bubble in 1720. These legal lists were designed to guard against loss of capital, and thus included nothing that would be considered speculative. This approach, if it continued to prevail today, would preclude any trust from investing in equities or, indeed, in anything but the highest-quality fixed income securities. Speculative investments would automatically be regarded as imprudent.

A greater tolerance for risk is possible under the concept of the “prudent man,” which can be traced back to Justice Samuel Putnam’s famous statement in 1830: “All that can be required of a trustee to invest is that he shall conduct himself faithfully and exercise sound discretion. He is to observe how men of prudence, discretion and intelligence manage their own affairs, not in regard to speculation, but in regard to the permanent disposition of their funds… Do what you will, the capital is at hazard.”

The prudent man rule did not mean an immediate or total shift away from the legal list approach; it was widely adopted by states only in the mid-twentieth century, and it still left open the question of what exactly a prudent man would actually do. Certain investments were still treated as presumptively imprudent, including non-dividend-paying stocks and bonds trading at a material discount to their par value. Nonetheless, this rule offers somewhat greater freedom for a trust fund to take risk, should it choose to do so.

Another step toward greater flexibility was taken in 1972, when the National Conference of Commissioners on Uniform State Laws (NCCUSL) approved the Uniform Management of Institutional Funds Act (UMIFA). UMIFA came about, at least in part, as a result of two studies commissioned by the Ford Foundation in the 1960s: “The law and the lore of endowment funds,” by William L. Cary and Craig B. Bright, and “Managing educational endowments,” by Robert Barker. Each report argued that the current laws did not best serve endowments’ interests. Among the key elements of UMIFA is a shift from judging the prudence of each investment in isolation to taking a portfolio-wide view—a shift that explicitly recognizes that diversification is, in itself, a valuable tool in risk management.

The Uniform Prudent Investor Act (UPIA), which applies to trustees of trusts, was approved by the NCCUSL in 1994. UPIA continued the evolution of the prudent investor rule with a greater emphasis on diversification and by moving from a focus on the avoidance of speculation to a requirement to set risk and return objectives which are “reasonably suited to the trust.”

UMIFA was superseded in 2006 by the Uniform Prudent Management of Institutional Funds Act (UPMIFA), which was designed in part to explicitly apply to all charities the prudent investor standard set out in UPIA. As of the date of this writing, laws based on UPMIFA have been adopted in all U.S. states except Pennsylvania.

These shifts in attitude toward the duties of trustees and nonprofit boards opened the door to the very broad-based investment approach described in, for example, David Swensen’s influential “Pioneering Portfolio Management.” That book lays out the philosophy and approach adopted by Swensen and his team in their highly successful management of the endowment of Yale University.

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4 This brief history is largely based on Schanzenbach and Sitkoff (2008) and Langbein (1996), to which the interested reader should turn for more detail.
The “endowment model” can, then, be seen as a relatively recent development. A range of strategies is now open to nonprofit investors, and it is up to each organization to decide the extent to which using the freedom to take risk in pursuit of higher returns is prudent and appropriate. For example, the official comment released with UPIA explicitly notes that “a trust whose main purpose is to support an elderly widow of modest means will have a lower risk tolerance than a trust to accumulate for a young scion of great wealth.” Thus, the developments of the past few decades have opened up a wider spectrum of approaches and created scope for greater differences in strategy, depending on the circumstances of each institution.

Choices in risk-taking will reflect, among other things, an organization’s culture; its relationship with stakeholders; its organizational documents (such as the trust agreement or corporate documents); donor restrictions; and the investor’s beliefs regarding the rewards available for risk-taking, a subject to which I will turn in the next section.

Which risks to take? Actions should follow beliefs

Risk takes many forms. For that reason, it is necessary to think about the various components of risk, and not to treat risk management as being a one-dimensional exercise. Investors can and do differ in the beliefs they hold, and hence in the kinds of risk they choose to take.

Many types of risk carry an expected reward, although not all do. Default risk on fixed income securities, for example, tends to be rewarded; i.e., the expected returns on riskier fixed income securities are generally higher than those on less-risky securities, even after actual defaults are taken into account. This should not be a surprise; given the choice, the typical investor will prefer the lower-risk security if it has the same expected return as the higher-risk security, and that preference will result in prices moving until buyers perceive adequate compensation for risk to be available.

Likewise, equities have consistently outperformed fixed income securities over most time periods and are generally expected to continue to do so in the future. Once again, this can be attributed to the greater volatility and uncertainty of the returns associated with equities, which ought to cause investors to avoid them unless a commensurately higher expected return is believed to be available. Private equity, meanwhile, is not only more uncertain in its outcome than listed equity investment, it is also less liquid, and more burdensome for the investor; for each of these characteristics, investors should expect to see some extra reward before choosing to invest. Once again, supply and demand considerations ought therefore to lead to higher expected returns.

However, not every form of risk carries an extra reward. For example, exposure to foreign currency introduces risk for an investor. Following the logic of the last two paragraphs, one might suppose that a U.S.-based investor ought to require a return premium before choosing to take on exposure to, say, the Australian dollar. However, that same logic would lead to the conclusion that an Australian investor should require a return premium before choosing to invest in the U.S. dollar. It cannot be true both ways; the exchange of assets between the two investors cannot generate expected positive returns for both, even though it can introduce additional risk for both. So currency risk cannot carry an expected reward for all investors.

6 Official comment to Section 2(b) of the Uniform Prudent Investor Act.

7 In practice, this type of exposure usually comes about as a side-effect of a decision to invest internationally. In that case, a small reward—a saving of the price of currency hedging—is available for retaining that exposure. I have ignored that here in order to keep the illustration simple.

8 A more common example of risk that does not have an expected positive return associated with it is the purchase of a lottery ticket, which typically returns on average 30-50¢ on the dollar before tax. In this case, purchasers are in effect treating the extremely skewed distribution of possible returns as a good risk, a risk they are willing to pay for rather than demand compensation in order to take it.
These are simply a few examples of the many possible beliefs about the rewards associated with certain forms of risk, beliefs that not everybody will subscribe to equally. Some beliefs are widely held, others less so. Where beliefs differ among investors, the divergences may lead to different asset allocation policies. For example, allocations to hedge funds differ significantly across organizations. To a small extent, this may be due to variations in risk tolerance; the greater cause of these differences, however, is most likely different levels of confidence in the return prospects of these funds, and the extent to which these are believed to make worthwhile the fees and oversight required.

A major area of differences in belief is the question of the timing of exposures. Even if most investors agree that corporate-issued fixed income should tend to outperform Treasury debt, the extent to which it is likely to do so clearly varies substantially over time; for example, the difference in yield between a 10-year AA corporate bond and a 10-year Treasury was around 1% throughout 2005, but greater than 5% in October 2008. Other sources of return premium—the liquidity premium, the equity risk premium, and so on—are likewise variable over time (although most are harder to measure than the corporate bond spread). On occasion, some risk premia may even become negative. So even if there is general consensus about the long-term characteristics of an asset class, investors will at times take sharply different views about its current attractiveness.

Indeed, moving for a moment slightly away from the strategic policy question with which this paper is primarily concerned, the benefit of making timing decisions at all is another area of difference in belief, and hence in practice. Timing is unquestionably difficult, and many investors prefer to avoid any attempt to incorporate opportunistic timing into their programs. For others, it is the major component of the investment strategy, either in actively managed broad multi-asset structures or within specific elements of their portfolio, such as tactical trading hedge funds. There is a whole spectrum of positions that can be taken between the two extremes.

I will not attempt to list all of the ways in which nonprofit organizations might differ from each other in their investment beliefs. The important point here is simply that, in many cases, different beliefs should and do lead to different asset allocation policies.

In practice, the connection between investor beliefs and investor actions is not always as strong as it might be. Turner (2012) addresses common areas of apparent divergence between beliefs and actions, such as whether it is absolute returns or benchmark-relative or peer-relative returns that matter most, or whether reporting should concentrate primarily on backward-looking or forward-looking metrics. Reviewing from time to time the beliefs implied by an investment program is well worthwhile, as is periodically considering whether those implied beliefs are indeed the beliefs you actually hold.

Organizational considerations

Our third and final broad area of difference lies in the nature of the nonprofit organizations themselves, and limitations or constraints such as the regulations and tax rules under which they operate, the resources and expertise that are available to apply to the investment program, and the mission and the history of the organization.

As mentioned above, direct regulatory constraints on specific investments have largely been removed for all trust funds, but distinctions in IRS treatment of different types of nonprofit investors do still exist: most notably, non-operating private foundations are required to spend at least 5% of their assets each year (or be subject to tax

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9 5% of the average of the market value over the previous tax year, with some subtleties described in, for example, Astro (2003).
penalties), while no such requirement exists for other organizations, such as community foundations, public charities, universities, and so on. Indeed, some organizations can be deemed to have acted imprudently if they spend too much; some states, for example, deem spending more than 7% of assets to be presumed as imprudent. Since investment policy will be influenced by spending policy, this regulatory and tax backdrop can lead to differences in investment policy.

In practice, a greater source of difference probably lies in peer group effects. Organizations are aware of what their peers are doing, and to some extent they tend to use their peers’ results as unofficial benchmarks. Peer groups can establish a norm. Hence an Ivy League endowment fund that did not follow a similar strategy to that of Yale or Harvard could find itself on the back foot, defending itself from critics for not holding—for example—oil and gas partnerships in its portfolio; it is unlikely that such a criticism would be made if those others did not exist as points of comparison. Thus, if different nonprofit organizations look to different peer groups, or are judged by others as having different peer groups, that can lead to differences in asset allocation. I should note here that, while a peer group can serve as a check on what is reasonable and is consonant with the normal interpretation of “prudent investor” requirements, the extent of peer group influence on investor choices is probably greater than it should be.

Size is clearly important in determining investment policy. Indeed, data such as that cited earlier from NACUBO imply that this may be the single most important dimension of difference between nonprofit organizations. It matters so much not only because size affects an organization’s ability to successfully implement some strategies, but also because it affects both the willingness and the ability of investors to pursue complex or resource-intensive strategies such as private equity or options-based programs. For smaller investors, some investment choices can be either prohibitively expensive, impossible to diversify, or simply unavailable.

Liquidity can also be a constraint on strategy. Other things being equal, illiquid investments can be expected to carry a return premium over liquid, but every organization needs a certain amount of liquidity to operate. The required amount of liquid assets varies; what may be an adequate degree of liquidity for one program could leave another dangerously exposed to the possibility of a cash squeeze in the wrong circumstances.

Organizations differ in these and many other ways: donor-specified conditions can affect, significantly in some cases, both spending policy and investment policy; history can cast a long shadow and prove an important, although often subconscious, source of influence; the organization may have policies regarding responsible investment; public profiles can differ markedly. Any of these characteristics can lead to differences in asset allocation policy.

These differences will remain

There are at least three reasons that nonprofit organizations’ differ in their asset allocation policies: different risk tolerances; different investment beliefs; and different organizational considerations, such as size, regulation and peer group effects. Many of these differences will persist in the future, and hence we should expect that asset allocation policies will continue to differ.
REFERENCES


Balancing investment and spending decisions for endowments and foundations

The next few papers in this guidebook address spending policy. Spending policy and asset allocation policy are the two main mechanisms by which fiduciaries can respond to fluctuations in financial markets as they pursue their objectives: preserving (and growing) purchasing power; providing stable support for the organization’s mission; and properly balancing the needs of current and future generations. Ideally, these policies are integrated and based on clear goals.

The paper that follows—first published in 2000—uses two simple case studies to illustrate the process of establishing goals and using those goals to formulate clear policies.
Balancing investment and spending decisions for endowments and foundations

Introduction

Although federal requirements differ for foundations and endowments, the two types of funds typically face a common issue: how to support the desired level of spending while maintaining or building the fund base. This can be difficult, because a sustainable spending policy depends on the fund’s ability to amass additional funds in a predictable manner, and the two potential sources of funding—contributions and portfolio returns—are less than predictable. In addition, high levels of spending may require aggressive investment strategies, but these strategies may in turn lead to greater uncertainty in investment returns and thus make a spending policy less sustainable.

Given these uncertainties, foundation and endowment boards need to carefully coordinate their overall fund goals with spending and investment decisions. In the US, independent and corporate foundations must meet the minimum level of spending required by the IRS (approximately 5 percent of assets). Beyond this, however, goals and strategies must be tailored to the individual characteristics of each fund. This paper provides a framework through which managers of foundations and endowments can understand the relationship between investment and spending decisions. Two fictitious but realistic cases are used to illustrate the setting of goals and to provide an understanding of the framework for analyzing investment and spending strategies in order to achieve the goals.

Setting goals

In order to develop a successful investment and spending strategy, a board needs to start with an understanding regarding the word “successful.” Strategies that lead to successful outcomes for one organization may not be the same strategies for other organizations. A clear statement of goals is required.

Goals provide a statement of what the organization strives for, not a guarantee of achievement. Successfully fulfilling the goals will depend on careful control of both spending policy and investment strategy.

1 The IRS requires, aside from slight administrative expenses, that the foundation on average, over rolling four-year periods spend 5 percent of the prior year’s assets. For purposes of this discussion, we will assume morerestrictively that 5 percent must be spent every year. For community and public foundations and endowments, the spending pattern is not restricted by the IRS.
GOAL CATEGORIES
Goals typically fall into three categories. These are listed below along with representative goal statements.

Spending pattern—that spending should:
- Be exactly 5 percent of total assets, or
- Be at least 5 percent of total assets and should not decrease on a year to year basis, or
- Increase by the rate of inflation each year.

Growth of fund assets—that fund assets should:
- Remain above zero at all times, or
- Not decrease, after accounting for spending; or
- Not decrease, after accounting for spending, but ignoring contributions, or
- Increase by 3 percent in real terms each year, after accounting for spending, but ignoring contributions.

Portfolio returns—that returns should be:
- At least 8 percent, or
- At least as good as a 60 percent equity/40 percent fixed income portfolio, or
- At least 6 percent in real terms.

Of course, these goals are not independent. Clearly maintaining high levels of spending is at odds with aggressive growth of assets. Often the same goal can be stated in more than one way. For example, a goal of increasing fund assets by 3 percent every year after 5 percent spending corresponds to a portfolio return requirement.

In general, we discourage our clients from using “portfolio returns” goals. We find (and clients typically agree) that the primary goals are to manage the spending patterns and the size of the asset base. While portfolio returns are a mechanism for achieving these other goals, they are not usually the goal in and of themselves.

Additional qualifications to the fund statements may include pre-tax and after-tax issues.

PREDICTABILITY
In addition to setting goals, fund boards should determine exactly how much uncertainty they are willing to accept in achieving them. A common misperception is to assume that matching the average portfolio return and average spending rate will guarantee success of the fund—that certain spending outflow can be covered with highly uncertain asset growth driven by volatile capital markets.

Given the volatility of capital markets, we cannot expect portfolio returns to cover spending every single year. Is it acceptable if they do so “on average”? Or, do we want to make sure that the goal is achieved “90 percent of the time”? Or perhaps we are concerned that “at least 80 percent of the time we are within 10 percent of achieving the goal, and at least 90 percent of the time we are within 20 percent of achieving the goal.” Each of these measures leads to slightly different conclusions.
Framework for analyzing strategies

Foundation and endowment boards can meet their goals through three main levers: contributions, spending and asset allocation. Contributions, if any, are arguably not under the control of a board, although they are often a key element of the organization’s success. Here, we focus on spending and asset allocation strategy.

It is important to understand consequences of spending and asset allocation policies across a wide range of market environments. For most funds, choosing an optimal asset allocation and spending strategy by evaluating tens of thousands of market scenarios provides a detailed understanding of the range of outcomes that the board can expect. Evaluating strategies across multi-year market scenarios allows great flexibility in the types of spending policies that can be considered and provides the ability to emphasize different goals over different investment horizons. An additional advantage is that it opens up the analysis to a broad range of forecasting methodologies from the very simple to the extremely sophisticated.2

In limited cases, a much simpler analysis—single period mean-variance—focusing on portfolio return and volatility can be used, but we would not advise this for most client studies. This approach has the significant advantage of requiring very little in the way of computational resources, but it is limited to a naïve forecasting method and does not directly allow the analysis of spending pattern goals or growth of fund assets goals. Only portfolio return goals can be directly incorporated. Perhaps more critically, it is also unable to address multi-year planning situations effectively. The planner must either suppose that all years within the horizon are identical or some other simplifying assumption. The impact of different possible paths into the future cannot be easily addressed.

For both foundations and endowments, evolution of the fund can be stated very simply: the asset base increases with portfolio returns and contributions, and decreases with spending. We assume here that contributions and spending occur at the beginning of each year, but it would be easy to modify this assumption to spread contributions and spending throughout the year or to place them at the end of the year.

Mathematically, these relationships can be stated as

\[
\text{Fund value(year } t+1) = \text{Fund value(year } t) \times (1+\text{portfolio return(year } t \text{ to } t+1)) - S_{\text{pending(year } t+1)} + C_{\text{contributions(year } t+1)}
\]

In these terms, Spending(year t+1) is usually compared to Fund Value(year t). Spending(year t+1) and Portfolio Return(year t to t+1) are the levers that the board can use to direct the evolution of Fund Value.3 For many foundations the Spending variable may be limited by IRS regulation or by the fund’s charter, but this basic relationship will still describe the dynamics of the fund.

Two examples illustrate the process of goal setting and the choice of spending and investment policy. The first shows how differing levels of certainty required in investment returns can result in very different strategies. The second illustrates the problem with expecting “average” returns to fund “average” spending.

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2 Forecast assumptions for the examples in this paper are shown in the appendix.

3 Portfolio return is controlled by directing the choice of asset allocation strategy.
Example 1: An endowment with contributions

Children's Charities, an IRS qualified charitable organization with $1,000,000 in assets and program spending of $40,000 this year, has been informed that as a result of settled litigation, they will be the beneficiaries of eight annual payments of $80,000. Payments will begin immediately. Excited about this unexpected windfall, the Children’s Charities board of directors set two goals: Grow their asset base to $2,000,000 by the end of the eight-year period and annually increase absolute spending on children’s programs. They would like to understand what level of spending increase could be maintained without missing the $2,000,000 target.

The chart below shows the probability of achieving the asset base target for different rates of increased spending under several investment strategies.

Figure 1: Probability of accumulating $2,000,000 by year 8

Based on this information, three board members state their conclusions:

- Board Member 1: “A 40 percent equity allocation is best because this provides the best chance of meeting the accumulation goal while providing moderate (3 percent) growth of spending.”
- Board Member 2: “An 80 percent equity exposure is preferred because this allows rapid (10 percent) spending growth and the best chance of satisfying the asset accumulation goal.”
- Board Member 3: “None of these strategies are satisfactory, and the goals should be reconsidered before an allocation strategy is set.”

None of these conclusions is wrong. Each simply represents a different opinion. The conclusion a particular board reaches will depend upon its interpretation of what it means to hit the target. No combination guarantees that the target will be met in all circumstances. Thus, agreement upon fund goals is necessary before making conclusions.

In a more detailed analysis, this endowment is likely to choose an allocation strategy that evolves over time. It may be advantageous for the investment policy during the next eight years to differ from the policy eight years hence. In fact, a policy that gradually changes throughout the eight-year horizon is almost certain to lead to a better outcome than a static policy.4 A more thorough analysis could identify better policies for the

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4 Optimal dynamic strategies by their very nature are guaranteed to be better than static strategies. Not all boards are able to implement dynamic strategies, however.
endowment that transition from the accumulation phase of the next eight years to the maintenance phase that will follow. Without a proper framework the fund evolution cannot be properly understood.

Example 2: A foundation dealing with the effects of inflation

The Beth Erickson Memorial Foundation has an asset base of $50,000,000 and does not anticipate future additions to this amount through outside contributions. The foundation provides financial assistance to college students. Terms of the foundation’s charter require that once a student has been granted assistance, that assistance continues throughout the student’s period of schooling. In its history the board has never elected to allow the number of scholarships to decrease, i.e., for each graduating senior, a new freshman is funded. Consequently, for each year’s budget it is important to maintain program spending after adjusting for inflation at least at the level of the previous year. In dollar terms spending may exceed the level of the previous year, but only in response to the IRS requirement that the foundation spend 5 percent of its assets each year. The goal of the board is to ensure that the size of the asset base keeps up with inflation over time. It is assumed that over time education-related inflation exceeds general inflation, but not by as much as has recently been observed. A 1 percent education premium is assumed for purposes of analysis.

The chart below shows the probability that foundation assets have increased at least as much as inflation (plus the 1 percent education premium) over different time horizons and for several investment strategies.

Projected simply over 10 years, these results look promising, but we can see that over the long run the board is likely to be in for some disappointment if it insists on keeping up with inflation and on a non-decreasing spending strategy. It may be appropriate to offer some portion of the scholarships on a single year basis (perhaps to students nearing graduation) and to limit the number of scholarships in years that follow poor market returns. Managing the number of single year scholarships may enable the board to adhere to the terms of the foundation’s charter while at the same time retaining flexibility in the spending policy.

Figure 2: Probability that asset growth meets or exceeds inflation
It is interesting to note that an 80 percent equity/20 percent fixed income portfolio on average returns 11.3 percent. Inflation averages 5 percent (including the 1 percent education premium) and spending is approximately 5 percent. We would expect portfolio returns to cover the required spending on average through time. Why does this relationship fail?

The foundation falls further behind its asset base growth goals when the portfolio returns are poor than it gains on the asset base growth goals when returns are good. In scenarios of poor returns, spending represents more than 5 percent of the portfolio and in scenarios of good returns it never falls below 5 percent of the portfolio. On average, spending must be something larger than 5 percent.

This point is further illustrated by considering a simple two-year projection. For clarity, we have ignored the inflation component.

**TABLE 1**

**Case 1:** Portfolio returns for the first two years are 27.8% and 16.8%.

\[
\text{Fund Value}(1) = \text{Fund Value}(0) \times (1+0.278) - 5\% \text{ Fund Value}(0) = 1.228 \times \text{Fund Value}(0)
\]

\[
\text{Fund Value}(2) = \text{Fund Value}(1) \times (1+0.168) - \max(5\% \text{ Fund Value}(1), 5\% \text{ Fund Value}(0)) = 1.373 \times \text{Fund Value}(0)
\]

Portfolio annual growth = 17.2%.

**TABLE 2**

**Case 2:** Portfolio returns for the first two years are –5.2% and 5.8%.

\[
\text{Fund Value}(1) = \text{Fund Value}(0) \times (1-0.052) - 5\% \text{ Fund Value}(0) = 0.898 \times \text{Fund Value}(0)
\]

\[
\text{Fund Value}(2) = \text{Fund Value}(1) \times (1+0.058) - \max(5\% \text{ Fund Value}(1), 5\% \text{ Fund Value}(0)) - 0.05 \times \text{Fund Value}(0) = 0.90 \times \text{Fund Value}(0)
\]

Portfolio annual growth = -5.1%.

Based on the forecast assumptions, Case 1 and Case 2 are equally likely because the outcomes are an equal number of standard deviations from the expected outcome. With an average portfolio return of 11.3 percent, the asset base is projected to grow at 11.3 percent - 5.0 percent = 6.3 percent before inflation, but on average the asset base grows by less than 6.1 percent for these example scenarios.

In Case 2, the amount spent in the second year is 5 percent of Wealth(0) because this is a larger number than 5 percent of Wealth(1). Spending as a portion of assets is higher in Case 2 because of bad market outcomes. A sequence of more than a single

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5 The average annual growth is calculated as (17.2% - 5.1%)/2 = 6.05%.
bad outcome in a row drives down the portfolio value even more quickly. As time goes on, we eventually expect a sequence of two (or three, or four) bad outcomes. It is very difficult to recover from such a string of bad luck without adjusting spending policy.

These examples serve to underscore the importance of analyzing a wide range of possible outcomes (the endowment example considers 25,000 future scenarios, and the foundation example considers 10,000 future scenarios). A deterministic projection of the foundation’s situation would have predicted smooth sailing with an 80 percent equity/20 percent bond portfolio because, in expected value terms, the returns on this portfolio exceed the 5% inflation + 5% spending hurdle.

Conclusions

For planners of foundation and endowment assets, it is important not only to understand fund dynamics, but also to state clear and measurable goals for the fund. The statement of fund goals should include not only the item being targeted (i.e., “Increase fund assets”), but also a quantitative measure of success or failure (“Increase fund assets to $2,000,000 in eight years”).

A framework that directly addresses the contribution, spending and asset allocation levers available to the board in managing the fund provides a clear relationship between board decisions and fund success. A framework that considers optimal policies over a wide range of multi-year market outcomes allows planners to understand and project fund behavior in both favorable and unfavorable markets. It reveals the tradeoffs between competing fund goals and allows managers of foundations and endowments to have confidence in their decisions.

Appendix

For purposes of the examples below, we assume that asset returns follow a lognormal distribution with the following parameters.

Table 1A: Asset return assumptions

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic stocks</td>
<td>12.0%</td>
<td>16.0%</td>
<td>1.00</td>
</tr>
<tr>
<td>Foreign stocks</td>
<td>12.0%</td>
<td>17.0%</td>
<td>0.51</td>
</tr>
<tr>
<td>Bonds</td>
<td>8.5%</td>
<td>6.5%</td>
<td>0.34</td>
</tr>
<tr>
<td>Cash</td>
<td>5.0%</td>
<td>1.0%</td>
<td>-0.08</td>
</tr>
<tr>
<td>Inflation</td>
<td>4.0%</td>
<td>1.0%</td>
<td>-0.19</td>
</tr>
</tbody>
</table>
Non-profit spending rules

Some organizations aim for intergenerational equity—for example, an educational endowment designed to fund a professorship in perpetuity aims to provide a comparable educational benefit to each successive wave of new scholars. Others—for example, a foundation devoted to finding a cure for a specific disease—seek to achieve the maximum good over a shorter time frame. Similarly, different organizations may place different degrees of emphasis on the importance of maintaining a stable asset value or a stable level of disbursement.

This paper provides an overview of two fundamental trade-offs that must be made in the selection of a spending policy: the trade-off between sustainability and predictability, and the trade-off between the present and the future. The more a spending policy varies with fluctuations in asset value, the more sustainable it is—but the less predictable it is. And the higher the payout rate, the greater the benefit for the current generation of beneficiaries—but at the price of a potential smaller benefit for future generations.
Non-profit spending rules

As non-profit organizations seek to balance the needs of their constituents with the desire to maintain and expand support for their communities in the future, spending policy plays a key role in managing current distributions and in planning for future ones. Spending rules are ultimately designed to advance the mission of an organization and its multiple goals. In addition to current and future beneficiaries who must share overall market uncertainty, boards, investment committees, managers and staff will also have an interest in maintaining sustainable and predictable payouts.

In the early years, prior to enactment of the Uniform Management of Institutional Funds Act (UMIFA) in 1972, spending from endowments was often linked to the income generated by holdings and did not include appreciation in the value of the assets themselves. UMIFA changed this practice, and a focus on the total returns of an investment pool has been adapted by both endowed and non-endowed organizations.

Regulatory developments

Spending based solely on income is in fact discouraged by UMIFA, and this has been reinforced with recent regulatory guidelines. The Uniform Prudent Management of Institutional Funds Act (UPMIFA) legislation adopted by most states\(^1\) in more recent years specifically focuses on total return, treating income-based spending as an exception rather than the standard; but many endowments continue to operate with income-only guidelines outlined in the gift agreements under which they were originally established. UPMIFA serves as a default in cases where a gift agreement is unavailable and also outlines a process by which organizations (which are often composed of many individual accounts which must be separately evaluated) can seek to modify terms of the original agreement.

Under the earlier legislation, UMIFA, protecting an endowment’s corpus often had the effect of limiting or preventing spending for new funds facing down markets and declines in asset values. UPMIFA provides relief for some underwater organizations seeking to distribute assets in pursuit of their charitable purposes, even though such action may lead to invasion of the historical endowed value of assets.

For non-endowed pools of charitable assets, there is typically greater freedom in determining spending amounts. Public charities generally have wide latitude in setting spending rates, though private non-operating foundations must satisfy a 5% minimum-

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\(^1\) At the time of this writing, only Pennsylvania, Mississippi and Puerto Rico have yet to enact a version of UPMIFA. Legislation has been introduced in Mississippi.
spending requirement. Those organizations with discretion to establish spending rates lower than 5% must also recognize that setting the rate too low may discourage future donors in their desire to support current community needs.

Common spending rules
According to the NACUBO-Commonfund Study of Endowments 2010 survey, the majority of organizations (a mix of endowed and non-endowed pools) determine spending as being a portion of assets rather than the level of interest, dividends, royalties, rents and leases generated by investments. As indicated in Exhibit 1, the majority of educational and charitable organizations determine spending based on a percentage of assets, though the weighting of current and past assets may vary. Averaging assets over 3 or 5 years is a common choice.

Exhibit 1: Percentage using rule

<table>
<thead>
<tr>
<th>Percentage of moving average assets</th>
<th>75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of beginning market value</td>
<td>4%</td>
</tr>
<tr>
<td>Hybrid rule (Yale/Stanford)</td>
<td>7%</td>
</tr>
<tr>
<td>Spend all current income</td>
<td>4%</td>
</tr>
<tr>
<td>Select rate each year</td>
<td>11%</td>
</tr>
</tbody>
</table>

Values do not add to 100% due to rounding
Source: NACUBO-Commonfund Study of Endowments 2010 survey

Spending rules can be thought of in two components: a spending rate or level, and the structure of the rule. A common example would be to spend 4% of 3-year average assets; 4% reflects the spending rate, and 3-year averaging is a description of the structure of the rule. An alternative rule is to spend $4M annually, adjusting for inflation. $4M provides a statement of the spending level, and the annual inflation adjustments describe the structure. Generally speaking, the spending rate or spending level needs to be coordinated with overall average portfolio returns to ensure that spending and growth are well balanced. Spending more than generated returns on an ongoing basis is a recipe for a decline in assets, regardless of the number of years of asset averaging and other features of the spending rule. The structure of the spending rule provides a mechanism for the risk sharing between interested stakeholders and provides a means of managing the stability of spending from year to year.

Exhibit 2: Weighting of current and past asset values for the first three rules

<table>
<thead>
<tr>
<th>Current Assets</th>
<th>1 Year Ago</th>
<th>2 Years Ago</th>
<th>3 Years Ago</th>
<th>4 Years Ago</th>
<th>5 Years Ago</th>
<th>6 Years Ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Year Avg.</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Year Avg.</td>
<td>33%</td>
<td>33%</td>
<td>33%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Year Avg.</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Yale (80%)*</td>
<td>20%</td>
<td>16%</td>
<td>12.8%</td>
<td>10.2%</td>
<td>8.2%</td>
<td>6.6%</td>
</tr>
<tr>
<td>7 Year Avg.</td>
<td>14.3%</td>
<td>14.3%</td>
<td>14.3%</td>
<td>14.3%</td>
<td>14.3%</td>
<td>14.3%</td>
</tr>
</tbody>
</table>

* The Yale Rule has two components: the first is last year’s spending, increased by inflation; and the second is the spending rate to be applied to current assets. Only the former, 80% in this example, affects the weighting for asset averaging. Because of the uncertainty of year-to-year inflation, its relatively minor impact has been ignored in providing these representative weights.

Source: Russell Investments
Exhibit 2 outlines the weighting of current and past asset values for the first three rules, which account for the vast majority of responses in the NACUBO-Commonfund Study of Endowments 2010 survey. As indicated, the Yale Rule is a variation of the rules that use a simple average of current and past assets.

The spending rules we most commonly encounter include the spending rate with asset averaging over some number of years. We also frequently work with organizations that employ alternative rules that define spending more or less independently of the current level of assets. These alternative rules include: spending a fixed amount, with or without escalation; spending only income; spending all portfolio return above some level (often inflation); or spending a portion of the historic value of assets. We have also evaluated rules that provide differential treatment to above-water and underwater accounts. Depending on the details, these rules can have features of rules that are defined in terms of a spending rate and of rules that focus on other characteristics as well.

Ensuring sustainability

While future beneficiaries are primarily interested in rapid growth of assets, they typically favor a narrower range of possible future account balances, rather than a broader one. This is the classic “expected return versus volatility” trade-off faced by many long-term investors. The interests of current beneficiaries are somewhat more nuanced. In addition to desiring larger rather than smaller outlays, they also desire predictability in the level of expenditure. Large variations in year-over-year spending can be disruptive to the programs and services they seek to provide. Both current and future beneficiaries have an interest in the sustainability of the spending program. Spending rules that are unsustainable in unfavorable markets serve neither group’s interests.

Exhibit 3 summarizes spending rule features based on the preferences of current and future beneficiaries.

<table>
<thead>
<tr>
<th>Favored by future beneficiaries</th>
<th>Higher future spending</th>
<th>Sustainability</th>
<th>Higher current spending</th>
<th>Predictability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower rate</td>
<td>Lower rate</td>
<td>Higher rate*</td>
<td>Longer averaging**</td>
<td></td>
</tr>
<tr>
<td>Lower level</td>
<td>% of asset rules</td>
<td>Higher level</td>
<td>Fixed amount</td>
<td></td>
</tr>
<tr>
<td>Return-linked</td>
<td>Above- / under-water</td>
<td></td>
<td>Inflation-indexed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tied to historic value</td>
<td></td>
</tr>
</tbody>
</table>

* Spending rates above 5% are difficult to maintain without erosion of the inflation-adjusted value of assets.

** Averaging beyond 5 years appears to provide limited improvements to predictability of the distributed amount.

Source: Russell Investments

Future beneficiaries are better off if the asset base grows larger and can support greater future inflation-adjusted payouts. This can be accomplished by lowering overall current spending to allow assets to accumulate at a more rapid pace. Depending on the...
selected rule, lower overall spending is accomplished either through a lower spending rate or (for rules that are not based on a spending rate) lower overall spending levels. Rules that shield the growth of assets from the variability of market returns are also to the benefit of future payout recipients.

Future beneficiaries also favor sustainable spending and might want to avoid rules that could fail in unfavorable market environments. For example, fixed dollar amount rules could lead to a lack of sustainability if the asset base falls and causes the fixed spending to become 10% or 20% of the assets, or a similar unsustainable level. In reality, such a situation would probably lead the decision makers to reduce spending, which would cause current beneficiaries to suffer; thus, boards and investment committees have an interest in sustainability as well.

In addition to sustainability, current beneficiaries are interested in high current distributions, and this is a consequence of high spending rates or overall spending levels. Of course, if rates are too high, they become unsustainable, so a balance must be maintained. Current beneficiaries also desire predictability. If the amount they receive varies from year to year, this may make it difficult for them to set budgets and plan for stable programs and services for the community. Predictability can be improved through longer averaging periods (up to a point) or by using a rule that defines the spending as a dollar amount rather than as a percentage of assets. Fixed-amount spending with or without inflation indexing is one way to accomplish this. Rules that focus on the historic value of the assets tend to be buffered from market variability and can be thought of as close cousins to fixed-amount spending. Depending on the details, they would tend to provide predictability.

Amidst the details and variations of spending rules, it is most critical to recognize that the spending rate or spending level needs to be coordinated with overall average portfolio returns to ensure that spending and growth are well balanced. The structure of the spending rule provides a mechanism for the risk sharing between interested stakeholders. In addition to current and future beneficiaries who must share overall market uncertainty, boards, investment committees, managers and staff will also have an interest in the sustainability and predictability of distributed amounts.

Conclusions

Spending rules can be structured in ways that seek to ensure intergenerational fairness, to maximize current spending, to encourage stable distributions from year to year or to achieve other goals. In other research\(^2\), we have found that private foundations which are subject to the 5% spending requirement, and which usually don’t have access to ongoing donations, are likely to have difficulty maintaining an inflation-adjusted assets value. There is little leeway for spending rule variations within mandated spending requirements, and our recommendation is to base distributions on the regulatory requirements.

For other charitable organizations, a 3.5% to 4.5% spending rate serves as a target that can reasonably support, from investment returns, the inflation-adjusted value of assets while providing sustainable payouts for current programs. Organizations with a predictable stream of donations must decide whether those inflows are best deployed immediately through increased spending or invested for future growth.

Asset averaging can lend meaningful smoothing to payouts, but smoothing beyond five years has limited effect. Organizations that target spending by use of specific dollar amounts are encouraged to carefully track asset growth to avoid situations in which spending becomes an unsustainable percentage of the investment pool.

Understanding the effects of spending policies for endowments and foundations

There are a number of possible approaches to designing a spending policy—some simple, some more complex. A policy might be based on current asset value; trailing-average asset value; past spending; income from assets; portfolio returns; or combinations of these. The right spending policy can play a significant role in an institution’s ability to achieve its objectives.

In this paper, Steve Murray and Yuan-An Fan describe the most common approaches to setting a spending policy and compare their implications for long-term spending patterns and the effects on likely future asset levels.
Understanding the effects of spending policies for endowments and foundations

Introduction

Endowments and foundations exist to provide ongoing support for charitable purposes. Board members and administrators must carefully manage the balance between current needs and future needs. The perpetual struggle is to decide how much of the available assets should be granted to those worthy causes currently knocking at the door and what portion should be invested for the future.

In the broadest view, the financial mechanics of an endowment or foundation has three parts: funds flow into the asset base through donations, grants, bequests and other sources of revenue; assets are depleted by expenses and as distributions are made to support programs and other worthwhile endeavors; and the remainder is invested for the future. Each of these three components, revenues, distributions and investment, is critical to the long-term success of the organization. While careful management in all of these areas is critical, our current purpose is to investigate the influence of an organization's spending policy on its ability to fulfill its mission.

An organization's spending policy is an important tool used to guide the charitable spending/investment tradeoff. While in any given year a foundation may opt to distribute either more or less than the amount suggested by the policy, the policy serves to broadly encapsulate the intended spending pattern. A variety of policies are actively used by US endowments and foundations, and indeed non-profit organizations in other countries as well. The policies fall into a small number of categories, each with distinct advantages and disadvantages. The purpose of this paper is to evaluate some of the consequences of various policies and to understand which might best serve endowments and foundations with goals regarding the accumulation of assets and the stream of distributions through time.

A typical endowment or foundation portfolio embeds significant uncertainty regarding the accumulation of market returns. There is no free lunch. In aspiring to higher levels of market return, increases in portfolio volatility cannot be avoided. That uncertainty must impact the ongoing management of the assets either through greater volatility in the fund value or in less predictable spending patterns. It is widely recognized that the spending policy can be used to manage the tradeoff between the current spending versus the amount of future spending. Less well known but equally important is that the policy can also be designed to manage the tradeoff between certainty/uncertainty in the growth of the asset base versus certainty/uncertainty in the stream of distributions. We find that some policies are more effective at managing these tradeoffs than others.

We start off by examining the role of a spending policy in the management of an endowment or foundation, followed by a discussion of the types of spending policies most frequently encountered. Using a simple case study, we compare a number of distribution policies based on long-term spending patterns and asset base evolution, as
well as shorter-term performance measures that might cause a board member to lose sleep at night. We also touch briefly on the effects of ongoing donations and the impact that asset allocation decisions can have on fund success.

**Importance of a spending policy**

The rigor with which a spending policy is established and monitored varies across the universe of endowments and foundations. While private foundations often adhere to the IRS-imposed 5% spending rules, public charities, community foundations, universities, hospitals, museums, etc. are less-encumbered by IRS requirements.

We have worked with many clients who simply spend whatever amount seems right. This may result from a policy of distributing funds to every worthwhile opportunity that is proposed or, at the other extreme, it may be because the organization has locked itself into promises of ongoing support for currently-supported programs.

Aside from satisfying the tax authorities, is there a need for a formal spending policy? What advantage does a policy provide?

The use of a formal spending policy does have certain advantages. To list a few:

- A formal policy imposes fiscal discipline.
- It is an important component of any audit trail providing a context to understand drivers of past success or failure.
- Any organization (as well as its beneficiaries) planning for long-term success will require an understanding of the funds available in the future for program and grant-making support. Such planning cannot be carried out in the absence of a spending projection.
- A formal policy accompanied by documented compliance may be the best defense for decision makers with the focus on fiduciary responsibility found in legislation such as the Uniform Management of Institutional Funds Act and the Sarbanes-Oxley Act of 2002 aimed at public companies.

A poorly understood or implemented policy may be worse than no policy at all. In more than one analysis we have found clients who are able to articulate a clear and well-defined policy, but as the conversation continued, it became clear that spending also occurs from discretionary accounts. In one case these extra disbursements transformed a 5% spending rule into a 12% spending rule. Lord (2003) summarizes this and other common errors.

For planning purposes as well as basic fiduciary record keeping, it is appropriate to have a well-documented policy for determining the organization’s spending levels. The need to make exceptions should not be viewed as a failure, but if exceptions become the dominant trend there may be a need to modify the basic rule. A number of distribution policies are in common use and we next turn to a more careful examination of their features.

**The components of a spending policy**

It is helpful to think of a policy as having two components: a structure or method for calculating the distribution (that is, what information influences the spending decision, e.g., average asset levels over the past years) and parameters to calibrate the amount distributed (the specifics of the calculation, e.g., 4% of assets averaged over the last 3 years). The structure controls the methodology within which the calculation is performed and the parameters provide the details.
Some examples are helpful:

In the US, private foundations are required to distribute 5% of their assets annually for charitable purposes. The structure is straightforward: distributions are a percentage of assets. The 5% parameter could in principal be shifted up or down without modifying the structure.

Some endowments distribute 4% of an average asset value, usually employing a 3 year window. This structure also sets distributions as a percentage of assets, but employs smoothed asset values. As in several of the structures we encounter, the parameters necessary to implement the rule require more than a single number. In this case, 4% and 3 years are the relevant pieces of information.

The Yale University Endowment has followed a guideline that sets spending at 70% of the previous year’s level adjusted for inflation plus 1.5% of current assets (stated as 30% of 5% of current assets). The structure, sometimes referred to as Tobin’s method, induces exponential smoothing of past asset values, and in the case of Yale, uses parameters of 70%, 30% and 5%.

There is nothing magical about the structure/parameter dichotomy that we have described and we should not be too rigid in interpreting spending policies in this manner. However, this representation of the policy does help to draw a distinction between the form of the spending policy (structure) and the details of the calculation (parameters).

Clearly the dominant parameter for most distribution policies is the spending rate. Not surprisingly, this parameter is more important in describing the consequences of a distribution policy than whether assets are smoothed over 3 years or 4 or whether distributions are determined using 70% or 60% of the previous year’s spending in Tobin’s rule. For most of this discussion we could simply drop the term “parameter” and plug in the term “spending rate.”

The distinction between structure and parameters (spending rate) closely parallels the two investment behaviors that endowments and foundations seek to manage: the rate drives the balance between current and future spending and the structure controls whether market (and fund raising) volatility is most strongly felt by the beneficiaries or by the fund asset base as the foundation proceeds into the future.

According to a recent National Association of College and University Business Officers (NACUBO) study, almost 13.3% of the largest educational institutions determine an appropriate distribution rate on a year-by-year basis. This can only loosely be considered a policy, at least in a formal sense. The NACUBO study also reported that 84% of the participants use a spending rule that represents a predetermined percentage of the moving average of the endowment wealth. The most common rate used is 5%. Other distribution rules used are to increase the distribution by a predetermined percentage each year, or to increase the spending by the inflation rate. For foundations, the Commonfund Benchmarks Study—Foundation Report (2003) lists spending policies by size and type of the 230 private and community foundations. Tables 1 and 2 summarize the findings of the two studies.
The spending policies that we encounter are typically constructed from a few common elements:

INFLATION-INDEXING: spending increases with inflation to provide a comparable level of support for charitable purposes in future years.

PORTFOLIO RETURN LINKAGE: spending is tied to portfolio performance over some period of time (often just a single year).

CORRIDORS: year-over-year increases and/or decreases in spending (either in percentage or absolute terms) are limited.

Table 1: Spending rules selected by colleges and universities in NACUBO study (2002)

<table>
<thead>
<tr>
<th>Spending rule</th>
<th>Total endowments</th>
<th>Over $1 Billion</th>
<th>$501 Million-$1 Billion</th>
<th>$101-$500 Million</th>
<th>$51 - $100 Million</th>
<th>$25 - $50 Million</th>
<th>Under $25 Million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spend a pre-specified percent of moving average of market values</td>
<td>83.5%</td>
<td>66.7%</td>
<td>88.1%</td>
<td>85.2%</td>
<td>86.3%</td>
<td>89.3%</td>
<td>73.3%</td>
</tr>
<tr>
<td>Grow distribution at a predetermined rate</td>
<td>3.0</td>
<td>16.7</td>
<td>4.8</td>
<td>4.4</td>
<td>1.7</td>
<td>0.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Decide on an appropriate rate each year</td>
<td>5.1</td>
<td>13.3</td>
<td>2.4</td>
<td>6.0</td>
<td>4.3</td>
<td>3.3</td>
<td>5.0</td>
</tr>
<tr>
<td>Spend a pre-specified percent of beginning market values</td>
<td>4.5</td>
<td>0.0</td>
<td>2.4</td>
<td>1.1</td>
<td>4.3</td>
<td>5.7</td>
<td>11.9</td>
</tr>
<tr>
<td>Spend all current yield</td>
<td>2.2</td>
<td>0.0</td>
<td>0.0</td>
<td>2.2</td>
<td>2.6</td>
<td>1.6</td>
<td>4.0</td>
</tr>
<tr>
<td>Spend a pre-specified percent of current yield</td>
<td>1.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.5</td>
<td>0.9</td>
<td>0.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Grow distribution at inflation rate</td>
<td>0.5</td>
<td>3.3</td>
<td>2.4</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Table 2: Spending rules selected by foundations in Commonfund Benchmarks Study—Foundation Report (2003)

<table>
<thead>
<tr>
<th>Spending rule</th>
<th>Total foundations</th>
<th>Over $1 Billion</th>
<th>$501 Million-$1 Billion</th>
<th>$101-$500 Million</th>
<th>$51 - $100 Million</th>
<th>Community</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decide on an appropriate rate each year</td>
<td>83.5%</td>
<td>66.7%</td>
<td>88.1%</td>
<td>85.2%</td>
<td>86.3%</td>
<td>89.3%</td>
<td>73.3%</td>
</tr>
<tr>
<td>28%</td>
<td>36%</td>
<td>37%</td>
<td>29%</td>
<td>15%</td>
<td>17%</td>
<td>32%</td>
<td>1.0</td>
</tr>
<tr>
<td>Target IRS minimum of 5%</td>
<td>39</td>
<td>24</td>
<td>41</td>
<td>39</td>
<td>46</td>
<td>15</td>
<td>46</td>
</tr>
<tr>
<td>Spend a pre-specified percent of beginning market values</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Grow distribution at a predetermined rate</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Spend all current income</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>26</td>
<td>36</td>
<td>18</td>
<td>24</td>
<td>30</td>
<td>53</td>
<td>17</td>
</tr>
</tbody>
</table>
SMOOTING: the asset base on which spending is calculated is determined by “averaging” the value of assets at multiple points in time. Averaging may simply mean that each of the asset values is given equal weight or an exponential weighting is used.³

ORIGINAL GIFT VALUE: the value of the asset base is not allowed to fall below a specified level. Often this corresponds to the original value of the donated funds or may correspond to an asset for which only income can be spent and the corpus remain inviolate. Not all endowments and foundations are bound to strictly preserve a corpus amount.

Most of these elements seem to have been adopted as heuristic exceptions added to the simple structure that uses a percentage of current assets. These components are used to provide predictability in the stream of distributions or in the growth of the asset base. Particularly for smaller organizations, a given strategy is often adopted based not on a rigorous analysis of the pros and cons of each alternative, but rather by following the lead of other organizations.

Many foundations simply follow the IRS-imposed 5% spending rule. Acknowledging this very real legislative requirement, we include it as one of the policies in our investigation. Not all foundations that must meet this requirement use it as the principal statement of their spending policy.

As part of any policy, there should be the ability to make exceptions. After all, other than the IRS-imposed minimum distribution requirement for private grant-making foundations, the specifics of the spending rule are self-imposed. Distribution rules are an important guide and should not be lightly abandoned or ignored, but there will be needs for exceptions. Non-recurring capital expenditures and exceptional support of programs is likely to occur from time to time.

While no organization should feel shackled to their distribution rule, if exceptions are predictable and/or routine, they should be incorporated into the rule. For example, many organizations limit the year-over-year change that can occur in spending levels. A common behavior is to limit the decrease in spending as dramatic changes (especially downward revisions) are likely to have strong adverse consequences for the very groups that the foundation or endowment seeks to support. To the extent that these situations and the organization’s response to them are predictable, they should be included within the formal distribution policy statement.

Overview of the analysis

We have chosen a group of spending policies that represent the most frequently used methods for determining endowment and foundation spending amounts. In addition to a plain vanilla version of each spending policy, we also investigate the influence of variations using the features discussed in the previous section. This selection of policies will be used to examine the range of outcomes that a typical endowment or foundation may face with regard to the level of distributions and growth of the asset base.

SPENDING POLICIES EVALUATED

Based on information noted in the NACUBO and Commonfund studies and on the spending policies that we typically encounter with clients, we have selected a number of spending policies for analysis. Our list contains not only the IRS-imposed 5% rule (Asset % 1), but also the very common 3-year smoothing (Avg Asset % 1) and the well-publicized Yale rule (Tobin 2). Starting from five base strategies, we also include variations to address the use of inflation-indexing and the application of corridors on the calculation of the spending amount. Table 3 summarizes the policies considered.

³ In principal weightings other than equal or exponential could be used, but this does not seem to be common.
Table 3a: Spending policies based on percentage of asset value

<table>
<thead>
<tr>
<th>Corridor Floor</th>
<th>Corridor Ceiling</th>
<th>Inflation Indexing</th>
<th>Return Linkage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset % 1</td>
<td>Distribute a fixed percentage of current assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asset % 2</td>
<td>Asset % 1 and include corridor lower bound preventing distributions below 90% of prior year’s adjusted for inflation</td>
<td>90%</td>
<td>✓</td>
</tr>
<tr>
<td>Asset % 3</td>
<td>Asset % 2 and include corridor upper bound preventing distribution above 110% of prior year’s adjusted for inflation</td>
<td>90%</td>
<td>110%</td>
</tr>
</tbody>
</table>

Table 3b: Spending policies based on percentage of 3-year average asset value

<table>
<thead>
<tr>
<th>Corridor Floor</th>
<th>Corridor Ceiling</th>
<th>Inflation Indexing</th>
<th>Return Linkage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Asset % 1</td>
<td>Distribute percentage of 3-year average asset value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg Asset % 2</td>
<td>Avg Asset % 1 and include corridor lower bound preventing distributions below 90% of prior year’s</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>Avg Asset % 3</td>
<td>Avg Asset % 2 and adjust prior year’s distribution for inflation</td>
<td>90%</td>
<td>✓</td>
</tr>
<tr>
<td>Avg Asset % 4</td>
<td>Avg Asset % 3 and include corridor upper bound preventing distribution above 110% of prior year’s adjusted for inflation</td>
<td>90%</td>
<td>110%</td>
</tr>
</tbody>
</table>

Table 3c: Spending policies based on Tobin’s Method

<table>
<thead>
<tr>
<th>Corridor Floor</th>
<th>Corridor Ceiling</th>
<th>Inflation Indexing</th>
<th>Return Linkage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobin 1</td>
<td>Distribute 70% of last year’s distribution plus 30% of portion of current assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobin 2</td>
<td>Tobin 1 and adjust prior year’s distribution for inflation</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Table 3d: Spending policies based on distributing a fixed amount

<table>
<thead>
<tr>
<th>Corridor Floor</th>
<th>Corridor Ceiling</th>
<th>Inflation Indexing</th>
<th>Return Linkage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance 1</td>
<td>Distribute portfolio return in excess of inflation</td>
<td>0%</td>
<td>✓</td>
</tr>
<tr>
<td>Performance 2</td>
<td>Performance 1 and impose upper and lower bounds on percentage of assets distributed</td>
<td>2%</td>
<td>6%</td>
</tr>
</tbody>
</table>
For each policy we consider cases in which the example fund is above or below the
original gift value necessary to satisfy the endowment preservation requirement.

A common spending policy that we don’t evaluate here (though it is related to the
Performance policies) is to distribute an amount based on fund income. Income is
typically defined as interest, dividends, royalties and sometimes realized capital gains
or losses. This form of spending policy is typically associated with older foundations and
endowments. For example, the University of Texas System employs this rule and a state
constitutional amendment would be necessary for any change. In some cases donated
assets may not be sold and distributions can only be drawn from any generated income.

In the financial mechanics of an endowment or foundation, revenue arrives through
donations, bequests and fund raising activities, some is distributed according to
spending policies and the remainder is invested for the future. The two sources of
income—donations and market returns—contain significant uncertainty, especially the
market return component. That volatility can be managed, but not eliminated. Either it
is passed through to near-term beneficiaries from direct or indirect ties between the
spending policy and market returns or it is absorbed by future beneficiaries through
uncertain growth of the asset base. Each type of spending rule controls the impact of
market (and donation) uncertainty in different ways. This behavior is well-summarized
in the following chart. The simple message is: you can have predictable distributions or
you can have predictable growth of the asset base, but it’s difficult to accomplish both.
Spending policy is the dial that helps control this tradeoff.

Figures 1a and 1b plot the dispersion in the cumulative distributions through year 20
versus the dispersion in accumulated assets at the 20 year horizon. (Figure 1b magnifies
the overlapping observations in the middle of Figure 1a.) The vertical axis plots the
uncertainty in the level of cumulative distributions and the horizontal axis demonstrates
the range of uncertainty in the value of the asset base in 20 years.

For example, with the Performance 1 spending policy, there is a 5 percent chance that
cumulative distributions are $56 M or below over the 20 year period (bottom of left-most
bar on top panel) and a 95 percent chance that distributions are $170 M or below
(top of left-most bar on top panel). The width of the 5th percentile to 95th percentile
range is $114 M. The corresponding range for inflation-adjusted asset values is $48
M (the distance from the bottom to the top of the left-most bar in the center panel). In
contrast, the Fixed 2 policy distributes a fixed dollar amount adjusted for inflation. The
distributions over the 20 year period are uniquely determined by the policy, so the 5th
percentile and 95th percentile outcomes are identical and the range is $0. However,
the 5th and 95th range in asset values is $220 M. The bottom panel of Figure 1a
plots the heights of the corresponding bars in the top and center panel. For example,
the Performance 1 policy is plotted at $114 M on the vertical axis and $48M on the
horizontal axis.

<table>
<thead>
<tr>
<th>Spending Policy</th>
<th>Corridor</th>
<th>Inflation</th>
<th>Return</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Floor</td>
<td>Indexing</td>
<td>Linkage</td>
</tr>
<tr>
<td>Fixed 1</td>
<td>Distributed fixed dollar amount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed 2</td>
<td>Distribute a fixed dollar amount increasing with inflation</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Fixed 3</td>
<td>Distribute a fixed dollar amount increasing at a fixed rate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3e: Spending policies based on distributing a fixed amount
Spending policies within the same “family” tend to cluster together as highlighted by the ellipses. Other charts and time points support the same conclusion: the structure of the spending rule has a strong impact on the evolution of both the asset base and the distributed amount. The extra bells and whistles of corridors and inflation adjustment certainly have an influence, but we can easily identify a cluster of results associated with each structure.

An exception to the observation that bells and whistles have lesser influence than the spending policy structure can be found by changing the corridor width. For policies Asset % 2, Asset % 3, Avg Asset % 2, Avg Asset % 3 and Avg Asset % 4 corridors are set to allow a maximum 10% change in year-over-year spending. This is a common choice, but wider or narrower corridors could have been employed. Clearly corridors that allow a maximum 0% change would cause these policies to become equivalent to Fixed policies and to plot near those outcomes in Figures 1a and 1b. If we had used 5% corridors, the policies would not have fallen as neatly into clusters. In particular, if Figures 1a and 1b were redrawn with 5% corridors, the relative locations of most policies would be unchanged, but the policies Asset % 3 and Avg Asset % 4 that use both upper and lower corridors would have shifted to the southeast quadrant of the graph though not nearly so far as the Fixed policies.

FIGURE 1a: Predictability of assets versus predictability of spending, 4% spending rate, $100 M initial asset base
At one end of the spectrum Performance-based spending policies tend to stabilize the evolution of the asset base concentrating market volatility in the distributed amount. At the other end Fixed spending policies control swings in the distributed amount leaving the asset base to absorb the ups and downs of financial markets. What about in between?

FIGURE 1b: Predictability of assets versus predictability of spending, 4% spending rate (95th – 5th percentile outcomes for inflation-adjusted assets and cumulative distributions over 20 year horizon)
The impact of market uncertainty is shifted between the distribution stream and the asset base in a slightly different way for each of the policies in Figure 1b based on their particular methodology for calculating the size of the asset base from which to calculate spending each year. The three-year smoothing methods fall between policies with no asset smoothing (Asset % 1, 2 and 3) and those that employ exponential smoothing (Tobin 1 and 2).

We use the results of Figures 1a and 1b to our advantage in the remainder of the document. For most of the exhibits, we will simply use one candidate from each of the clusters in order to understand the consequences of each spending policy choice.

The base case

To study the impact on wealth and distribution amounts under the different spending policies, we construct a base case which is derived from a real world study.

There are no external sources of funding such as grants or donations. A foundation with assets of $100 million determines the distribution amount at the beginning of every year and makes the payout throughout the year. Distributions for the initial and all subsequent years are set according to a pre-established spending policy.

In analyzing the evolution of the fund, we employ the Russell forecasting model. We use a 20-year horizon for our analysis and the forecast statistics at that horizon are shown in Table 4. The Russell forecasts include a transition from current market conditions of relatively low interest rates to longer-term market equilibrium. The tendency for rates to rise (from the current low levels) implies a lower assessment of market return levels in the near term and more typical levels in the future. The specifics of the forecasting model have little influence on the results of this study.

Table 4: 20-year asset return assumptions

<table>
<thead>
<tr>
<th>Asset class</th>
<th>Expected return</th>
<th>Standard deviation</th>
<th>US Equity</th>
<th>Non-US Equity</th>
<th>U.S. bonds</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Equity</td>
<td>8.3%</td>
<td>18.4%</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-US Equity</td>
<td>8.3%</td>
<td>19.4%</td>
<td>0.5</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity US</td>
<td>5.8%</td>
<td>2.9%</td>
<td>0.2</td>
<td>0.2</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td>2.7%</td>
<td>4.0%</td>
<td>0.1</td>
<td>0.1</td>
<td>0.6</td>
<td>1.0</td>
</tr>
</tbody>
</table>

As shown in Table 5, most endowments and foundations (especially the larger ones) maintain a significant exposure to alternative asset classes (private real estate, private equity, hedge funds, etc.) that are generally expected to enhance portfolio performance. In this analysis alternative investments are purposely excluded in order to keep the study easy to understand and to focus on “high-confidence” forecasts.

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4 A description of the forecasting methodology can be found in Fox, Gardner and Jackson (2000), as well as Murray (2001).
In order to assess long-term viability for any of the spending policies, it is useful to focus on inflation-adjusted values for asset values and distributions amounts.

### Cases evaluated

To evaluate each of the spending policies described in the previous section, we focus on the evolution of the fund value as well as the stream of distributions in several different cases.

- Spending rates of 4%, 5% and 6%.
- Original gift value of $20 M and $90 M. For our $100 M fund this implies a decline of $80 M or $10 M, respectively, before spending must be suspended.
- Allocation mixes with 40%, 60% and 80% equity exposure as shown in the table below:

<table>
<thead>
<tr>
<th>Type of investment</th>
<th>Total foundations</th>
<th>Over $1 billion</th>
<th>$501 million–$1 billion</th>
<th>$101–$500 million</th>
<th>$50–$100 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic equities</td>
<td>48%</td>
<td>47%</td>
<td>49%</td>
<td>46%</td>
<td>52%</td>
</tr>
<tr>
<td>Fixed income</td>
<td>24%</td>
<td>22%</td>
<td>27%</td>
<td>27%</td>
<td>30%</td>
</tr>
<tr>
<td>International equities</td>
<td>10%</td>
<td>11%</td>
<td>11%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>Alternative investments</td>
<td>14%</td>
<td>16%</td>
<td>11%</td>
<td>13%</td>
<td>7%</td>
</tr>
<tr>
<td>Short term securities/cash</td>
<td>4%</td>
<td>4%</td>
<td>2%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

We also considered other values for the prior year’s assets, but this did not materially affect results.

### Table 6: 20-year forecasted portfolio returns and standard deviations

<table>
<thead>
<tr>
<th></th>
<th>40% equity</th>
<th>60% equity</th>
<th>80% equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Equity</td>
<td>30%</td>
<td>40%</td>
<td>55%</td>
</tr>
<tr>
<td>Non-US Equity</td>
<td>10%</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>US Bonds</td>
<td>60%</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Expected nominal return</strong></td>
<td><strong>6.4%</strong></td>
<td><strong>6.9%</strong></td>
<td><strong>7.4%</strong></td>
</tr>
<tr>
<td><strong>Standard deviation of nominal return</strong></td>
<td><strong>7.3%</strong></td>
<td><strong>10.2%</strong></td>
<td><strong>13.3%</strong></td>
</tr>
</tbody>
</table>

For most of the results included in the following discussion we focus on a spending rate of 4%, prior year’s assets of $90 M\(^5\) for policies that rely on prior year’s assets, an original gift value of $20 M and a 60% equity portfolio. Other settings are also explored for an understanding of their impact.

### How do the policies compare?

Having mapped out the range of cases for consideration, we address several questions regarding the advantages and disadvantages of various spending policies. Performance measures focus on the accumulation of assets (both nominal and inflation-adjusted) as well as the evolution of distributions. We focus on the long term sustainability of the spending policies as well as the potential for undesirable outcomes over short periods of time.

\(^5\) We also considered other values for the prior year’s assets, but this did not materially affect results.
We emphasize a long-term horizon for evaluating the sustainability and success of any spending policy. There is some discretion in the definition of long-term, but our experience has been that 20 years is a common choice and this value is used in our analysis. This choice is consistent with the intention of most endowments and foundations to operate in perpetuity and we find that a 50 year horizon would not change the basic conclusions.

THE TRADEOFF BETWEEN CURRENT DISTRIBUTIONS AND FUTURE DISTRIBUTIONS

Over any fixed period, the distributed amount serves as a measure of resources applied to current programs and the ending asset base provides funds for future activities. We observe in Figure 2 that the median total amount distributed during the initial 20 year period is roughly the same for each of the policies under a given spending rate. A 4% spending rate leads to median cumulative distributions of between $60 M and $80 M in today’s dollars, a 5% rate leads to median cumulative distributions between $80 M and $90 M and a 6% rate leads to median cumulative distributions between $90 M and $100 M.

Figure 2: Cumulative inflation-adjusted distributions over 20-year horizon ($ millions)

![Cumulative inflation-adjusted distributions over 20-year horizon](image)

Note that the Fixed 1 policy exhibits a somewhat distinct pattern across the three groupings. Its median lags the others when the spending rate is lower than portfolio returns, but exceeds the others when returns generally fall short of the spending rate. Recall that the fixed spending amounts are set at nominal values of $4 M, $5 M and $6 M under the three spending rates, respectively, and remain unchanged over the 20-year horizon regardless of inflation levels.

In contrast, the Performance 1 policy has only one range of outcomes. This is because the distributions are linked to the annual rate of return, not a pre-established spending rate. This means the range of outcomes is driven by the capital market forecasts.

What about the support provided to future beneficiaries? Figure 3 projects the inflation-adjusted value of the asset base at the 20-year horizon under the same spending policies and rates. The value of the asset base measures the support available for future beneficiaries because these are precisely the funds available for that support.

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6 A brief description of how to interpret Figure 2 and other figures is provided in the appendix.
In Figure 3 we observe a pattern similar to that of Figure 2. The spending rate is a much stronger influence on future asset values than the structure of the spending policy.

Figure 3: Inflation-adjusted value of assets at year 20 ($ millions)

<table>
<thead>
<tr>
<th>Spending Rate</th>
<th>Value of Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>4%</td>
<td>$200,000</td>
</tr>
<tr>
<td>5%</td>
<td>$225,000</td>
</tr>
<tr>
<td>6%</td>
<td>$250,000</td>
</tr>
</tbody>
</table>

In many cases, it may be appropriate to consider a horizon other than 20 years as the split between current and future distributions. This same pattern can be observed at shorter as well as longer time horizons as well as for other policies within these clusters and alternative allocation mixes (the 60% equity portfolio is shown in Figures 2 and 3).

We conclude that the particular structure employed to make the calculation has much less influence than the rate at which funds are distributed.

Assessing year-by-year volatility of spending and asset base under different policies

Figure 4 illustrates the year-by-year pattern of spending that is expected from policies Asset % 1 and Tobin 1. The general trend is similar for the two policies, however, the range of outcomes is tighter under Tobin 1. Spending amounts are more predictable under Tobin 1—a very helpful feature for planning purposes.

Figure 4: Comparison of year-by-year distributions for asset % 1 and Tobin 1 policies at 4% spending rate
The tradeoff for greater certainty of the distribution stream is typically less certainty regarding the level of assets. In Figures 5 and 6 we observe that the policy with the greatest variability in distributed amounts (Performance 1) is precisely the one that leads to the lowest variability in the asset value. Conversely, Fixed policies limit the spending variability, but allow greater uncertainty in the growth of the asset base. Policies that calculate spending as a percentage of assets (either with smoothing or without) appear similar due to the scaling necessary to capture outcomes for Performance and Fixed policies, but it is important to recognize that the variability of the size of the asset base at year 20 for Tobin 2 is much larger than the variability of Asset % 2—the difference represents 20% of the initial asset value.

FIGURE 5: Predictability of cumulative spending (95th – 5th percentile outcomes for inflation-adjusted cumulative distributions over 20-year horizon) ($ Millions)

Figure 6: Predictability of 20-year asset value (95th – 5th percentile outcomes for inflation-adjusted assets over 20-year horizon) ($ Millions)
Readers will note that the data points plotted in Figures 1a and 1b are a convenient consolidation of the 20-year data points in Figures 5 and 6.

There is a clear grouping of distribution policies in Figures 1a and 1b according to the spending policy type. The influence of inflation-adjustment or corridors is relatively minor along this measure of success. Planners can emphasize predictability in the level of distributions or predictability in the growth of the asset base and the selection of the spending policy is the means to manage this trade off.

While other goals can be targeted through the choice of spending policy structure, it is clear that one important role of the structure is to manage variability over time, in distribution amounts or asset values or both.

**Underwater endowments**

The bull market of the 1990s lead to the establishment of many new endowments and foundations. The subsequent market correction placed many endowments and foundations in the uncomfortable position of stewarding a materially smaller asset base than that originally entrusted to their care. For some the mixed blessings of the market are merely a wistful “what might have been,” but for others, the earlier asset high-water mark limits potential spending.

A true endowment as well as agreements with original donors for many foundations limits the ability of the organization to spend if the value of the asset base falls below the original gift value. For some endowments and foundations this is a “simple” matter of renegotiating the expectations of donors. For others it is a much more significant legal obstacle.

In the absence of a renegotiation with donors, the Uniform Management of Institutional Funds Act may require that distributions must be curtailed or eliminated until the asset base has sufficiently recovered (increased back to the original gift value). The value of the endowment limits the ability of the endowment or foundation to withdraw funds, but the needs of beneficiaries remain. While UMIFA laws may change in the near future regarding the interpretation of original gift value, currently underwater endowments represent a serious challenge for many non-profit institutions with newer endowments.

For mature endowments this is unlikely to be a significant limitation, but for the many endowments that were established during the bull market of the 1990s, this has proven to be a serious problem.

Figures 7 and 8 compare the inflation-adjusted asset base as well as distributed amounts for our base assumption of $20 M original gift value with the assumption of a $90 M original gift value. In poor economic markets, the $10 M buffer between the initial asset value of $100 M and the $90 M original gift value can be quickly eroded. Once the $90 M level is hit, spending must be suspended. Inflation-adjusted assets are therefore higher in these poor markets (the lower end of each column). For example, the difference between a $20 M original gift and a $90 M original gift is $40 M versus $60 M, respectively, for organizations following Tobin’s method.

* Editor’s note: These changes were indeed included in the Uniform Prudent Management of Institutional Funds Act (UPMIFA); at this time, laws based on UPMIFA have been adopted in all U.S. states except Pennsylvania.*
We observe that the downside protection of the asset value induced by the suspension of spending once assets fall to $90 M leads this case to have a stronger asset value in poor markets implying relatively higher spending after year 20 due to the stronger Year 20 asset base.

Figures 7 and 8 demonstrate the impact that the suspension of spending may have over time. An initial gift value of $20 M is rarely constraining on a $100 M endowment, but an initial gift value of $90 M will curtail spending if there is ever a 10% decline in the asset value either due to spending or unfavorable markets. In the long run, Figure 7 demonstrates that the $90 M floor protects the asset base in poor markets. In all cases...
the downside outcomes are higher for the $90 M initial gift case. This asset-preserving features leads to slightly lower distributions on the downside in Figure 8.

**Shorter-term concerns: Avoiding sleepless nights**

Spending policies can be targeted to guide the steady accumulation of assets as well as to manage uncertainty in asset and distribution levels. Another important role is to manage year-to-year performance. For long-term planning and program development, it is important to understand the level of distributions 5 or 10 or 20 years hence, but day to day operations are more often concerned with shorter-term performance measures.

In the short-run, rapid change can often represent significant challenges for both the managers of the endowment or foundation as well as the beneficiaries of their largesse. Large changes in the level of distributions (both upwards and downwards) can be disruptive to programs and make planning difficult. In particular, declining levels of distributions may require undesirable cutbacks.

In the long-term, market returns must support spending. Even with an eye toward the volatility inherent in capital markets and the recognition that this is a relationship requiring a long-term focus, returns that fail to cover distributed amounts can be a cause for concern even over shorter horizons.

A third short-term performance measure is from the perspective of those private foundations that are required to satisfy the IRS 5% spending rule. An organization following an alternative spending policy may need to make an exception to their typical distribution habits in order to satisfy the regulation. How often might this happen?

**Year-over-year spending declines**

Often of critical concern is the year-to-year change in distributed amounts. Stability in the series of distributions is beneficial both for the organization and those receiving support.

Since declining distributions are more likely to cause trouble than increasing distributions, we focus on the probability that distributions could fall from the prior year.

**Figure 9: Potential year-over-year decline in spending** (1 in 10 chance decline is at this level or greater)
As we would probably anticipate, smoothing of the asset base used in the calculation of spending is a useful tool for limiting the potential of large year-over-year declines in the distributed amount. Figure 9 provides a clear illustration of this concept. Policies that employ no smoothing of assets (Asset % 1, Asset % 2 and Asset % 3) lead to relatively larger potential spending declines than those policies that smooth asset values.

Fixed 1 and Fixed 3 are not shown in Figure 9. These policies don’t allow spending declines and would plot at the bottom of the chart. To avoid dramatically rescaling the graph and obscuring its message, Performance policies are not plotted as they have an approximately 50% chance of spending declines from one year to the next.

The use of corridors and inflation-proofing provide little distinction among the policies. It may be that the 90%–110% corridors are too wide, though they are consistent with the choices we have observed in the marketplace and results using 95% – 105% corridors provide generally similar outcomes. At the extreme of equal upper and lower corridors, the policies would all become equivalent to a Fixed policy.

While Figure 9 describes the size of a 1 in 10 potential decline in spending, Figure 10 plots the likelihood that there might be a decline of any size. Not surprisingly, the Performance based policies are very likely to cause a year-over-year decline in spending after accounting for the impact of inflation. At the other extreme, Fixed 3 which indexes a fixed spending amount by inflation will never result in a decline on an inflation-adjusted basis.

Figure 10: Likelihood of year-over-year decline in spending

Figures 9 and 10 demonstrate the strength of asset smoothing as a tool for limiting year-over-year changes in the distributed amount. Surprisingly, the additional bells and whistles of corridors or inflation-indexing provide only a minor amount of influence.

Spending in excess of portfolio returns

On an ongoing basis, it is necessary that portfolio returns (plus additional donations for public charities) are sufficient to cover spending needs. Given the inherent volatility of investment returns, it is impossible to guarantee this every year. Even with confidence that in the long run the investment portfolio will support spending, years
of underperformance may still lead to sleepless nights. Figure 11 provides guidance regarding how frequently each of the policies may lead to distribution amounts in excess of the portfolio return in a given year for each of the allocation mixes. While results are shown for the 60% equity portfolio, the pattern is similar for both 40% and 80% equity portfolios.

We should note that policies that employ asset smoothing typically have an advantage (from the perspective of growing the assets base, not from that of the beneficiary) over those that do not. Since markets generally rise more often than fall, it is likely that the past asset values used in the smoothing calculation will lead to smaller distributions than for policies that only consider the value of assets for the current year. The likelihood that spending exceeds portfolio returns will be commensurately smaller.

Figure 11: Probability of spending in excess of portfolio return for 60% equity portfolio and 4% spending rate

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Private foundations: Meeting the IRS 5% spending requirement

In addition to the concerns already discussed, private foundations have an additional burden imposed through the IRS 5% spending requirement. While many private foundations simply set their spending according to this 5% requirement, there is no legal barrier to using another distribution rule as long as the IRS requirement is satisfied.

Figure 12 shows how frequently each policy would fail to meet the 5% spending rule. The spending rate for each policy is set to 5%. The proper interpretation of these results is not that the organization would suddenly cease to comply with the law, it is simply that the foundation would be required to increase distributions for a given year by the amount of shortfall between the spending amount calculated from their policy and that required by the IRS.

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7 A discussion of this requirement can be found in Astro and Ilkiw (2003) and Astro (2003).

8 The details of the rule actually allow a full tax year after the close of the prior tax year to make the distributions. Furthermore, excess qualified spending can be carried forward for five years. For a complete description of the IRS requirements, readers are encouraged to review IRS documents and consult with their accounting and legal staffs.
Calculations underlying Figure 12 include the 5-year carry-forward allowed for distributions in excess of the required amount.

Figure 12: Probability IRS 5% spending requirement overrides planned spending policy for private foundations

Figure 12 very starkly portrays the likelihood that any of these policies will allow private foundations to satisfy the IRS's spending requirement. The IRS rule will override these policies between 5% and 60% of the time. This may help explain the finding in Table 2 that nearly half of the private foundations included in the Commonfund Benchmarks Study—Foundation Report use the IRS rule as their spending target. Interestingly, the use of smoothing in the Avg Asset % policies and Tobin policies only serve to complicate life for private foundations that use them as they lead to frequent deviations from policy in order to satisfy the IRS regulation.

A foundation seeking to capture the benefits of some of the spending policies will likely need to compromise in their choice of parameters. Setting the spending rate slightly higher than 5% will, in most cases, dramatically decrease the likelihood that an exception will be necessary to satisfy the IRS requirement. Consider a policy that distributes 5% of assets using 3 year smoothing. If markets are rising, the 3 year lag implies that as a percentage of current assets the distribution amount will fall short of the 5% target. Unless markets rise dramatically, a small increase in the spending rate to 5.1% or 5.2% will typically compensate for this tendency.

Other important issues

The spending policy does not stand alone as the sole contributor to success of the endowment or foundation. As previously discussed, the overall financial health of the organization depends not just on the spending, but also on revenues and investment returns. Within the scope of this paper, we don't attempt to address these other components in a detailed manner, but it is important to understand the impact they might have.

Other strategies to strengthen financial performance focus on improvements in implementation. Cost controls and efficient operations are clearly beneficial. Another
common strategy is to capture the benefits of skilled stock selection through active management. Implementation discussions are outside the scope of this paper.

What about donations?
We chose not to include donations in our constructed cases. The simple reason is that the inclusion of the donations would make the results more difficult to analyze and interpret. Nevertheless, there are more profound reasons for not including the donations. In the book, ‘Pioneering Portfolio Management,’ (Swensen, 2000), David Swensen stated, “The incoming donations usually bring more distribution activities. Therefore, they might not be able to relieve the pressure to maintain the asset value. Furthermore, when we consider the goal of preserving wealth, the incoming donations may have to be included.” New donations increase the wealth base and hence the distribution amount. For example, a $100 portfolio required to grow with inflation has a target of roughly $103. A $10 donation serves to increase the target by a corresponding amount to approximately $113. The demands for investment performance are still intact and even larger future donations may be necessary to maintain portfolio growth.

Investment returns
In coordinating the spending policy, donations and investment returns, it is clear that performance in one area impacts demands on the others. An additional dollar of distributions could either come from an extra dollar of donations or from increased investment returns.

Unfortunately, the level of market performance is difficult to predict and is accompanied by market volatility. Will a 60% Equity/40% Debt portfolio provide an average return of 6.9% as assumed in this paper or could it possibly be 7.2% or some other number? Even if it is 6.9%, it is virtually guaranteed that some years will be higher (perhaps significantly so) and others will be lower than this level.

While we recognize that the choice of forecasting assumptions is a non-trivial input to this analysis, a wide ranging forecasting discussion is outside the scope of this paper. However, it is interesting to consider how the various policies would have performed over different historical periods. In particular, Fan and Murray (2004) demonstrate that even the strong returns of the last 75 years provide little guarantee that a private foundation needing to satisfy the IRS 5% spending requirement would be able to capture sufficient growth to maintain the real value of the asset base. Whether upcoming market performance will be as strong as that observed in the past remains to be seen.

Traditionally, the only means of achieving higher portfolio returns was through an increase in the allocation to risky asset classes. At its most basic, this is simply the split between equity and debt in a portfolio. Modestly refining the roster of asset classes leads to alternative asset classes—typically private equity, real estate and hedge funds—that may also represent sources for portfolio return enhancement.

Figure 13 shows the impact of more aggressive and more conservative portfolios on endowment wealth and distributions. As we can see, the ending real wealth and its volatility increase with more equity in the portfolio, and the same trend holds for the cumulative real distribution. One notable exception is that the policy of Performance 1 leads to a lower ending real wealth level with the more aggressive portfolio. The reason is that this policy generates higher distributions during good markets and absorbs more loss on the downside. Nevertheless, the relative relationship remains the same among those spending policies: moving from left to right in any of the allocation subsections implies an increasing range of asset values and a declining range of distribution amounts.
As a group, endowments and foundations have been one of the largest blocks of investors in non-traditional asset classes. As shown in Table 5, endowments and foundations—particularly the larger ones—have shifted significant portions of their asset bases into these investments. For many this bet has paid off.
In the analysis that we undertake for clients, we find that a balanced exposure to alternative asset classes can improve performance at all percentile levels. That is, it doesn’t simply serve to improve expected performance with an accompanying increase in the range of outcomes (both positive and negative), but also outperform those without alternative investments in most market environments.

It still remains, however, that the choice of spending policy generally trumps the choice of asset allocation in influencing the long-term sustainability of the endowment or foundation.

Conclusions

Endowments and foundations must carefully consider their current and future spending needs and choose the spending policy that fits them the best. Without careful evaluation of the goals and circumstances of any particular foundation, it is impossible to conclude that any of the distribution policies that we have considered are “best” for that organization. Foundations with relatively longer-term commitments are likely to focus on predictability of distribution amounts—they may favor Fixed policies or those that strongly employ smoothing such as Tobin’s method—those focusing on a shorter horizon and can more nimbly change their distributed amounts may conclude that asset base growth is more important—they may favor spending policies linked to portfolio performance or that employ relatively less smoothing.

There are several messages following from this analysis:

• Choosing the right spending policy is most critical to achieve an institution’s objectives.

• The spending rate at which funds are distributed has much more impact than the particular structure employed to make the calculation.

• Institutions that focus on stability of the distribution stream may find that Fixed policies or those that employ strong smoothing mechanisms such as Tobin’s method lead to less volatility in cumulative real distribution and fit their spending needs the best. Organizations that emphasize the stability of the asset value and can more nimbly change their distributed amounts may favor spending policies linked to portfolio performance or that employ relatively less smoothing.

• Choosing a more aggressive or conservative portfolio will increase or decrease the level and volatility for both wealth and distribution, however, it won’t change the relative relationship between various spending policies. Likewise for longer horizon and optimized allocations.

• Meeting the IRS 5% distribution requirement may lead to frequent deviations from policy. Some policies are worse than others in this aspect. The spending policies that use asset smoothing lead to deviations from policy more often.

• Original gift value restriction may break down the distribution-smoothing feature of those methods. Plans should be put in place to meet such a contingency.

• Asset smoothing can be a useful tool for limiting year-over-year changes in the distributed amount.

The choice of spending policy can impact not only the long term success of the organization, but also performance along the way. The spending policy serves as an important planning tool and source of fiscal discipline. It controls the balance between serving current beneficiaries and growing the asset base to allow for support of future beneficiaries. The spending policy can be designed to manage uncertainty in both the level of distributions as well as the value of the asset base and it strongly influences year-over-year performance.
REFERENCES

Appendix 1: Description of chart format
- Generate large number of scenarios, using capital market assumptions, to describe the range of possible future outcomes for asset returns and economic variables
- Use these scenarios to project assets and distributions at a point in the future
- Calculate the different outcomes for each scenario
- Order the outcomes from highest to lowest

<table>
<thead>
<tr>
<th>Assets $millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
</tr>
<tr>
<td>70</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>30</td>
</tr>
</tbody>
</table>

- 5% of the scenarios generated asset values that are more than $100M
- 95% of them generated asset values that are less than $100M
- 50% if the scenarios generated asset values that are more than $50M
- 50% of them generated asset values that are less than $50M
- 5% of the scenarios generated asset values that are less than $30M
- 95% of them generated asset values that are greater than $30M
Appendix 2: Model formulation

To summarize the various distribution policies, we formulate the general form as follows:

\[ S_T = aS_{T-1}(1 + i_1) + (1 - \alpha)\left(\sum_{j=0}^{N-1}(\beta_{T-j}W_{T-j})\times r\right) + mS(1 + i_3), \]

\[ f \times (S_{T-1}(1 + i_2)) \leq S_T \leq c \times (S_{T-1}(1 + i_2)), \]

\[ 0 \leq \alpha \leq 1, \sum_{j=0}^{N-1}\beta_{T-j} = 1, \beta \text{ nonnegative}. \]

Where,

- \( S_T \) = The spending amount in dollars at time \( T \).
- \( a \) = A parameter that decides the percentage of previous spending counted in computing the current spending.
- \( i_1, i_2, i_3 \) = A gross-up parameter to adjust the spending at different time point.
- \( N \) = The number of years to smooth the wealth for computing the spending.
- \( \beta_i \) = The weight to use at year \( i \) in smoothing \( N \)-year's wealth.
- \( W_i \) = The wealth at year \( i \).
- \( r \) = The spending rate for computing the spending.
- \( f \) = The floor for the spending, always less than 1.
- \( c \) = The ceiling for the spending, always larger than 1.
- \( m \) = A zero or one parameter that decides if a fixed spending is used or not.
- \( S \) = The fixed spending amount in dollars.
Purpose and origin of the 5% payout rule for non-operating private foundations

The 5% payout rule for non-operating private foundations

These two brief papers, dating from 2003, provide an overview of the requirement that non-operating private foundations (also known as grant-making foundations) distribute at least 5% of their assets each year. The title of the first, “Purpose and origin of the 5% payout rule for non-operating private foundations,” is self-explanatory: it gives a brief history of why the rule exists and discusses what it is intended to achieve. The second paper describes the key features of the rule in more detail.
Purpose and origin of the 5% payout rule for non-operating private foundations

**Issue**
Initially set at the greater of total investment income or 6% of net investment assets and eventually standardized at 5%, the payout rule for non-operating private foundations is still the focus of continued debate.

**Response**
The 5% payout rule ensures that private foundations operate philanthropically, existing strictly to advance their stated missions rather than serving as a tax shelter to perpetuate the accumulation of private wealth or other non-philanthropic purposes.

The 5% payout rule replaced an initial 6% rule passed by Congress in the Tax Reform Act of 1969 to combat alleged widespread abuse and misuse of tax-sheltered foundation assets.

The foundation community demonstrated convincingly that a minimum 6% payout was too onerous and would undermine the longevity of existing foundations, and discourage the establishment of new foundations.

Congress approved the less-onerous 5% payout rule in 1976, and is only one aspect of regulations governing the financial management of non-operating private foundations.

**Background**

**WRIGHT PATMAN’S CAMPAIGN AGAINST FOUNDATIONS, 1962-69**

In 1962, Congressman Wright Patman (D-TX) released the first of a series of reports and press releases depicting foundations as well-intended tax shelters that were systematically abused by the wealthy. He charged foundations with short sales of securities, speculation in commodity futures and oil wells, manipulation of stock prices, and the use of their assets to carry on proxy fights for the control of corporations. In later testimony to the House Ways and Means Committee in 1969, Patman stated: “Put most bluntly, philanthropy—one of mankind’s most noble instincts—has been perverted into a vehicle of institutionalized, deliberate evasion of fiscal and moral responsibility to the nation”.

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1 Non-operating private foundations are foundations that grant funds to other entities that directly engage in charitable activities. They are also known as grant-making foundations. Wealthy individuals and families establish and endow the typical private foundation. This is in contrast with public charities, which typically are funded by a large number of unrelated donors.

2 For a detailed summary of the 5% payout rule and related requirements, see The 5% payout rule for non-operating private foundations

The Patman campaign attracted enough Congressional attention to threaten passage of the pending Tax Reform Act of 1964. To avoid its delay, the Treasury agreed to investigate the foundation community the following year. The 1965 Treasury Report on Private Foundations, which included the results of a statistical survey of 1,300 foundations, presented a generally positive picture of the foundations community. However, it did confirm and expose abuses by a minority of foundations. To rectify the identified problems, the Treasury recommended:

- Prohibitions against self-dealing;
- Minimum annual payouts of either total realized income or 3 to 3.5% of net investment asset value; and,
- Limitations on business holdings.

The Treasury did not find compelling regulations that would:

- Tax foundation investment income; or
- Limit the life of a foundation.

Interestingly, both Wright Patman and Senator Al Gore, Sr. (D-TN), the father of the former Vice-President Al Gore, had argued strongly that a 25-year limit be imposed on the lives of all foundations.4

The Tax Reform Act of 1969 was motivated by the belief that private foundations, being funded by a narrow donor base or single family, were highly susceptible to financial impropriety. The 1969 Act specifically targeted private foundations and established:

- A distribution rule requiring the greater of total investment income or 6% of net investment assets to be paid out annually in the form of charitable donations;
- A 4% excise tax on investment income;
- Severe penalties for self-dealing, excess business holdings, jeopardy investments, and taxable expenditures; and,
- Further division between private operating foundations and non-operating foundations, the latter being grant-making entities felt to be most prone to tax evasion.

It was clear from the earlier congressional hearings that grants were being made to advance private agendas and influence partisan lines. To curtail this, Congress also instituted a strict ban on “taxable expenditures,” or any expenses made:

- To influence legislation;
- As a political contribution; or,
- For non-charitable purposes.

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The Council on Foundations successfully convinced Congress to reduce the payout percentage from its initial 6% to 5% in 1976, and to reduce the excise tax to 2% in 1978. The Tax Reform Act of 1981 preserved both of these provisions. Inflationary pressure in the 1970’s on the real value of foundation assets justified elimination of the total income return provision of the payout requirement and set the 5% as the standard in the 1981 Act. The principal purpose of the excise tax was to fund the expected expenses incurred for monitoring foundations. When revenue exceeded this oversight expense, the excise tax was reduced.

Continued debate

Attorney Thomas Troyer, a participant and witness to the events surrounding the Tax Reform Act of 1969, concluded that “The act doubtless amounted to overkill...but the remedial legislation since 1969 has removed much of its harmful aspects.” Between 1969 and 1994, the Council on Foundations was chiefly responsible for championing this “remedial legislation.”

Articles questioning the ability to maintain the real value of a foundation’s endowment while meeting the annual spending requirement have multiplied since the requirement’s first legal debut in 1969. For example, the Council of Michigan Foundations and the Council on Foundations have both sponsored studies depicting high foundation mortality and advocated lobbying against future legislation to raise the minimum.

In contrast, others believe helping the current generation of foundation beneficiaries outweighs the goal of maintaining in perpetuity the real value of foundation assets. The National Committee for Responsive Philanthropy and National Network of Grantmakers have adopted a “1% More for Democracy” campaign, publicizing favorably those foundations that voluntarily employ high payout policies.

Impending legislation

The Charitable Giving Act of 2003, “HR7,” is currently being considered by the House Ways and Means Committee. Reconvening in early September, the Committee will negotiate the following provisions:

- Denying inclusion of administrative expenses in annual payout, which effectively increases the required minimum payout;
- Reducing the excise tax paid on income from 2% to 1%. This would apply to non exempt, non-operating foundations only.

RELATED READING


National Network of Grantmakers: www.nng.org

National Committee for Responsive Philanthropy: www.ncrp.org

Council on Foundations: www.cof.org
The 5% payout rule for non-operating private foundations

Issue
Non-operating private foundations\(^1\) are subject to a minimum 5% payout rule. What are the terms and key features of the payout rule and related requirements?

Response
The 5% payout rule requires private foundations to distribute annually in the form of charitable contributions a minimum of 5% of the fair market value of their investment assets. A host of regulatory provisions complicate this simple central rule. Most importantly:

- The required disbursement is based on an average market value for the measured year, rather than the beginning or ending value.
- Average market value excludes a variety of assets deemed necessary to the operation of the foundation but not income-producing.
- Distributions associated with a particular year must be completed within 12 months of the end of the year in question.
- Distributions may be placed into “set-aside” accounts that accumulate assets to prepare for charitable programs that require a period of large expenditures relative to the assets of the foundation. Set-aside assets must be used for the designated purpose within 5 years of the funding date, and must advance the program being funded relative to simple annual distributions.
- Taxes are imposed on distribution shortfalls that escalate from punitive to confiscatory. Beyond these taxes, private foundations are also subject to a 1% or 2% excise tax on net investment income.

A more detailed explanation of the 5% rule and the excise tax on investment income are presented below. For more detailed explanations, see the reference texts and the relevant sections of the Internal Revenue Code (IRC).

Background

**PAYOUT**

“Payout” is the industry vernacular for what the IRC calls “minimum investment return,” and must consist only of “qualifying distributions,” specifically those expenditures made by a private foundation allocated to charitable purposes. “Charitable purposes,” are defined as, “religious, charitable, scientific, literary or educational purposes; the fostering of national

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\(^1\) Non-operating private foundations are foundations that grant funds to other entities that directly engage in charitable activities. They are also known as grant-making foundations. Wealthy individuals and families establish and endow the typical private foundation. This is in contrast to public charities, which typically are funded by a large number of unrelated donors.
or international amateur sports; and the prevention of cruelty to children and animals.”

Qualifying distributions are typically grants made to other IRC-recognized charitable organizations, although annual payout may also include the following:

- Grants made to non-charitable organizations or individuals for charitable purposes. For example, a grant may be made to a for-profit biotech firm to research a drug to treat a rare disease, which would not otherwise be a profitable undertaking. The recipient of such a grant must forego making a profit on the project. Increased reporting requirements apply to such grants.
- Reasonable and necessary administrative expenses
- Excise tax paid on foundation income
- Program-related investments. An example is student loans repayable to the foundation, but made at below-market interest rates as a charitable undertaking.
- Amounts set aside for future charitable purposes
- Funds used to acquire assets necessary to sustain tax-exempt operations

Expenses for managing investment assets, including custodial, brokerage and manager fees do not count as qualifying expenditures.

**PROHIBITED DISTRIBUTIONS**

Foundations are prohibited from making certain distributions, which are termed “taxable expenditures” in the IRC. These include:

- Distributions made to influence legislation;
- Distributions made as political contributions; and,
- Distributions for non-charitable purposes.

**INVESTMENT ASSETS**

The source of qualifying distributions is the foundation’s investment assets. These include but are not limited to stocks, bonds, real estate and other assets held for investment purposes. Assets excluded from the base of the 5% payout calculation are:

- Cash reserves;
- Assets used by the foundation to carry out tax-exempt purposes. (e.g., fixed assets such as furniture and research facilities; not to be confused with such items used as a means to generate income, such as computers, software, or resource material);
- Indebtedness used to acquire assets;
- Program-related investments; and
- Assets held for future use, such as an office acquired as a headquarters, but temporarily rented out.

Referred to as “non-investment assets,” these assets are expected to be used in direct support of charitable purposes, rather than as income generating resources and thus are excluded from the amount subject to calculation. Exhibit 1 offers a visual representation.
Exhibit 1. Determining assets subject to minimum distributable income calculation

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment assets</td>
<td>$5,400,000</td>
</tr>
<tr>
<td>Non-investment assets</td>
<td>$75,000</td>
</tr>
<tr>
<td>Foundation indebtedness</td>
<td>($100,000)</td>
</tr>
<tr>
<td>Amount subject to calculation</td>
<td>$5,300,000</td>
</tr>
</tbody>
</table>

Source: The Family Foundation Handbook, Table 7-4

The fair market value of the final amount is multiplied by 5% to obtain the minimum investment return, or minimum payout. In addition, the foundation may make several adjustments. The figure may be:

- Reduced by the year’s excise tax;
- Reduced by prior year’s overpayments (credits may not be applied after 5 years);
- Increased by the prior year’s qualifying distributions that have been returned;
- Increased by the amount of income distributions from split-interest trusts; or
- Increased by the amount of prior year’s underpayments.

PENALTIES FOR UNDER-DISTRIBUTION

Foundations have one tax year after the close of the previous tax year to meet the distribution requirement. A 15% excise tax is imposed on undistributed amounts that extend beyond one year, and an additional 15% tax is imposed in any subsequent year that the under-distribution remains. The excise tax can be avoided if the foundation demonstrates reasonable cause for the under-distribution. The foundation is subject to a 100% excise tax on the un-distributable amount within 90 days of receiving a deficiency notice from the IRS unless it can again reasonably justify its actions.

PENALTIES FOR TAXABLE EXPENDITURES

An initial tax of 10% is applied to a taxable expenditure, unless the foundation can demonstrate reasonable cause for the expenditure. A further 100% tax is imposed for any tax expenditure that is not corrected within the taxable period.

EXCISE TAX ON NET INCOME

A private foundation must pay a 2% excise tax on its net investment return, including realized and unrealized capital gains. Net investment income typically involves stocks, bonds, real estate, interest, dividends, and royalties, or any other assets held for investment purposes. This tax is intended to cover administration fees incurred by the federal government in monitoring private foundations. This can be reduced to 1% if a foundation meets specific requirements. For the most part, it is larger and more sophisticated foundations that qualify for this provision because of its overall complexity and in particular, the need to estimate portfolio values and investment income before the year-end.

EXEMPTIONS FOR OPERATING PRIVATE FOUNDATIONS AND PUBLIC CHARITIES

In general, the 5% rule and ancillary regulations do not apply to operating foundations and public charities because their organizational structures are materially less suited to the tax avoidance and misuse of assets that have periodically tainted the reputation of private grant-making foundations. In particular, operating foundations and public charities are managed under the discipline of having to gather and use assets under the scrutiny of the public and multiple donors.

RELATED READING


Are 5% distributions an achievable hurdle for foundations?

The 5% payout rule described in the previous two papers was originally a 6% payout rule. The required rate was lowered in 1976, in part because 6% was seen as being unsustainably high. Whether a 5% real return can be consistently achieved over the long term is thus a fundamental question. If it cannot be, then foundations without sources of new capital cannot expect to preserve their purchasing power indefinitely while meeting the 5% payout requirement. If it can be, then such an aspiration would be feasible.

The paper that follows—which has been updated here to include data through 2011—shows that 5% is a problematic rate on which to base this question. It is not so high that it is inarguably unsustainable, but neither is it low enough that it can be achieved in the absence of reasonably aggressive investment policies—and the challenge appears to have grown tougher since the first version of this analysis was published in 2004.
Are 5% distributions an achievable hurdle for foundations? Were they ever?

Russell first published an analysis focusing on the historical success of different spending rates in 2004 in the research report “Are 5% distributions an achievable hurdle for foundations? Were they ever?” (Yuan-An Fan and Steve Murray, 2004). Our 2009 update followed one of the most challenging periods in modern financial history as markets plunged and a recession settled over the US economy. As with the 2009 update, this current review finds that sustainably supporting charitable distributions continues to remain a difficult challenge.

The study employs historical data to determine whether typical investment portfolios have allowed foundations and endowments to meet their payout rates while simultaneously keeping up with inflation. Our 2009 study incorporated pre-1926 observations while also adding in the 2005-2009 returns. The current study extends the data through the end of 2011.

The 2009 review initiated the tracking of performance for portfolios containing alternative investment categories and that analysis is also updated in this study.

The data supporting the current analysis contains only three additional data points compared with the data of the 2009 study. Consequently, for traditional assets the additional data has limited influence on results. For alternative investments the additional three years comprise a significant portion of the available data (about 8% of the 39 annual observations), so values have shifted slightly (generally lower for three year rolling horizons and higher for one year horizons), but may simply be on their way to settling into a long-term pattern. We continue to view alternative investments as an important component of a long-term portfolio designed to support charitable payouts, particularly for organizations falling under the 5% spending requirements for non-operating private foundations, but they are unlikely to provide a magic bullet for those seeking to spend at dramatically higher rates.

Review of previous studies

The IRS requires that non-operating private foundations meet minimum payout requirements of approximately 5%, but this doesn’t typically encompass all cash flows out of the investment portfolio. Most organizations (including those not falling under the 5% spending requirement) have additional, non-qualified expenses. The 2004 and 2009 studies considered outflow levels (the combination of qualified and non-qualified spending) of 2% to 9% to gauge how various portfolio mixes would have fared in the years it studied.
Looking at history to estimate future market trends, we concluded that relatively aggressive (“aggressive” as defined by higher allocations to equity) portfolio mixes would be required for private foundations to meet their IRS spending obligations while maintaining the inflation-adjusted value of portfolio assets. The study also suggested that the trend toward alternative investments might be able to help these organizations generate returns that would enable them to increase their community support.

Provisions of the Pension Protection Act (2006) adjusted the definition of qualified expense causing a greater portion of actual expenses to fall outside of this category effectively increasing other qualified spending if this exclusion causes the level to lag the 5% required level.

The Uniform Prudent Management of Institutional Funds Act (UPMIFA) that had been adopted by 43 states and the District of Columbia at the time of the 2009 study has now been approved by all but one. It is too early to observe influences of this legislation on the aggregate payout rates of charitable organizations, but spending-related provisions of the act provide paths to additional spending for organizations that may previously have been limited by under-water accounts.

UPMIFA addresses prudent spending policy for endowed funds and provides greater flexibility for funds that have been hampered in spending by a historic dollar value accounting of their assets. More importantly for this paper, UPMIFA provides a 7% cap on spending from endowment funds. The Act does not outlaw spending above 7%, but does state that there is a “presumption of imprudence” if more than 7% of an endowment is spent in a single year, i.e., that the onus is on the organization to demonstrate prudence in this case. The goal of this restriction is to ensure that the purchasing power of the fund can be maintained into the future—precisely the measure of success used in these studies.

Data from the IRS Statistics of Income Bulletin, shown in Exhibit 1, provide a measure of the actual qualified spending amounts. As observed in prior studies, the actual spending by non-operating private foundations is distinctly higher than the 5% required level.

Note that UPMIFA provides guidance for endowed funds and not all states opted to include the provision of 7% maximum spending in their version of the act. Non-operating private foundations do not typically fall into this category, though the economics of sustainable spending would apply equally.
Exhibit 1: Value of non–charitable use assets\(^2\) and qualifying distributions for domestic non-operating private foundations (in $billion)

<table>
<thead>
<tr>
<th>Reporting year</th>
<th>Net value of non–charitable use assets</th>
<th>Qualifying distributions</th>
<th>Qualifying distributions as percentage of net value of non–charitable use assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>$516.813</td>
<td>$46.004</td>
<td>8.9%</td>
</tr>
<tr>
<td>2007</td>
<td>$566.771</td>
<td>$45.575</td>
<td>8.0%</td>
</tr>
<tr>
<td>2006</td>
<td>$508.978</td>
<td>$37.635</td>
<td>7.4%</td>
</tr>
<tr>
<td>2005</td>
<td>$460.279</td>
<td>$34.263</td>
<td>7.4%</td>
</tr>
<tr>
<td>2004</td>
<td>$427.731</td>
<td>$30.492</td>
<td>7.1%</td>
</tr>
<tr>
<td>2003</td>
<td>$386.964</td>
<td>$29.811</td>
<td>7.7%</td>
</tr>
<tr>
<td>2002</td>
<td>$368.838</td>
<td>$28.727</td>
<td>7.8%</td>
</tr>
<tr>
<td>2001</td>
<td>$397.968</td>
<td>$29.785</td>
<td>7.5%</td>
</tr>
<tr>
<td>2000</td>
<td>$421.273</td>
<td>$29.845</td>
<td>7.1%</td>
</tr>
<tr>
<td>1999</td>
<td>$382.028</td>
<td>$25.057</td>
<td>6.6%</td>
</tr>
<tr>
<td>1998</td>
<td>$326.067</td>
<td>$21.189</td>
<td>6.5%</td>
</tr>
<tr>
<td>1997</td>
<td>$279.163</td>
<td>$17.727</td>
<td>6.4%</td>
</tr>
<tr>
<td>1996</td>
<td>$229.452</td>
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<td>6.9%</td>
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<tr>
<td>1995</td>
<td>$194.955</td>
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<tr>
<td>1994</td>
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<td>$153.196</td>
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<td>1990</td>
<td>$127.726</td>
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</tr>
<tr>
<td>1989</td>
<td>$119.237</td>
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In the 2009 study we noted both that qualifying distributions continued to exceed the 5% level and that on average they exceed the 7% "excessive" level addressed in UPMIFA due to worries regarding its sustainability. Furthermore, non-qualified spending represents an additional 0.7% to 1.5% draw on fund assets.\(^3\)

It is interesting to note that the payout rate actually seems to increase when markets drop. A regression analysis of the 3-year average equity market returns and the spending rate from Exhibit 1 suggests that a 1% drop in the average market return leads to a 0.04% increase in the payout rate. This may serve as evidence that organizations are attempting to buffer their beneficiaries from the volatility of financial markets.

\(^2\) Non–charitable use assets are primarily investments and cash holdings.

\(^3\) A portion of this non-qualified spending reflects investment management fees. Boards would anticipate that these fees will be compensated through active returns above the benchmark return levels assumed in this analysis.
Spending sustainability

Asset returns in the three years since the 2009 analysis have been favorable for stocks and bonds. Cash investors have barely managed to maintain the nominal value of their assets and have lagged on an inflation-adjusted basis. As Exhibit 3 indicates, the average performance for the asset classes has changed little with three additional years of data.

Exhibit 2: Comparison of average annual returns in current and prior studies

<table>
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<tr>
<th></th>
<th>U.S. stocks</th>
<th>Non-U.S. stocks</th>
<th>Bonds</th>
<th>Cash</th>
</tr>
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<td>2004 study 1926–2003</td>
<td>12.1%</td>
<td>11.2%</td>
<td>5.5%</td>
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<tr>
<td>2009 study 1900–2008</td>
<td>11.1%</td>
<td>10.0%</td>
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<td>Current study 1900-2011</td>
<td>11.2%</td>
<td>10.2%</td>
<td>5.0%</td>
<td>3.9%</td>
</tr>
</tbody>
</table>

Sources: Refer to Exhibit A2

Exhibit 3 indicates the frequency with which a foundation would have been successful in maintaining its inflation-adjusted asset base over historical 1-, 3-, 5-, 10- and 20-year time periods. Spending rates ranging from 2% to 9% are considered, as are a range of investment portfolios. Entries with a grey background failed to maintain the inflation-adjusted value of the asset base at least half the time.

It should be clear from this data that even over longer time periods, E&F managers and boards should expect to be disappointed from time to time in their efforts to spend at current levels while simultaneously maintaining the after-inflation corpus of their assets. In fact, even over longer periods, the likelihood of maintaining even a 5% spending rate after inflation is only 50%, and the likelihood of maintaining a 7% spending rate is less than one in three, if future market experience proves similar to the past 112 years.

Exhibit 3 uses December as opposed to June year ends, which, we recognize, many endowments and foundations use. Choosing a June versus a December fiscal year end matters very little for multiple-year analysis, though it could make a difference in the outcome for an individual year (e.g., fiscal year ending June 2009).

5 Portfolio allocation weights are provided in Exhibit A1 of the appendix.
### Exhibit 3: continued

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As suggested in the earlier studies, the trend toward alternative investments may provide some relief for organizations as they attempt to maintain the purchasing power of assets while serving their communities. While the availability of reliable return histories for alternative investments is limited, we have constructed a representative return series using the asset classes shown in Exhibit A3 of the appendix. The series is an equal weighting\(^6\) of the returns of the alternatives available in a given year for the period starting in 1973.

Combining the exposure to alternatives with a 60% stocks/40% bonds portfolio, in Exhibit 4, we look at the likelihood of maintaining inflation-adjusted assets over 1-year and 3-year periods using 1973–2011 data. It appears that including alternatives may improve the chances of success by a fairly modest amount for very low payout rates and may provide a slight advantage as spending rates move into the 5% or higher range. A more closely considered weighting of alternative investments may lead to additional improvements.

**Exhibit 4:** Frequency inflation-adjusted return exceeds spending rate in 1-year and 3-year periods for 2%–9% spending for portfolios with alternative investments mixed with a 60% stocks/40% bonds traditional base, 1973–2011

| 1-year periods | 60% alternatives | 50% alternatives | 40% alternatives | 30% alternatives | 20% alternatives | 10% alternatives | 100% traditional
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| 3-year periods | 60% alternatives | 50% alternatives | 40% alternatives | 30% alternatives | 20% alternatives | 10% alternatives | 100% traditional
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\(^6\) Endowments and foundations do not typically construct equally weighted exposures to these nontraditional investments. In fact, the range of exposures is often associated with the size of the organization. Since the current question is whether these assets can help outpace inflation and support spending, we did not attempt to tie the allocation weights to any particular subset.

\(^7\) A 60% alternatives portfolio translates to 60% alternatives, 24% equity, 16% bonds. The 60% alternatives is equally-weighted of the alternatives listed in Exhibit A3. The 30% alternatives portfolio translates to 30% in an equally-weighted mix of alternatives, 70% in the traditional 60/40 mix.

\(^8\) “Traditional” = 60% equity/40% fixed income
What might the future hold?

While history can provide a window to possible future market return patterns, it is also informative to consult the experts. What do professional forecasters anticipate for upcoming market returns? Given the unprecedented low interest rates (the 10-year US Treasury yield is near 1.5% at the time of this paper), an unfiltered analysis of historical outcomes may have less to tell us than the outlooks of those who follow the market on an ongoing basis and factor in details of the economic backdrop forming a context for market returns.

The Federal Reserve Bank of Philadelphia maintains a Survey of Professional Forecasters which has been in existence since 1968. In 1992 questions were added to the survey to solicit opinions on the performance of the US stock and bond markets over subsequent 10-year periods. While forecasting is likely as much art as science, it is useful to consider the outlook from this group of professionals. In the words of mathematician Henri Poincare, "It is far better to foresee even without certainty than not to foresee at all."

Exhibit 5 shows the forecast of 10-year forward returns for a 60% weighting of the average outlook for stocks and 40% weighting of the average outlook for bonds based on the views of the survey participants. Also shown are the average prediction for inflation over the same 10-year periods and the simple difference between the two that provides a then-current prediction for the inflation-adjusted returns of the 60/40 portfolio.

As can be observed, the outlook for markets has declined steadily over the last 20 years. From an initial 5% inflation-adjusted return view, forecaster predictions have fallen to just 3%—a level that would make supporting a 5% spending rate untenable.

Exhibit 5: 10-year forecasts from Philadelphia Federal Reserve Survey of Professional Forecasters

Data as of August 2012

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9 The survey originated under the auspices of the American Statistical Association and the National Bureau of Economic Research and was transferred to the Federal Reserve in 1990. Details can be found at http://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters.

10 Henri Poincare, The Foundations of Science, p. 129

11 The stock and bond benchmarks specified in the survey are the Standard and Poors S&P500 Index and the 10-Year Treasury Bond, respectively.
Luckily, the results of Exhibit 5 come with some significant qualifications. Not only is the bond component based on a Treasury benchmark, the portfolio also contains no international exposure or allocations to real assets, hedge funds, private investments or traditional active management. Certainly the outlook for market returns has declined and this should be of great concern to non-profit investors, but the tools available to help improve returns about this relatively naïvely constructed portfolio are significant.

Conclusion

The difficulty of supporting a 5% or higher payout rate while maintaining the value of the investment portfolio has not lessened since the original 2004 study by Fan and Murray. Updating the data through the end of 2011 leads to a history-based forecast for moderately decreased success. Based on IRS data, non-operating foundations continue to spend a percentage or two above the 5% required levels, causing additional strain on investment assets.

Further supporting the difficulty of maintaining high payouts are the outlooks of professional forecasters whose projections of inflation-adjusted benchmark returns have fallen by about 2% over the last two decades.

The use of alternative assets over the 38 years from 1973 to 2011 suggests that these positions can be effective supplements to a portfolio; however, they have not provided sufficient returns to unambiguously address the challenges faced by endowments and foundations.

Appendix

Exhibit A1: Portfolio allocation weights

<table>
<thead>
<tr>
<th></th>
<th>U.S. stocks</th>
<th>Non-U.S. stocks</th>
<th>Bonds</th>
<th>Cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% equity</td>
<td>70%</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90% equity</td>
<td>65%</td>
<td>25%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>80% equity</td>
<td>60%</td>
<td>20%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>70% equity</td>
<td>50%</td>
<td>30%</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>60% equity</td>
<td>45%</td>
<td>15%</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>50% equity</td>
<td>35%</td>
<td>15%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>40% equity</td>
<td>30%</td>
<td>10%</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>30% equity</td>
<td>20%</td>
<td>10%</td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td>20% equity</td>
<td>15%</td>
<td>5%</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>10% equity</td>
<td>5%</td>
<td>5%</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>100% bonds</td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>100% cash</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exhibit A2: Data sources for traditional assets*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. stocks</td>
<td>DMS U.S. Equity Total Return</td>
<td>Russell 3000® Index Total Return</td>
</tr>
<tr>
<td>Non-U.S. stocks</td>
<td>DMS World Equity Total Return</td>
<td>Russell Global ex-US Index Total Return</td>
</tr>
<tr>
<td>Bonds</td>
<td>DMS U.S. Bond Total Return</td>
<td>Barclays US Aggregate Bond Index</td>
</tr>
<tr>
<td>Cash</td>
<td>DMS U.S. Bill Total Return</td>
<td>Citigroup 3-Month Treasury Bill</td>
</tr>
<tr>
<td>Inflation</td>
<td>DMS U.S. Inflation</td>
<td>US CPI</td>
</tr>
</tbody>
</table>


Exhibit A3: Data sources for alternative investments

<table>
<thead>
<tr>
<th>Investment</th>
<th>Source</th>
<th>First available year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodities</td>
<td>GSCI Commodity Index</td>
<td>1973</td>
</tr>
<tr>
<td>Private real estate</td>
<td>NCREIF Property Index Total Return</td>
<td>1973</td>
</tr>
<tr>
<td>Non-directional hedge funds</td>
<td>Hedge Fund Research Institute Fund of Hedge Funds Conservative Index</td>
<td>1990</td>
</tr>
<tr>
<td>Directional hedge funds</td>
<td>Hedge Fund Research Institute Fund of Hedge Funds Strategic Index</td>
<td>1990</td>
</tr>
<tr>
<td>Global REITS</td>
<td>FTSE EPRA/NAREIT Global REIT Index</td>
<td>1991</td>
</tr>
</tbody>
</table>

*The HFRI indexes are actually universes of hedge funds, rather than true indexes. These universes are subject to a variety of biases, including but not limited to self-selection, backfill, survivor and large fund biases. HFRI is a trademark of Hedge Fund Research, Inc and may be found at http://www.hedgefundresearch.com/?fuse=indices.*
Endowments, foundations and the inflation challenge

For almost all nonprofit organizations, it is not the nominal dollar value of the corpus nor the nominal dollar value of distributions that truly measures effectiveness, but rather the values in real terms, after adjusting for inflation. Different goods and services experience different rates of inflation: for example, professional services (such as education) generally have less scope for productivity gains through technology than the manufacturing sector, and hence their costs might be expected to increase faster than the broad CPI. Health care costs likewise can behave quite differently than headline inflation measures.

This paper tests the effectiveness of various asset classes in helping protect against various measures of inflation over the 1990s and 2000s.
Endowments, foundations and the inflation challenge

The vast majority of endowments and foundations (E&Fs) aspire to provide services to their communities in perpetuity.¹ That task is complicated by steady increases in costs through time; as inflation eats away at portfolio value, the ability to maximize benefits to both current and future beneficiaries becomes a critical focus of investment policy.

By their very nature, endowments and foundations are exposed to inflation (Ross and Madden, 2009).² Indeed, certain endowments, such as those attempting to keep up with increases in the cost of education or health care, face an inflation rate that is materially higher than inflation rates in other parts of the economy. E&Fs with a non-U.S. focus are also sensitive to exchange rates and inflation outside of the U.S.

In this paper we explore the relationships of various asset classes to inflation and the distinct behavior of medical and education inflation. The recent economic environment, including massive fiscal and monetary stimulus efforts by the U.S. and many other governments, has led some observers to believe that a higher rate of inflation is imminent. Such expectation has supported the proliferation of “inflation hedging” investment products. This paper is not meant to affirm projections that higher inflation is around the corner—indeed, Russell has forecast otherwise (Dueker and Luu, 2009).³ Rather, our intent is to address the very real issues faced by nonprofit organizations relative to the increasing costs of future services.

Our research methodology includes various correlation analyses with monthly, quarterly, semiannual and annual periodicity, analyses of different time horizons, investigations of the historical ability of asset classes and multi-asset mixes to surpass our collection of inflation indexes by 1% to 5% over such horizons and an analysis of lead and lag relationships between investments and inflation.

Inflation is represented through several measures: the U.S. Consumer Price Index (U.S. CPI), the medical and educational components of the U.S. CPI, the Higher Education Price Index (HEPI)⁴ and the G7 countries’ consumer price indexes (G7 CPI). To understand the effectiveness of various asset classes in lowering inflation risk, we evaluate the traditional equity and bond indexes (detailed below) as well as Treasury Inflation Protected Securities (TIPS), commodities, listed infrastructure, listed

¹ The Foundation Center and Council on Foundations, in its “Perpetuity or Limited Lifespan: How Do Family Foundations Decide?” study (2008), estimated that 63% of family foundations intend to operate in perpetuity and that 25% are undecided. For public charities, the percentage of “undecideds” is most likely higher.


⁴ Medical and Education CPI are both from the U.S. Census Bureau (http://www.bls.gov/CPI/). HEPI is calculated by the Commonfund Institute. (http://www.commonfund.org/Commonfund/CF+Institute/CI_About_HEPI.htm).
real estate and gold. In the pages to follow we describe the differences between the various measures of inflation and also the conventional wisdom on the asset classes.

We find that for E&Fs, as for all investors exposed to inflation, a well-diversified portfolio that incorporates exposures to real assets is an important aid to meeting the inflation challenge. In the following pages, we seek to bolster the reader’s understanding of the inflation sensitivities of nonprofits as we assess the ability of any asset class to “hedge” inflation; provide additional details on our data and methodology; and demonstrate our results. We conclude our paper with investment recommendations E&F’s should consider.

Background

Endowments and foundations must “trade off” their ability to support their communities through current grants and programs against their ability to provide such support in the future. Most of them aspire to intergenerational equity, so that the value of future support is comparable to that of today. The rate at which costs of services are expected to increase is factored into this balance, and most organizations seek to ensure that, after expenses, their assets increase at least as quickly as inflation. The relevant measure of inflation is specific to the charitable purposes of the organization.

E&Fs will want to design their portfolios to address the inflation pressures they feel. Yet to do so, they must have a good understanding of which assets are most likely to be helpful. Since education and health care E&Fs have unique inflation profiles, we devote this paper to understanding those assets which are important for organizations to consider as part of their diversified mix as they seek to keep pace with increases in costs.

Murray (2009) investigated the ability of portfolios to support a designated spending rate while also keeping pace with inflation. Using over 100 years of U.S. market data, the study exposes the difficulty of maintaining the spending requirements imposed on private foundations by U.S. tax law. The relatively recent availability of real estate, commodities, infrastructure and TIPS investments invites our more focused evaluation of those assets’ inflation-tracking merits.

The reader may notice that we have not to this point included “inflation hedging” among the terms of our discussion. While much ado has been made of the purported ability of certain asset classes to hedge inflation, we admonish the investor to exercise caution when setting expectations. “Hedging” typically describes an investment position that (ideally) moves in lockstep with the item being hedged. It is not clear that E&F investors should seek to manage their inflation challenges in this manner. More typically, organizations simply seek to invest in such a way that they are able to keep up with the relevant inflation measure over time.

Some asset classes may have had a long-term relationship with various measures of inflation, but no asset class is a specific hedge against inflation.

Indeed, most inflation series are reported only infrequently (at least as compared with the minute-by-minute availability of most securities market data), and reports often face subsequent revision. Attempting to hedge the twists and turns of an inflation target would be merely difficult if inflation processes were frequently reported. Absent a formal inflation swap, no asset is designed to provide such protection on an entire

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6 Non-operating private foundations are currently required to make qualified distributions of at least 5% of assets on an annual basis.
portfolio. The relative infrequency of inflation reporting leads us to consider broader measures of what it means to minimize inflation risk. Thus, our analysis compares the performance of assets and portfolios with inflation along multiple lines.

Some asset classes may have had a long-term relationship with various measures of inflation, but no asset class is a specific hedge against inflation. Indeed, as we will show, the most appropriate asset classes and portfolio mixes for outpacing inflation may be similar to those already in use by many investors—though there are some useful additional assets that may be of benefit.

Let us consider some examples of investments popularly called inflation hedges:

- **Commodities**—Collateralized commodities futures are often cited as particularly helpful in inflationary environments. It is often noted that some 40% of the CPI is commodities-based.\(^7\) The differences between commodities and inflation include the remaining 60% of the CPI, as well as the costs of transforming commodities into end products. For example, with commodities that are closely aligned with food, the final prices consumers pay in the grocery store reflect many “in between” steps that prevent them from varying in synch with variations in the prices of the underlying commodities market. Similarly, while energy—a large component of the commodities indexes—has a direct impact on consumer budgets as regards gasoline, it also creeps into other prices, such as travel, electricity, and heating oil, in a more muted fashion. Commodities may indeed experience a long-term benefit where inflation is concerned, but its volatility may make it a bumpy ride.

- **Real Estate Investment Trusts**—REITs are similar to commodities in that they are likely to have a long-term relationship to inflation and that housing is a material component of CPI. However, as in the case of commodities, REITs are several steps removed from the CPI calculation and of a much higher volatility level.

- **Infrastructure**—Some types of infrastructure assets, such as pipelines, electrical distributors, and toll roads, may have their fees or margins tied to inflation. As such, their cash flows are inflation-linked (though that linking may have a lag). While this linking is clear, security prices will be subject to market movements and not explicitly to inflation.

- **Treasury Inflation-Protected Securities**—Holders of TIPS bonds receive coupon payments that vary directly with inflation, and the ending principal of a TIPS will exactly reflect the inflation-adjusted value of the initial investment. Where TIPS diverge from inflation-linking is in their market prices. As with all other bonds, TIPS prices vary with yields. Therefore, the total return of TIPS and portfolios of TIPS will have a lower correlation with inflation than might be expected. For example, the monthly correlation of TIPS with inflation (based on CPI) has been 0.11 from October 1997 through June of 2009. Ultimately, a basket of TIPS will likely offer an inflation correlation similar to that of short-term bonds.

- **Gold**—Gold has been in the news of late as an inflation hedge, currency hedge, panic hedge, etc. While gold is not a typical holding in most E&F portfolios, we include it as part of our comprehensive inflation analysis for E&Fs. Gold is a diversifier to an equity and bond portfolio; however, gold has not exhibited attractive returns over the past few decades, except in the recent recession.

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\(^7\) The 40% is from the CPI-Urban index dated December 2008. This and other statistics may be found at [www.bls.gov/CPI](http://www.bls.gov/CPI).
While for these assets there may be a long-term relationship with inflation, short-term volatility may be challenging for the faint of heart. That said, investors who are able to maintain focus on the long term are likely to find some combination of these asset classes beneficial to their diversified portfolio mix.

Data and methodology
To evaluate the usefulness of various asset classes in managing an inflation exposure, we employ several tests and several indexes to proxy market exposures. The indexes we use are as follows:

- U.S. CPI (All Urban Consumers; Seasonally Adjusted)
- U.S. CPI Medical Component
- U.S. CPI Education Component
- U.S. Higher Education Price Index (HEPI)
- G7 CPI

There is a material difference between the U.S. CPI Education Component (Education CPI) and HEPI. Education CPI reflects costs faced by “consumers” of education and is calculated monthly. HEPI tracks the costs to colleges and universities for provision of educational services and is calculated annually at the end of June. Based on the available 18 years of data, we find that the Education CPI increases at a faster rate than does HEPI. The two indexes are shown in Exhibit 1.

Exhibit 1: Education CPI and HEPI growth rates

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8 U.S. CPI and its components can be obtained at http://www.bls.gov/cpi/. Educational CPI is available from November 1992; medical and general CPI series started in January 1991. HEPI is an annual series produced by Commonfund beginning in June 1992. G7 CPI is a weighted average of the CPI levels of the largest seven global economies (Canada, Germany, Italy, Japan, United Kingdom and United States). It is available from January 1991. Data through June 2009 is used which corresponds with the last announced value of the HEPI index.
We proxy asset classes and portfolios of assets from February 1991 with standard indexes as follows:

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equities</td>
<td>Russell 3000® Index</td>
</tr>
<tr>
<td>U.S. Aggregate Bonds</td>
<td>Barclays U.S. Aggregate Bond Index</td>
</tr>
<tr>
<td>Real Estate</td>
<td>FTSE/NAREIT Equity REIT Index</td>
</tr>
<tr>
<td>Commodities</td>
<td>DJ-UBS Commodity Total Return Index</td>
</tr>
<tr>
<td>Cash</td>
<td>U.S. One-Month Treasury Bill</td>
</tr>
<tr>
<td>Gold</td>
<td>DJ-UBS Gold Total Return Index</td>
</tr>
</tbody>
</table>

As we’ve noted above, our goal is to identify assets and portfolio mixes that are likely to be helpful to E&Fs facing inflationary pressures. Relying on the extent to which standard indexes illustrate the common ground of these organizations, we seek to identify assets that have demonstrated a historical tendency to improve the ability of nonprofit organizations to manage their inflation risk. The inflation challenge experienced by any individual or organization is likely to be unique; therefore, investors may need to take unique steps toward managing inflation exposure. We do not claim to see a direct, one-size-fits-all hedge to inflation.

To understand the relationships between portfolio returns and inflation outcomes, we compare the returns of individual asset classes as well as portfolios comprised of these asset classes to the outcomes of the five inflation measures. Portfolio weights are provided in Appendix Exhibit A1.

In comparing asset return behavior with inflation, we approach the data from several different directions:

**DOES THE CORRELATION OF INVESTMENTS WITH INFLATION DEPEND ON DATA FREQUENCY?**

While it is common to evaluate monthly data, most organizations and individuals are focused on a longer term. Therefore, in many cases we show our results with monthly, quarterly, semiannual, annual and biannual periodicity. We test whether results based on higher-frequency observations still hold when a longer time period is used. In several cases, they do not.

**ARE RESULTS DIFFERENT WHEN USING CALENDAR YEARS VS. ACADEMIC YEARS?**

For annual and biennial analyses, we evaluate both calendar years and July–June school calendar years, which conform to the end-of-June release of HEPI and reflect the fiscal year of many colleges and universities.
IS THERE A LEAD OR LAG EFFECT BETWEEN ASSET RETURNS AND INFLATION?
The effects of inflation on asset return may not be contemporaneous. Therefore, we include an analysis of the correlations of inflation to asset returns on a lagged as well as a contemporaneous basis.

WHICH INVESTMENTS PROVIDE THE BEST CHANCES FOR OUTPACING INFLATION?
In addition to correlations, we consider the ability of assets and portfolios of assets to outpace inflation by some margin over various time horizons. Correlation may be of less concern if an investment generally grows 4% faster than inflation, for example.

DO RECENT MARKET EVENTS BIAS OUR RESULTS?
The latter part of 2008 marked a time of extreme market behavior. Therefore, we also investigate results (particularly, correlations) with the period of August 2008 to present removed.9

A brief comparison of different inflation measures
Before we delve into the relationships between inflation and asset class returns, it will be helpful to look at the general behavior of the different inflation measures. In addition to portfolio-construction considerations, organizations will be influenced by the pattern of cost increases they may face as they continue to provide services into the future. To the extent that an organization’s expenditures are sensitive to specific areas, fiduciaries are well advised to consider those areas in devising their inflation-management strategies.

The five inflation measures appear to have distinctly different behaviors, as shown in Exhibit 2. Educational CPI rises most quickly, followed by Medical CPI, HEPI, U.S. CPI and G7 CPI.

Exhibit 2: Annual average growth and volatility for inflation indexes

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>4.3%</td>
<td>5.5%</td>
<td>3.5%</td>
<td>2.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.7%</td>
<td>2.3%</td>
<td>0.8%</td>
<td>0.9%</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

Other than for U.S. and G7 CPI, the monthly correlations among these measures as shown in Exhibit 3A are relatively low and sometimes negative. The relationships evaluated on a monthly basis differ from those evaluated over longer time periods in both signs and magnitudes. Correlations of annual data are provided in Exhibit 3B.

Exhibit 3A: Correlation of monthly rates

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical CPI</td>
<td>1.00</td>
<td>– 0.17</td>
<td>1.00</td>
<td>0.05</td>
<td>0.11</td>
</tr>
<tr>
<td>Education CPI</td>
<td>– 0.17</td>
<td>1.00</td>
<td>0.12</td>
<td>0.12</td>
<td>0.07</td>
</tr>
<tr>
<td>HEPI</td>
<td></td>
<td></td>
<td>1.00</td>
<td>1.00</td>
<td>0.76</td>
</tr>
<tr>
<td>U.S. CPI</td>
<td>0.05</td>
<td>0.12</td>
<td>0.76</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>G7 CPI Survey</td>
<td>0.11</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9 N.B. This is mostly in consideration of monthly data.
In comparing Exhibits 3A and 3B, we see that periodicity matters in evaluating the inflation facing different organizations. For example, Medical CPI and Education CPI grow in opposite directions on a monthly basis and tend to move together on an annual basis. In observing Exhibit 1 above, we note that Education CPI tends to experience a large change at mid-year, with relatively minor adjustments otherwise—quite similarly to the annually calculated HEPI. Therefore, it could be that any monthly analysis of Education CPI is fundamentally flawed, because intra-year analysis obscures the real inflation time, which is June–July.

In addition, we note that on an annual basis, both Education CPI and HEPI show a negative relationship to U.S. CPI and G7 CPI. The Education CPI does not exhibit such a negative relationship when examined monthly. Perhaps only the July–June year is relevant for Education and, if this is so, our second analysis demonstrates the true relationship to any sort of education analysis.

We now explore the relationships among various asset classes and various measures of inflation. Just as inflation measures differ from each other, the relationships to asset classes vary by inflation type and over periodicity.

Case study 1: Medical CPI

Medical CPI is the second-highest inflation measure over our sample period—outpaced only by Education CPI. With an average annual inflation of 4.3% and very little variation around that average, E&Fs that support medical causes face quite a challenge in maintaining their services over time. Because Medical CPI is material regardless of economic environment, these E&Fs are more likely to experience volatility in their expenditures compared with their investment returns.
In Exhibit 4, we examine the historical correlation of various assets with Medical CPI. We note that Medical CPI is most correlated to TIPS; however, given the relatively low return level of TIPS, stopping at correlation would be naïve for an E&F facing such a high rate of inflation. In Exhibit 5, we consider the ability of various assets and portfolios to outperform Medical CPI for rolling biannual periods. While TIPS are most highly correlated with Medical CPI, a TIPS portfolio is unlikely to keep pace with Medical CPI over the long run, much less support ongoing spending needs, due to the current low yield environment.

What is most striking about Exhibit 5 is that so many portfolios of assets appear to provide probabilities of beating inflation by various margins that are similar to the success rates of individual assets. In the assets section of the exhibit, we observe that commodities are most likely to outpace Medical CPI at the lower margins, while real estate and infrastructure have historically done better at the higher margins. Both real estate and listed infrastructure had remarkably good runs over the past decade, but given the overvaluation in real estate, we may have less confidence in their ability to maintain such momentum going forward.
Exhibit 5: Probability of beating medical CPI by various margins in rolling two-year calendar periods, Jan 93–Dec 08

<table>
<thead>
<tr>
<th>P{beat inflation by …}</th>
<th>0%</th>
<th>2%</th>
<th>4%</th>
<th>6%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real Estate</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>Commodities</td>
<td>75%</td>
<td>75%</td>
<td>75%</td>
<td>50%</td>
</tr>
<tr>
<td>Listed Infrastructure</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>U.S. Equities</td>
<td>63%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Non-U.S. Equities</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
<td>50%</td>
</tr>
<tr>
<td>Aggregate Bonds</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>38%</td>
</tr>
<tr>
<td>U.S. TIPS</td>
<td>50%</td>
<td>33%</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>1 Month Treasury Bill</td>
<td>38%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Gold</td>
<td>63%</td>
<td>63%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Portfolios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE/Comm/LI</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>RE/Comm/LI/TIPS</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>RE/Comm/LI/TIPS/Gold</td>
<td>75%</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>60 Equities /40 Fixed Income</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>60/40 + RE/Comm/LI</td>
<td>75%</td>
<td>63%</td>
<td>63%</td>
<td>50%</td>
</tr>
<tr>
<td>60/40 + RE/Comm/LI/TIPS</td>
<td>75%</td>
<td>63%</td>
<td>63%</td>
<td>50%</td>
</tr>
<tr>
<td>60/40 + RE/Comm/LI/TIPS/Gold</td>
<td>75%</td>
<td>63%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

In looking at the information in Exhibits 4 and 5, we might do well to find the portfolios with the best combination of correlation and outperformance; such a combination are expected to provide good returns with low volatility around asset growth as compared to expenses. The portfolios with the best combination here are those including real assets (commodities, real estate and listed infrastructure). If we discount the unusually strong performance of real estate and infrastructure in the last decade, we would prefer that real assets be combined with a stocks and bonds mix, with TIPS and gold playing a less important role.

**Recommendation #1:** E&Fs supporting medical causes should consider using well-diversified portfolios that include stocks, bonds and real assets.

**Case study 2: Education CPI and HEPI**
Recall from above that Education CPI represents a consumer’s view on inflation, whereas HEPI represents the view of the university, the “producer” of education. Education CPI exhibits the highest average in our group at 5.5% annually and also the highest volatility among our inflation measures at 2.3%, 2.3% and is at three or four times the volatility of any other index. This is contrasted with HEPI, which shows a (still substantial) annual rate of 3.5% but lower volatility.

As we did with Medical CPI, we will show various views on the correlation and probability of outperformance by various assets and portfolios. In the case of education-related indexes, however, we will consider July through June annual periods rather than calendar years. HEPI is available only on a July through June basis.
Curiously, in Exhibit 6 under the assets section, we see a switch as periodicity decreases. For time periods of less than one year, Aggregate Bonds show the highest (albeit very small) correlations. For the annual periods, however, both Education CPI and HEPI have an oddly high correlation with gold. We offer no explanation for this one, but also note that real estate, commodities and infrastructure (the suite of real assets) and global equities are also positively correlated at the lower periodicity. Perhaps one might draw the inference that currency is a material factor in education production and consumption, since gold and real assets are global in nature.

Under the portfolio section, we again note that real assets offer the higher correlations for all periodicities. As well, at the portfolio level, anything with fixed income shows a negative correlation, even though Aggregate Bonds looked correlated at the individual asset class level.
Exhibit 7 shows assets and portfolios outpacing Education CPI and HEPI by various margins. While gold had a curiously high correlation with Education CPI, we observe that it did not compete well against other asset classes in beating inflation. In fact, for Education CPI, U.S. equities are as useful as any asset class. In evaluating portfolios, we believe a mix of equities, bonds and real assets shows the best potential for outpacing the rapid growth of education costs by a reasonable margin.

**Recommendation #2: For E&Fs focused on consumer education expenditures, a combination of equities, bonds and real assets may be an attractive combination.**

When evaluating the HEPI index, we find that stocks and bonds are the most effective assets for outpacing inflation. However, the inclusion of real assets becomes a toss-up when we look at portfolios from the perspective of outpacing HEPI over biannual periods. When we combine this information with what we’ve observed on the correlation front, combining real assets with TIPS and gold may be more beneficial, to the extent that volatility between returns and expenses is reduced.

**Recommendation #3: College and university endowments seeking to meet their financial obligations may find it helpful to add real assets, TIPS and gold to an equity and bond mix.**
Case study 3: U.S. CPI and G7 CPI

U.S. CPI and G7 CPI inflations are very similar in all our tests. This is not too surprising, given that the U.S. makes up almost 50% of the G7 index.10 Thus our final case study, an evaluation of these two indexes, has information useful to E&Fs with non-medical and non-education mandates.

In Exhibit 8, we again review the correlations of various asset classes and portfolios to inflation for differing periodicities. The rankings of the correlations are reasonably robust to periodicity and, as is the case above, we see increasing correlations as the time period lengthens. Among the asset classes, commodities are, by a material margin, the most highly correlated to inflation. Among the portfolios, those including real assets and real assets combined with TIPS and gold are materially more highly correlated than other portfolios. Indeed, what is most striking about the portfolios is the inability of real assets to move the dial much on a 60/40 portfolio.

Exhibit 8: The effect of periodicity on the correlation of U.S. and G7 CPI with asset and portfolio returns

<table>
<thead>
<tr>
<th></th>
<th>Monthly Feb 91 – Jun 09</th>
<th>Annual Calendar Jan 92 – Dec 08</th>
<th>Monthly Feb 91 – Jun 09</th>
<th>Annual Calendar Jan 92 – Dec 08</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U.S. CPI</td>
<td>G7 CPI</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real Estate</td>
<td>0.08</td>
<td>0.46</td>
<td>0.13</td>
<td>0.42</td>
</tr>
<tr>
<td>Commodities</td>
<td><strong>0.22</strong></td>
<td><strong>0.75</strong></td>
<td><strong>0.30</strong></td>
<td><strong>0.63</strong></td>
</tr>
<tr>
<td>Listed Infrastructure</td>
<td>0.05</td>
<td>0.53</td>
<td>0.10</td>
<td>0.47</td>
</tr>
<tr>
<td>U.S. Equities</td>
<td>0.00</td>
<td>0.29</td>
<td>0.06</td>
<td>0.22</td>
</tr>
<tr>
<td>Non-U.S. Equities</td>
<td>0.05</td>
<td>0.48</td>
<td>0.09</td>
<td>0.37</td>
</tr>
<tr>
<td>Aggregate Bonds</td>
<td>– 0.12</td>
<td>– 0.06</td>
<td>– 0.15</td>
<td>0.01</td>
</tr>
<tr>
<td>U.S. TIPS</td>
<td>0.11</td>
<td>0.54</td>
<td>0.08</td>
<td>0.49</td>
</tr>
<tr>
<td>1 Month TBIII</td>
<td>0.13</td>
<td>0.30</td>
<td>0.12</td>
<td>0.26</td>
</tr>
<tr>
<td>Gold</td>
<td>0.09</td>
<td>0.30</td>
<td>0.05</td>
<td>0.26</td>
</tr>
<tr>
<td><strong>Portfolios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE/Comm/LI</td>
<td>0.16</td>
<td>0.71</td>
<td><strong>0.23</strong></td>
<td>0.61</td>
</tr>
<tr>
<td>RE/Comm/LI/TIPS</td>
<td>0.15</td>
<td>0.71</td>
<td>0.22</td>
<td><strong>0.62</strong></td>
</tr>
<tr>
<td>RE/Comm/LI/TIPS/Gold</td>
<td><strong>0.16</strong></td>
<td><strong>0.72</strong></td>
<td>0.21</td>
<td>0.61</td>
</tr>
<tr>
<td>60 Equities /40 Fixed Income</td>
<td>– 0.02</td>
<td>0.29</td>
<td>0.03</td>
<td>0.23</td>
</tr>
<tr>
<td>60/40 + RE/Comm/LI</td>
<td>0.03</td>
<td>0.45</td>
<td>0.09</td>
<td>0.37</td>
</tr>
<tr>
<td>60/40 + RE/Comm/LI/TIPS</td>
<td>0.02</td>
<td>0.42</td>
<td>0.08</td>
<td>0.35</td>
</tr>
<tr>
<td>60/40+RE/Comm/LI/TIPS/Gold</td>
<td>0.01</td>
<td>0.40</td>
<td>0.07</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Yet correlations are, as we know, only part of the story. In perusing Exhibit 9, we observe that real assets, even on a stand-alone basis, are very effective at beating inflation by small and large margins over rolling two-year periods. What is also apparent is that, irrespective of low correlations, the 60/40 portfolio, either alone

or combined with real assets, shows a high probability of beating inflation by a 2% margin. However, to get a higher margin (of 6%), real assets seem to be more effective for this sample period. Keep in mind, once again, that real assets have had a very good run for the past 20 years and there is no guarantee it will continue.

Exhibit 9: Probability of beating U.S. and G7 CPI by various margins in rolling 2-year calendar periods, Jan 93 – Dec 08

<table>
<thead>
<tr>
<th>Assets</th>
<th>U.S. CPI</th>
<th>G7 CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P{beat inflation by ...}</strong></td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>Commodities</td>
<td>75%</td>
<td>50%</td>
</tr>
<tr>
<td>Listed Infrastructure</td>
<td>75%</td>
<td>63%</td>
</tr>
<tr>
<td>U.S. Equities</td>
<td>63%</td>
<td>50%</td>
</tr>
<tr>
<td>Non-U.S. Equities</td>
<td>63%</td>
<td>50%</td>
</tr>
<tr>
<td>Aggregate Bonds</td>
<td>50%</td>
<td>38%</td>
</tr>
<tr>
<td>U.S. TIPS</td>
<td>50%</td>
<td>33%</td>
</tr>
<tr>
<td>1 Month TBill</td>
<td>38%</td>
<td>0%</td>
</tr>
<tr>
<td>Gold</td>
<td>63%</td>
<td>50%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Portfolios</th>
<th>U.S. CPI</th>
<th>G7 CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>RE/Comm/LI</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>RE/Comm/LI/TIPS</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>RE/Comm/LI/TIPS/Gold</td>
<td>75%</td>
<td>50%</td>
</tr>
<tr>
<td>60 Equities /40 Fixed Income</td>
<td>63%</td>
<td>38%</td>
</tr>
<tr>
<td>60/40 + RE/Comm/LI</td>
<td>75%</td>
<td>50%</td>
</tr>
<tr>
<td>60/40 + RE/Comm/LI/TIPS</td>
<td>75%</td>
<td>50%</td>
</tr>
<tr>
<td>60/40+RE/Comm/LI/TIPS/Gold</td>
<td>75%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Finally, unlike our previous two case studies, the lead and lag relationships between portfolio returns and U.S. and G7 CPI were very interesting. Since the U.S. and G7 CPI results were very similar, we report only U.S. CPI lead and lag information. In Exhibit 10, we see that real assets tended to lead inflation by about one quarter, whereas portfolios with stocks and bonds led inflation by three quarters. Therefore, we might infer that real assets have a more direct and immediate cause/effect on price levels, while a general heating up of the economy takes more time to show up in prices (perhaps, outside real assets, prices are stickier).
Bringing together the analyses of correlation, outperformance and leading/lagging, we see that (a) real assets have benefited investors with inflation exposure and (b) that combining real assets with stocks and bonds improved investors’ ability to outperform inflation over two-year periods.

Recommendation #4: For investors with exposure to broad U.S. or other developed markets inflation, combining real assets with stocks and bonds may be appropriate. The returns on these assets may lead the onset of inflation.

What is the effect of the 2008 financial crisis on these relationships?

Almost without exception, the correlations between the asset class returns and the inflation measures were lower during the July 2008–June 2009 period. If this time period is removed from the data, the correlations rise, but the asset class that achieves the highest correlation with each measure of inflation rarely changes. The average increases in correlation from including the final year in the data set is shown in Exhibit 11.

Exhibit 11: Average increase in monthly correlations to asset returns from excluding July 2008–June 2009

| Medical CPI, Feb 91 – Jun 08 | 0.11 |
| Education CPI, Feb 93 – Jun 08 | −0.02 |
| HEPI, Jun 92 – Jun 08 | 0.07 |
| U.S. CPI, Feb 91 – Jun 08 | 0.21 |
| G7 CPI Survey, Feb 91 – Jun 08 | 0.20 |
Summary
As nonprofit organizations strive to maintain their effectiveness through time, the relentless drag of inflation on portfolio values calls for the construction of portfolios that can best respond to its consequences. Endowments and foundations focusing on medical or educational causes may face a higher rate of inflation than broad CPI.

Not surprisingly, real assets are generally strong candidates for offsetting inflation’s effects, and over the long term, a well-balanced portfolio that includes stocks, bonds and real assets provides the best opportunity to keep up with inflation and manage the burden of rising costs.

Our strongest conclusions can be summarized in the following recommendations:

- **Recommendation #1:** E&Fs supporting medical causes should consider using well-diversified portfolios that include stocks, bonds and real assets.
- **Recommendation #2:** For E&Fs focused on consumer education expenditures, a combination of equities, bonds and real assets may be an attractive combination.
- **Recommendation #3:** College and university endowments seeking to meet their financial obligations may find it helpful to add real assets, TIPS and gold to an equity and bond mix.
- **Recommendation #4:** For investors with exposure to broad U.S. or other developed markets inflation, combining real assets with stocks and bonds may be appropriate. The returns on assets may lead the onset of inflation.

Appendix

Exhibit A1: Portfolio weights

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Equities</th>
<th>Fixed Income</th>
<th>Commodities</th>
<th>Real Estate</th>
<th>Global Listed Infrastructure</th>
<th>TIPS</th>
<th>Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Assets</td>
<td>40%</td>
<td>32%</td>
<td>24%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>Real Assets + TIPS[1]</td>
<td>40%</td>
<td>32%</td>
<td>24%</td>
<td>24%</td>
<td>24%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Real Assets, TIPS, Gold</td>
<td>40%</td>
<td>32%</td>
<td>24%</td>
<td>18%</td>
<td>18%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>60% Eq/40% Fixed Income</td>
<td>60%</td>
<td>40%</td>
<td>24%</td>
<td>18%</td>
<td>18%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>60/40 + RA</td>
<td>48%</td>
<td>32%</td>
<td>8%</td>
<td>6%</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60/40 + RA + TIPS</td>
<td>48%</td>
<td>32%</td>
<td>6.4%</td>
<td>4.8%</td>
<td>4.8%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>60/40 + RA + TIPS + Gold</td>
<td>48%</td>
<td>32%</td>
<td>4.8%</td>
<td>3.6%</td>
<td>3.6%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Prior to the availability of US TIPS in October of 1997, the portfolios omit this entry and scale up weights on remaining components.
Liquidity: From afterthought to headache

Liquidity is a classic example of asymmetric effects: if you have enough, there is little to be gained from having more; but if you do not have enough, the best of long-term strategic plans can be derailed. Before 2008, liquidity attracted little attention as an investment topic, but when the financial crisis hit, many nonprofit organizations found that their investment decisions were dominated by liquidity considerations. Hence the title of this article, first published in early 2012 in our quarterly newsletter, *Communiqué*. It reviews the continuing evolution of liquidity management in the aftermath of the crisis and in light of such trends as the increasing adoption of alternative investments and the growing use of derivatives.
Liquidity: From afterthought to headache

Liquidity management—making sure there’s enough cash on hand to meet spending needs—is something that was top of mind for only a few institutional investors five years ago. Those with very regular outflows, such as pension plans with high benefit payments, non-profits with high spending rates, or large and mature allocations to alternatives are well versed in this process. But for investors today, it’s become an important element of fund management. This article describes six factors that helped drive this change.

Improving risk and return

Today’s portfolios are more tailored to institutional investors’ goals and preferences, but the general trends over the last few years come in six common flavors:

1. Targeted fixed income allocations
2. Increased allocation to alternative investments
3. Moving toward global equity
4. Reduced assets, same spending needs
5. Increased use of derivatives
6. Market volatility

The liquidity impact of each move individually is fairly subtle. However, these factors all have a negative impact on liquidity. The exhibit below illustrates a generalized liquidity heat map to illustrate the overall effect of these changes. While most investors tend to think in asset space, particularly with respect to liquidity, this first is shown relative to spending obligations which are difficult to change in the short term and are effectively fixed dollar amounts.

The impact to these six broad changes is discussed in more detail below.

TARGETED FIXED INCOME ALLOCATIONS

The role of fixed income has changed for many investors (especially pension plans) from the low risk/diversifying asset to specialized and targeted investment strategies. Surplus-oriented plans have moved toward long duration credit allocations to better match liabilities. Other investors have added exposures to high yield, emerging markets and more broadly “opportunistic” credit strategies. In both cases, there are higher expected returns and/or reduced risk, but generally less liquidity than traditional broad market fixed income portfolios.
During the financial crisis, it became clear that the market structure of bonds changes during times of stress and liquidity can effectively dry up. Costs to trade some previously liquid securities increased to 200 basis points or more.\(^1\) When cash was needed during this time, investors looked to the most liquid managers; and those managers were forced to sell the most liquid holdings. This created a distortion of portfolio structure and of subsequent performance. The result is that equity is now the preferred asset class for liquidity purposes due to the more homogenous market structure.

Exhibit 1: The impact of asset allocation changes on liquidity

INCREASED ALLOCATION TO ALTERNATIVE INVESTMENTS

Due to the private nature of the assets involved and/or the structures of portfolios, alternative investments tend to be the most illiquid portion of the asset allocation picture. In fact, one key source of return for many strategies in this space is an illiquidity premium. Accordingly, alternative investments are only viewed as a source of liquidity in the most dire of circumstances. But that is not the whole story. The nature of many alternatives is a commitment of capital that gets drawn down over an uncertain period of time. This increases the overall liquidity needs of the portfolio, and the need for flexibility due to the less predictable flows compared to monthly benefit payments.

GLOBAL EQUITY

Equity portfolios have increasingly moved from a strong home country bias to a more global capitalization weighted approach. In the process of investing more assets overseas, liquidity is reduced in two ways. First, the cost to trade foreign securities is on average greater than in the U.S. Typical transactions costs in the U.S. are 10–15 basis points (bps), where a developed non-U.S. portfolio is 25–35 bps\(^2\), and larger trades can have a greater impact on spreads compared to U.S. Second, global market trading hours and settlement cycles mean that an extra day or more can be required to have cash available.

REDUCED ASSETS, SAME SPENDING NEEDS

Whether the primary objective is to provide benefit payments to retirees or to meet the spending goals of a non-profit, the reduction in assets to meet these needs may have the biggest impact on overall liquidity. As assets fall, not only is there a greater return needed from the remaining assets, but the stable payment levels now constitute a proportionately greater value of assets. For example, if assets drop 20%, the liquidity demands on the remaining assets are 25% higher.

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\(^1\) Source: Russell Implementation Services, based upon transition management liquidity analysis for pre-trade estimates and other market liquidity tools used through the financial crisis from 2008-2009.

\(^2\) Source: Russell Implementation Services, based upon transition management liquidity analysis for pre-trade estimates and trading experience during 2011.
INCREASED USE OF DERIVATIVES

Derivatives use has increased substantially among institutional investors as they have sought better ways to manage exposures. Derivatives can be very effective in this role, and are often used specifically for liquidity management. However, market convention and prudent risk management requires immediate realization of gains and losses to minimize counterparty risk. Compare this to a physical portfolio that accumulates unrealized gains and losses only. The same investment outcome is achieved, but the liquidity needs of the derivatives portfolio can be challenging to manage during volatile markets.

MARKET VOLATILITY

The factors discussed above are changes to portfolio structure and the level of assets. One final and very powerful factor for all funds has been environmental: increased market volatility. From the start of 2003—following the tech crash—to the end of 2007, equity market volatility was generally declining from around 20% to an extended period of around 10%. The subsequent four years it more than doubled—averaging 27%—with prolonged periods above 40%. The dramatic increase in volatility has tested the nerves of investors and helped motivate the meaningful asset allocation changes. It also increases the degree of difficulty for managing liquidity. When cash is raised, it generally comes from an overweight asset class to accomplish a “free” rebalancing trade. However, huge changes in the relative performance of asset classes can happen in very short periods. These market swings can quickly move the overweight asset to underweight, adding unintended risk to the portfolio.

Exhibit #2: CBOE volatility index (VIX) 2003–2011

![CBOE volatility index (VIX) 2003–2011](chart)

Indexes are unmanaged and cannot be invested in directly. Data is historical and is not indicative of future results.

Contributions—a silver lining for pension plans?

Ultimately, if the asset performance falls short of full funding, contributions will need to be made. This has a positive effect on liquidity for pension plans. In some cases, plans have contributed up to a year’s worth of benefit payments. But the timing of contributions tends to be lumpy, rather than synchronized with benefit payments. This timing mismatch provides an abundance of liquidity, which has its own issues. A common reaction is for a sponsor to leave the contribution in cash rather than invest in the capital markets to “preserve the value” or avoid the transactions costs associated with a roundtrip investment. However, holding cash yielding near 0% creates a significant drag on the total fund return and is a massive and conscious bet against policy.

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3 Source: Bloomberg.
Practical solutions

All changes considered, funds are now managing twice the amount of cash flows with far fewer liquid assets to draw on. Careful and deliberate liquidity management has gone from a luxury to a necessity. Fortunately there are a few viable solutions available to institutional investors to help reduce the cost of managing the increasing demands on liquidity. Three of the primary solutions include a futures overlay, index funds and exchange traded funds (ETFs). It is important to note that these are not mutually exclusive. A fund can use a combination of two or even all three of the above solutions depending on specific needs and circumstances.

Like any investment strategy, liquidity management is more likely to be successful with a thoughtful and deliberate approach, adapted to a changing portfolio and environment over time. Setting up a liquidity management process with a range of tools to gain market exposures is a significant step reducing the impact of providing liquidity for today’s investment portfolios and their beneficiaries. Reducing the cost of managing liquidity (along with a little help from the markets!) may help get investors back to a fully funded position.
Russell’s model portfolio framework for endowments and foundations

Traditional approaches to asset allocation can lead to a heavy concentration of risk (over 90%, by some measures) in a single factor: the return on equity markets. Nonprofit organizations have for many years sought ways to diversify that risk, looking for exposures not only to various markets, but also to skill-based strategies, private markets and other opportunities.

The Russell model portfolio framework described in this 2008 paper is one approach to building a portfolio that seeks to make use of a diversified mix of sources of return.
Russell’s model portfolio framework for endowments and foundations

Building the right investment structure for an endowment or a foundation is a complex challenge. Strategic questions such as investment objectives and return targets quickly lead to a daunting array of other questions: the role of alternatives, implementation issues, questions of risk, and how to find the right investment vehicles to put the strategy into effect, among many others.

To help our clients face this challenge, Russell uses a model portfolio framework that helps institutional investors such as endowments and foundations address the choices systematically, and create well-structured portfolios that take into account their specific objectives, resources, and circumstances.

The challenge—reduce reliance on public equity markets

Despite the big steps that some (mostly very large) endowments and foundations have taken towards alternative asset classes, it remains the case that, for most of this market, there is still a very heavy concentration on public equity markets as a source of investment return. While the high profile Yale University Endowment, for example, has just 25% of its assets invested in the stock market, this is not typical: the average university endowment has 47%, and the average foundation has 52%.

These allocations represent an enormous concentration of risk. Indeed, by our calculations, 98% of the variance in returns of an investor with 45% invested in U.S. equity indexes, 20% in non-U.S. equity indexes and 35% in fixed income indexes can be attributed to equity market volatility. Add in traditional active management associated with those asset classes and the figure only falls to 96%—the return pattern is still completely dominated by the performance of equity markets.

Responding to the challenge—Russell’s model portfolio framework

Most endowments or foundations are looking for fairly high levels of return from their investments: often somewhere in the range 7% to 10% annually (or 4-7% after the effect of inflation). If the reliance on equity markets is to be reduced, then alternative

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1 The 2007 Yale Endowment annual report.
2 NACUBO Endowment Study 2007—47% equal weighted allocation to equities for funds greater than $1 billion; 57% equal weighted; and 47% dollar-weighted allocation to equities for the total participants in the study.
sources of return must be found if those targets are to remain achievable. So the key questions must be asked: what are the best sources of return and how can the average endowment access them?

Our model portfolio framework uses four steps to help answer these questions.

STEP 1: SEEK DIVERSESIED EXPOSURE VIA SYSTEMATIC RETURNS (BETA) FROM PUBLIC MARKETS

While the Russell model portfolio framework relies less on equity markets than traditional investment approaches, these markets still play an important role at the core of sound investment programs, along with the systematic returns (or beta) available from other publicly-traded markets.

There’s a lot that is appealing about these sources of return: they are relatively easy (and cheap) to access; there are many strategies and products to choose from; and, because these types of investments are familiar, boards are usually comfortable with the exposure and the risks they entail. Consider the typical board’s reaction to a 10% drop in equity markets over a few weeks, reducing the value of the total investment holdings by 5%. Then compare that to how a 5% loss in the total value of the holdings would be seen if it happened for any other reason. Familiarity has bred comfort.

Even within public markets, most endowments or foundations do not take advantage of the full breadth of available opportunities. Global equity strategies range from traditional large cap mandates to niche strategies such as frontier emerging markets and micro-cap, while fixed income strategies range from treasuries through high yield, emerging markets and distressed debt. Other categories fall into the public market arena including public real estate (REITs), collateralized commodity futures and listed infrastructure.

STEP 2: ADD SKILL-BASED (ALPHA) STRATEGIES

One way to diversify away from equity market beta as a source of return is to place greater emphasis on skill-based (alpha) strategies. Potential sources of alpha have widened tremendously in recent years. In addition to traditional long-only active management mandates, there is a growing opportunity set with strategies associated with alpha extension (e.g., 130%/30%), diversified hedge fund approaches, global tactical asset allocation, specialist active currency management, exposure management, and more.

STEP 3: ADD TOTAL RETURN STRATEGIES WHERE ALPHA AND BETA CANNOT BE SEPARATED

Not every investment opportunity can be neatly split into its systematic (or beta) and skill-based (or alpha) parts. These include some major, diverse, global private or less liquid investments that are becoming increasingly accessible to many institutional investors. Under the general heading of private real estate, for example, would fall traditional “core” mandates which typically would lie somewhere between equity and fixed income on the risk/return spectrum, but other opportunities in this category include the more aggressive areas of value-added and opportunistic real estate. Likewise private equity spans a number of strategies including secondaries, leveraged buyouts and venture capital. Private infrastructure also offers a range of risk/return profiles from the more bond-like mature investments to private-equity like greenfield opportunities.

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6 For a discussion of whether these return aspirations are likely to be met for endowments and foundations in general, see Blackwell, R. and R. Collie (2008) Q: Will a 6% real return be available to non-profit investors in the future? A: Not always. Russell Research, April.
STEP 4: BE OPPORTUNISTIC

The fourth step in the Russell model portfolio framework is to explicitly open the door for constant review of the investment structure and to make space for tactical shifts in response to market developments. Many endowments and foundations have investment processes and structures that create barriers to the consideration and implementation of new opportunities. But some of the most successful investors have been the ones that instead sought out and embraced them. Few non-profit organizations have the resources of a Yale, Harvard, or the Ford Foundation, and we do not recommend that they attempt to replicate the processes that those better-resourced organizations have built. But, opportunistic strategies can nonetheless often be included even in less exalted programs through the use of vehicles such as directional hedge funds (most of which we would categorize as opportunistic investors, as opposed to their non-directional low-beta counterparts, which sit more naturally into the “alpha” step).

Implementation

If the benefits of diversification are to be maximized, then strategies need to be looked at in the context of the total portfolio, and risk should be assessed in terms of contribution to risk at the total fund level, not in isolation. The broader set of investment opportunities that the Russell model portfolio framework covers brings with it the need to take into account a different set of risk considerations. Risk is not simply about asset volatility, but also about liquidity, lock-up periods, leverage, governance, operations, and transparency.

As we work through this process with clients, there are many other implementation issues that need to be addressed, many of which are specific to the particular circumstances of each client. The cost and implementation approach of each potential strategy needs to be considered; many alternative strategies involve higher fees and higher trading costs. Some investments may only trade in less liquid secondary markets prior to maturity. Thought must be given to the demands a strategy places on the organization, and to what the most appropriate vehicles would be. Investors need to be confident that they have the resources and structure to be successful in their execution— with most of these strategies, even more than with traditional investments, it is not enough that they are done, they must be done well.

The end result: better portfolios

Russell’s model portfolio framework offers a path by which endowments and foundations can reduce their reliance on equities through broader exposure within public markets, an increased impact from skill-based alpha strategies and more exposure to various types of alternative and opportunistic investments.
Constructing an alternatives portfolio

In many ways, the term “alternatives” has become an unhelpful label. It throws together a variety of strategies defined by what they are not (they are not listed equities or fixed income securities), rather than by what they are. The only justification for a “Miscellaneous Other” category is when each member of that category is small enough that it’s not worth calling out on its own. As interest in different strategies continues to grow, that’s simply not the case with alternative investments. Today, alternatives have outgrown that label.

Our next paper provides a more useful categorization of the many nontraditional strategies commonly pursued by nonprofit investors, and a starting point for decisions about the portfolio weight to each.
Constructing an alternatives portfolio

In the search for increased portfolio returns and reduced risk, investors are constantly on the watch for new market segments or new strategies for exploiting opportunities in existing categories. The roster of these alternative investments evolves through time, and incorporating members of the collection into portfolios is typically more challenging than is the case with traditional stock and bond asset classes.

Introduction

Complications arise from the difficulty in predicting return behavior based on data with limited histories or data that may not be representative of existing opportunities; in understanding liquidity profiles and fee structures; and in evaluating and gaining access to attractive products as investors compete for the often limited capacity of some strategies.

While there are different ways to organize the alternative investments, we tend to group them into “listed real assets,” “private investments” and “alpha-driven investments.”

Listed real assets provide exposures distinct from those in stock and bond markets. Private investments usually have significant illiquidity, and they will often target segments of markets that are disadvantaged by the pressures of daily trading and pricing. Alpha-driven investments offer opportunities for returns that are strongly premised on the skills of active managers, and they may contain virtually no systematic components.

There are certainly gray areas. Our main purpose in this paper is to provide a logical framework by use of which investors can appreciate the characteristics of these investment opportunities, and to give our thoughts on the weighting of these strategies within a portfolio.

Our specific allocation choices are driven more by an evaluation of the general characteristics of alternative investments than by a purely quantitative assessment of their expected future performance. It is useful to consider quantitative models, but they ultimately serve as one source of information out of several. The allocation weights we provide may be well suited to a given institutional investor or may require modest tailoring. They map out an effective, balanced implementation, but in the end the specific circumstances of each investor will be the key driver of the investment decision.
Definitions

“Alternatives” is a category often defined in terms of what it doesn’t contain, rather than what it does. Traditional exchange-traded stocks and bonds are clearly outside the definition of Alternatives, while hedge funds and private investments are universally acknowledged to fit the category. The gray area typically arises for listed assets that are neither stocks nor bonds, and for categories of stock and bond markets that have not been widely adopted. The relatively recent inclusion of commodities and listed infrastructure holdings in typical portfolios nudges them into the Alternatives camp, but listed real estate is more problematic. Despite the fact that Real Estate Investment Trust (REIT) positions have been common for decades, listed real estate plays a similar role within the portfolio, and its allocation should be coordinated with those of other real assets. Within our market breakdown, listed real estate is considered an alternative investment.

Recognizing the existing ambiguity, for current purposes we adopt a taxonomy using the banner “Alternatives” for all holdings other than listed global stocks and bonds. Our bias is to include less-common segments of these listed markets in the “non-Alternatives” listing. Examples include high-yield and emerging markets debt, which are very common though not universal exposures. We also view rules-based, non-capitalization-weighted exposures to traditional asset classes as being members of the non-Alternatives category.

Alternative investments are often characterized by their liquidity, their availability to a limited set of investors (e.g., private equity is not widely available to retail investors with lower levels of assets), their greater reliance on manager skill as a component of total return, and their familiarity to a wide spectrum of investors. In addition, greater resources and oversight is required of investors in the evaluation and management of alternatives.

A breakdown of the investment universe is shown in Exhibit 1, with Alternatives including, as noted above, (nontraditional) Listed Real Assets—such as commodities, REITs and infrastructure—as well as Private Investments and Alpha-Driven Investments that may rely primarily on manager skill, rather than on systematic return components, for their growth. The Private Investments segment includes equity, real estate, infrastructure and structured debt products. Alpha-Driven Investments includes the full variety of hedge funds strategies, global tactical asset allocation (GTAA), active currency and portable alpha.

Even this reasonably well-delineated breakdown of markets is not without its gray areas. For example, although frontier markets may reflect a basket of listed securities, investors’ limited ability to trade in these securities—as well as the liquidity provisions of some frontier markets products—causes the investment to be similar to private holdings. For the moment, we consider frontier markets to be a part of the global listed equity positions, but the decision does suggest the possibility that familiarity and available packaging may cause migration out of the Alternatives category over time. For example, if hedge funds become widely available in formats accessible to retail investors, their Alternatives designation may lose much of its meaning.

It is possible to rework the paradigm to distribute the Alternatives categories to various buckets. Equity long/short and equity market neutral hedge fund strategies are primarily focused on trading equity securities and might naturally fall into a broad equity category. While we don’t have any fundamental disagreement with this outlook, we find it more helpful to maintain separate Alternatives categories to highlight the common challenges that most members of the category face, including liquidity, fee levels, familiarity, and benchmarking challenges, as well as the importance of active manager skill as a component of total return.

As investors seek new sources of return, diversification and market insights, the entire Alternatives collection should be targeted in a coordinated manner. The choice of
particular segments to emphasize will depend on the particular goals of each pool of assets as well as the preferences and resources of the investment managers. It is helpful to parse the Alternatives bucket into underlying components, but it is also critical to understand how the composite improves the prospects of the investment portfolio.

Exhibit 1: Asset class categories

While it is true that Treasury Inflation-Protected Securities (TIPS) and Real Assets may be considered by investors with inflation-related investment goals, we include TIPS as a fixed income investment and do not put it in the Listed Real Assets category.

It is important to note that some investors, notably defined benefit pension plans, have well-identified liabilities. Their concern is not purely investment growth, but rather surplus management. Investors such as these are likely to dedicate a significant portion of total assets to investments that hedge their liabilities. The current discussion and weight recommendations focus on the return-seeking investments: that portion of assets which is not dedicated to hedging.

Survey

The allocation to alternative investments varies both geographically as well as for different investor types. It is instructive to understand the exposures that investors currently hold and what might be driving any differences among the investor categories.

Results from a number of surveys of institutional investors are summarized in Exhibit 2. In addition to the overall allocations to global (listed) equities, global fixed income and alternative investments, the ratio of alternative investments to total non-fixed income investments is shown. This is helpful, because reporting categories are not identical across the various surveys, and there is insufficient information for an understanding of whether all reporting investors aspire to the same risk/return trade-off. Furthermore, DB plan investors are likely to dedicate a portion of their fixed income investments to liability hedging, rather than simply to being part of a well-diversified return-seeking mix.

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1 Returns are primarily (alpha) skill-based, but may include systematic (beta) components
2 An evolving and potentially endless list
Exhibit 2: Alternative asset exposures for different investor types

<table>
<thead>
<tr>
<th>U.S. DB Pension Funds</th>
<th>Global Equity</th>
<th>Global Fixed</th>
<th>Alts</th>
<th>Alts / Non-Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNY Mellon Pension Fund Universe Average (Jun. 2010)</td>
<td>44.0%</td>
<td>40.0%</td>
<td>7.0%</td>
<td>14%</td>
</tr>
<tr>
<td>BNY Mellon Taft Hartley Universe Average (Jun. 2010)</td>
<td>57.0%</td>
<td>31.0%</td>
<td>5.0%</td>
<td>8%</td>
</tr>
<tr>
<td>BNY Mellon Public Fund Universe Median (Jun. 2010)</td>
<td>47.0%</td>
<td>34.0%</td>
<td>11.0%</td>
<td>19%</td>
</tr>
<tr>
<td>Public Fund Survey Universe Average (2009)</td>
<td>52.1%</td>
<td>33.4%</td>
<td>14.5%</td>
<td>21.7%</td>
</tr>
<tr>
<td>Greenwich Public Funds Universe Average (2009)**</td>
<td>50.1%</td>
<td>29.7%</td>
<td>20.2%</td>
<td>29%</td>
</tr>
<tr>
<td>Greenwich Taft-Hartley/Union Universe Average (2009)</td>
<td>46.5%</td>
<td>36.6%</td>
<td>16.8%</td>
<td>27%</td>
</tr>
<tr>
<td>Russell Consulting Client Universe Policy Average (Jun. 2010)</td>
<td>53.5%</td>
<td>36.0%</td>
<td>10.5%</td>
<td>16%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-U.S. Pension Surveys</th>
<th>Global Equity</th>
<th>Global Fixed</th>
<th>Alts</th>
<th>Alts / Non-Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK William Mercer (Dec. 2009)</td>
<td>54.0%</td>
<td>39.0%</td>
<td>7.0%</td>
<td>11%</td>
</tr>
<tr>
<td>Netherlands Watson/UBS Study (Dec. 2009)</td>
<td>28.0%</td>
<td>48.0%</td>
<td>24.0%</td>
<td>46%</td>
</tr>
<tr>
<td>Japan Corporate Pension Fund Average (2010)</td>
<td>42.5%</td>
<td>53.5%</td>
<td>4.1%</td>
<td>9%</td>
</tr>
<tr>
<td>Canadian Member Composite (2009)</td>
<td>43.9%</td>
<td>33.0%</td>
<td>23.2%</td>
<td>35%</td>
</tr>
<tr>
<td>Australia SAA High Growth Average (2010)</td>
<td>71.3%</td>
<td>7.8%</td>
<td>20.9%</td>
<td>23%</td>
</tr>
<tr>
<td>Australia SAA Conservative Average (2010)</td>
<td>22.5%</td>
<td>63.4%</td>
<td>14.3%</td>
<td>39%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nonprofit Investors</th>
<th>Global Equity</th>
<th>Global Fixed</th>
<th>Alts</th>
<th>Alts / Non-Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>NACUBO Universe Average (2009)</td>
<td>32.0%</td>
<td>17.0%</td>
<td>51.0%</td>
<td>61%</td>
</tr>
<tr>
<td>NACUBO Endowments &gt; $1B Universe Average(2009)</td>
<td>26.0%</td>
<td>13.0%</td>
<td>61.0%</td>
<td>70%</td>
</tr>
<tr>
<td>NACUBO Endowments $50M – $100M Universe Average (2009)</td>
<td>51.0%</td>
<td>27.0%</td>
<td>22.1%</td>
<td>30%</td>
</tr>
<tr>
<td>BNY Mellon E&amp;F Universe Median</td>
<td>39.0%</td>
<td>16.0%</td>
<td>32.0%</td>
<td>45%</td>
</tr>
<tr>
<td>Greenwich E&amp;F &gt; $1B Universe Average (2009)</td>
<td>44.9%</td>
<td>20.6%</td>
<td>34.5%</td>
<td>43%</td>
</tr>
<tr>
<td>Greenwich E&amp;F &lt; $500M Universe Average (2009)***</td>
<td>46.3%</td>
<td>21.6%</td>
<td>32.2%</td>
<td>41%</td>
</tr>
<tr>
<td>Endowment AM Book Oxford Colleges Average (2007)</td>
<td>55.0%</td>
<td>21.0%</td>
<td>24.0%</td>
<td>30%</td>
</tr>
<tr>
<td>Endowment AM Book Cambridge Colleges Average (2007)</td>
<td>53.0%</td>
<td>17.0%</td>
<td>31.0%</td>
<td>37%</td>
</tr>
</tbody>
</table>

Sources: BNY-Mellon; Greenwich Associates; Russell Investments; William Mercer; Watson Wyatt/UBS; Pension Fund Association, Japan; Pension Investment Association of Canada; NACUBO; Endowment Asset Management by Acharya and Dimson (Oxford University Press, 2007).

Data is as of the specified dates. Current data may be different.

DB plan investors appear to maintain a relatively smaller exposure to alternative investments compared to nonprofit investors. Results are survey-dependent, but it would appear that U.S. DB plans hold 15%–25% of non–fixed income investments in Alternatives (data is insufficient for identifying trends for pension plans outside the U.S.) and that nonprofit investors tend to hold 35%–45% of non–fixed income investments in Alternatives categories—those nonprofits with greater total assets may hold a majority of total assets in Alternatives.

It is interesting to note the variation across surveys, but we should also be careful, in consideration of the recent economic turmoil. It is difficult to ascribe much precision to any comparisons, given that surveys are not contemporaneous and that it is difficult to adjust exposures when selling into illiquid markets; it’s possible that these values may be as representative of circumstance as of investment policy.
### Exhibit 3: Allocations within Alternatives for different investor types

<table>
<thead>
<tr>
<th>U.S. DB Pension Funds</th>
<th>Allocation as % of Total Alts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Alts</td>
<td>Listed Real Assets</td>
</tr>
<tr>
<td>BNY Mellon Pension Fund Universe Average (Jun. 2010)</td>
<td>7.0%</td>
<td>85.7%</td>
</tr>
<tr>
<td>BNY Mellon Taft Hartley Universe Average (Jun. 2010)</td>
<td>5.0%</td>
<td>60.0%</td>
</tr>
<tr>
<td>BNY Mellon Public Fund Universe Median (Jun. 2010)</td>
<td>11.0%</td>
<td>72.7%</td>
</tr>
<tr>
<td>Public Fund Survey Universe Average (2009)</td>
<td>14.5%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Greenwich Public Funds Universe Average (2009)</td>
<td>20.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Greenwich Taft-Hartley/Union Universe Average (2009)</td>
<td>16.8%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Russell Consulting Client Universe Policy Average (Jun. 2010)</td>
<td>10.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Russell Global Survey on Alternative Investing Corporate Pensions (2009)</td>
<td>12.0%</td>
<td>14.0%</td>
</tr>
<tr>
<td>Russell Global Survey on Alternative Investing Corporate Pensions (2012 estimate)</td>
<td>16.0%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Russell Global Survey on Alternative Investing Public Pensions (2009)</td>
<td>18.0%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Russell Global Survey on Alternative Investing Public Pensions (2012 estimate)</td>
<td>29.0%</td>
<td>21.0%</td>
</tr>
<tr>
<td>Non-U.S. Pension Surveys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK William Mercer (Dec. 2009)</td>
<td>7.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Netherlands Watson/UBS Study (Dec. 2009)</td>
<td>24.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Japan Corporate Pension Fund Average (2010)</td>
<td>4.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Canadian Member Composite (2009)</td>
<td>23.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Australia SAA High Growth Average (2010)</td>
<td>20.9%</td>
<td>24.9%</td>
</tr>
<tr>
<td>Australia SAA Conservative Average (2010)</td>
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<td>22.4%</td>
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<tr>
<td>Nonprofit Investors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NACUBO Universe Average (2009)</td>
<td>51.0%</td>
<td>12.0%</td>
</tr>
<tr>
<td>NACUBO Endowments &gt; $1B Universe Average (2009)</td>
<td>61.0%</td>
<td>12.0%</td>
</tr>
<tr>
<td>NACUBO Endowments $50M – $100M Universe Average (2009)</td>
<td>22.1%</td>
<td>10.0%</td>
</tr>
<tr>
<td>BNY Mellon E&amp;F Universe Median</td>
<td>32.0%</td>
<td>96.9%</td>
</tr>
<tr>
<td>Greenwich E&amp;F &gt; $1B Universe Average (2009)</td>
<td>34.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Greenwich E&amp;F &lt; $500M Universe Average (2009)</td>
<td>32.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Endowment AM Book Oxford Colleges Average (2007)</td>
<td>24.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Endowment AM Book Cambridge Colleges Average (2007)</td>
<td>31.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Russell Global Survey on Alternative Investing Nonprofit (2009)</td>
<td>19.0%</td>
<td>17.0%</td>
</tr>
<tr>
<td>Russell Global Survey on Alternative Investing Nonprofit (2012 estimate)</td>
<td>23.0%</td>
<td>16.0%</td>
</tr>
</tbody>
</table>

For sources, see Exhibit 2
Data is as of the specified dates. Current data may be different.

It is also interesting to consider which segments of the Alternatives categories investors favor. Exhibit 3 outlines the “habitats” for these investor surveys.

It is particularly difficult to distinguish patterns within the Listed Real Assets category, as some of the surveys include REITs within listed equities and some record it in a separate category. A comparison of exposures within Private Investments and Alpha-Driven Investments reveals no clear trends, but if UK and Japanese data are indicative, there clearly are differences in the ways investors construct their Alts portfolios.
Overlap

As suggested earlier, REITs and listed infrastructure represent equity securities already included in broad equity benchmarks. This makes it difficult to separately track exposures, and also raises the question of whether they merit a distinct allocation. After all, aren’t we already obtaining exposure through the listed equity positions?

Exhibit 4 provides a description of the overlap of the broad equity market indexes with the REIT and listed infrastructure benchmarks. While virtually all of the global REITs benchmark members and the majority of the global listed infrastructure benchmark members appear in the Russell Global Index and regional indexes, they represent a fairly small slice of the overall market.

Investors with a home country equity bias may find themselves overexposed to domestic REIT and listed infrastructure opportunities while lagging in exposure to nondomestic positions. The impact of this imbalance will vary depending on the concentration of listed real estate and infrastructure in each market, but none of the individual markets capture a majority of the REIT or listed infrastructure opportunities.

Exhibit 4: Portion of equity indexes comprised of REIT and listed infrastructure positions

<table>
<thead>
<tr>
<th></th>
<th>Global REIT</th>
<th>Global Listed Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of index</td>
<td>% of benchmark in index</td>
</tr>
<tr>
<td>Russell Global Index</td>
<td>2.2%</td>
<td>99.5%</td>
</tr>
<tr>
<td>Russell 3000® US Equity Index</td>
<td>2.2%</td>
<td>40.7%</td>
</tr>
<tr>
<td>Russell Global UK Index</td>
<td>1.7%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Russell Global Europe ex-UK Index</td>
<td>1.5%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Russell Global Australia Index</td>
<td>6.0%</td>
<td>8.6%</td>
</tr>
<tr>
<td>Russell Global Japan Index</td>
<td>2.8%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Russell Global Canada Index</td>
<td>1.1%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Russell Emerging Markets Index</td>
<td>2.8%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Global REIT = FTSE/EPRA NAREIT Developed Index
Global Listed Infrastructure = S&P Global Infrastructure Index
Data is as of December 31, 2010. Current data may be different. Indexes are unmanaged and cannot be invested in directly.

While REIT and listed infrastructure securities appear in equity benchmarks, Russell research of typical active manager holdings indicates that they are often ignored or at least significantly underweighted in most actively managed equity portfolios. It should also be noted that REITs and listed infrastructure typically provide a larger portion of their total return in the form of dividends than do other equity investments. Investors emphasizing income will find these exposures useful in meeting cash flow goals.

Over shorter investment horizons, it is likely that REITs and listed infrastructure returns will be strongly influenced by the patterns in broader equity markets. For strategic planning periods, they provide a somewhat distinct return pattern and long-term diversification benefits. For this reason, and because it is important to recognize the need for exposure to these investments and to be able to track that exposure (even if some of it occurs within an equity position), Russell treats these investments as categories distinct from other available asset classes.
Pricing and liquidity

One of the key characteristics of many alternative investments is limited liquidity. While those in Listed Real Assets typically provide for daily pricing and liquidity, those in Private Investments usually involve multi-year lockups. Liquidity profiles within Alpha-Driven Investments vary, but many hedge fund products require redemption notices and can usually be redeemed on a quarterly basis.

As recent events have highlighted, the liquidity provisions described in offering documents may not always be consonant with the actual liquidity during extreme market volatility. The promise of daily or quarterly liquidity may not be realized without a severe haircut on asset value.

Because alternative investments (with the exception of those in Listed Real Assets) do not represent uniform packages behaving similarly to some benchmark, their unique compositions and lack of frequent trading make it difficult to precisely assign prices. In some cases this can be advantageous, providing the appearance of lower volatility, but can make it difficult to precisely target a desired investment exposure or to reduce overweight positions.

Investors with higher tolerance for illiquidity, and those for whom frequent performance reporting is less critical, can take advantage of the premia associated with lower liquidity and pricing transparency. The overall level of these factors can also be managed through manager guidelines and coordination with similar investments in listed markets.

For investments that have both a listed and a private version, it is often helpful to coordinate those allocations by using the listed portion to provide liquidity and facilitate rebalancing against the illiquid private position. It is an imperfect substitution, as asset class segments available in the private arena may not have listed counterparts.

Recommended allocations

Allocation to Alternatives will depend on a number of factors, including an investor’s liquidity needs, familiarity with the various investment types and ability to identify, access and monitor appropriate opportunities. It is difficult to prescribe a one-size-fits-all strategy.

The recommendations for Alternatives are based on an assumption that more highly skilled managers in the Private Investments and Alpha-Driven Investments categories can be identified. These categories do not lend themselves to passive investment approaches, making active the only game in town. Furthermore, the “average” returns represented by manager universe returns and category benchmarks do not tend to be particularly attractive. The careful identification of, and access to, stronger managers is a necessary prerequisite for exposure to Private Investments and Alpha-Driven Investments.

During portfolio construction, a range of return levels is available within each category. Generally, more aggressive portfolios will have not only a larger exposure to Alternatives, but also greater representation in the more aggressive components.

Forecasts of returns to various categories of Alternatives (particularly Private Investments and Alpha-Driven Investments) are not precise enough to simply allow an optimizer to sort out and recommend an allocation. We believe that on a passive basis Listed Real Assets will provide returns intermediate to those from stocks and bonds, but that returns for Private Investments will depend not only on an illiquidity premium of 3%–5%, but also on the structure within the category. Core, value and opportunistic
components can be blended to target returns similar to those from listed Alternatives, or returns several percentage points above those from traditional equity markets. Specific return outlooks will vary, and will be associated with the level of manager aggressiveness and use of leverage.

Opportunities in Alpha-Driven Investments have a broad range of potential return levels. Given their role as a diversifier of traditional and listed market returns, these investments are often appealing even at return levels close to those from fixed income investments. Directional strategies often provide returns comparable to, or in excess of, equity returns.

Because of the typically higher fees and oversight expenses associated with alternative investments, it is important to keep in mind that the relevant measure of return is a net-of-fees assessment. The relatively lower fees available to larger pools of assets is one reason these investors tend to maintain higher exposures to Alternatives. Smaller institutional clients may also have greater difficulty in researching and accessing these potentially higher-performing products. In conjunction with illiquidity limitations, fees and manager selection are the most significant reasons that smaller institutional clients tend to have lower exposure to these investments.

Asset allocation is a combination of art and science. The art is in understanding which markets typically favor one investment over another; in judging how future outcomes may mirror or differ from past performance; in evaluating hypothetical tail-risk scenarios; and in deciphering the logic that leads investors to their current allocation exposures. The science is associated with the development of quantitative assessments of past return patterns, and development of risk and reward frontiers. Quantitative support for the science aspect is more difficult to precisely determine within the realm of Alternatives than within traditional asset classes. Rather than proceed simply from our best assumptions, we feel it is important to incorporate this ambiguity in the development of portfolio weights. In this arena, guidance from standard sources is also less readily available—for most categories, only a rough assessment of market capitalization is available. Market capitalization can be calculated for some categories, but even then, leverage complicates the calculations. In the end, an equal-weighted strategy (particularly within categories) may have a lot to recommend it.

Given the limits to what is knowable regarding future performance, it is important to establish investment constraints that take into account not only the tremendous return possibilities if our assumptions are prescient, but also the downside if performance does not reflect our forecasts, as well as the possibility that we may simply experience a bad draw from the range of potential outcomes.

Our approach is to map out an allocation that we believe will serve a broad range of institutional investors and, at least as importantly, to outline the logic underlying the suggested structure. Investors working from different assumptions can develop tailored structures following a similar line of reasoning. Investors’ specific objectives, investment resources and governance practices are at least as critical as peer allocations or any assessment of future returns in determining an appropriate allocation.

LISTED REAL ASSETS
Investments in Listed Real Assets (commodities, REITs and listed infrastructure) provide highly liquid exposures to return patterns that are distinct from those of traditional stocks and bonds. REIT and listed infrastructure investments typically provide significant dividend cash flows as a component of total return. This can be advantageous for income-oriented investors, but may be less tax-efficient as well.
The expected return levels of these investments are similar and suggest fairly equal exposures. We recommend a slightly higher weight for commodities, which may not be quite as strongly influenced by the patterns of listed equity markets on which REITs and listed infrastructure investments typically trade. Assuming that institutional investors are able to access each of these asset classes, we recommend considering a mix of 4:3:3 in commodities, REITs and listed infrastructure, respectively. That is, an overall allocation of 10% to Listed Real Assets could be segregated into 4% commodity exposure and 3% exposure in each of REITs and listed infrastructure. For investors in economies such as Australia’s and Canada’s, which are more strongly linked to commodity return patterns, we remove this preference for commodities relative to other listed real assets.

For asset classes such as real estate, where listed and private investment opportunities exist, a holistic approach is necessary to coordinate allocations for the two components. For example, we typically recommend a larger allocation for private real estate than for REITs, but each investor must determine an appropriate balance based on return potential, liquidity, governance and access concerns as well as the desire to obtain a diversified exposure to underlying market segments. The 4:3:3 mix suggested above should be evaluated in light of decisions within the private investment category.

PRIVATE INVESTMENTS
Securities in the Private Investments category typically have associated listed counterparts, although segment (investment type, geographical distribution, etc.) representation may differ. Private markets generally provide access to higher-returning portions of each asset class to compensate for the more limited liquidity of the investments, and investments can also benefit from a higher degree of active management. However, our allocation recommendation is premised more on portfolio liquidity limits than on anticipated returns.

Investors can access private markets through separate accounts, direct holdings, open-end funds and closed-end funds. In the Private Investments category, the entry and exit process for investments made through closed-end funds is distinct from that in other categories. Investors must make commitments to provide capital, but the funds are typically drawn down over a number of years (often three to five). The redemption period starts not long after the investment period closes and results in a forced redemption each time an underlying portfolio holding is sold. The result is that the investor is rarely fully invested early and suffers from reinvestment risk later. It is usually necessary to overcommit to Private Investments in order to reach target weights.

While it is difficult to get out of commitments that have not yet been funded, it is possible—at a deep discount, which makes it all the more difficult for investors to change their minds after the initial decision. Private equity products generally include provisions to extend the life of the fund in the case that all investments are not liquidated by the end of the term (commonly, 10 years after the initial commitment), often extending the investment an additional two or three years.

Private equity and private real estate are the most common components of a Private Investments portfolio, though private infrastructure, which has been popular in Australia for several years, is becoming more widely available, and private commodities (less-liquid portions of publicly traded commodities) may be future entrants. We recommend considering a fairly even split between these components, with a slightly higher weight to private equity due to its anticipated higher levels of return.
ALPHA-DRIVEN INVESTMENTS

Like the overall Alternatives category, Alpha-Driven Investments may be defined by what it does not include. It serves somewhat as the catch-all category for alternative investments that do not fit into the Listed Real Assets or Private Investments buckets. Even those divisions are not completely black-and-white.

The primary components of Alpha-Driven Investments are hedge fund strategies, global tactical asset allocation (GTAA) and active currency. As indicated in Figure 1, there may be other investment strategies that find their way into this bucket, particularly opportunistic investments, which are designed to take advantage of market imbalances that may not persist on an indefinite basis.

A common characteristic of Alpha-Driven Investments strategies is their reliance on manager skill rather than systematic market beta as the dominant source of return. That isn’t to say that portfolios won’t realize returns based on systematic exposures, but that these exposures are unlikely to be static through time.

It is not enough to merely invest in alpha-driven markets. Passive investment strategies are neither available nor particularly desirable in the Alpha-Driven Investments arena. The ability to recognize and access skilled managers is critical to structuring a successful portfolio. Currency can often be implemented as an overlay on other positions, making it particularly attractive. The use of an overlay allows investors to access active currency returns with zero or low reduction in exposures to other asset classes. Anticipated returns are enhanced (in expected-value terms) by the leverage implicit in such overlays.

Hedge fund investments span a range of underlying strategies, suggesting potentially greater diversification across active managers and investment strategies. On the other hand, hedge funds may also include lockups and limited contribution and redemption schedules. While they do not typically suffer from the years-long liquidity concerns associated with private investments, they often allow for only quarterly rebalancing.

GTAA evolved from earlier tactical asset allocation efforts that were often confined within the borders of a single economy and that allowed for the tilting between domestic stocks and domestic bonds. GTAA provides the manager with a broader set of asset classes among which to tilt. In many ways, GTAA is similar to global macro or systematic macro hedge fund strategies, and it is an accident of history that distinguishes GTAA (and TAA before it) from the hedge fund category. For allocation purposes, we advise that the GTAA exposure be assigned within the context of the hedge fund allocations.

We recommend exposure to a diversified mix of the available alpha-driven strategies. If only limited categories are available, a reduced allocation should be considered. The relatively lower fees for active currency suggest that a modestly higher allocation is warranted when this investment is available.

ALTERNATIVES PORTFOLIO WEIGHTS

Often the performance assessment of Alternative Investments supposes such favorable return, risk and diversification levels that the question of whether to invest in this category is a foregone conclusion. Given the difficulty in formulating reliable estimates of future returns, we believe it is more appropriate to focus on liquidity needs and the availability of promising products and to avoid putting all eggs in one basket.

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1 Equity long-short, equity market–neutral, merger arbitrage, distressed securities, special situations, convertible bond arbitrage, relative value arbitrage, asset-backed securities arbitrage, structured debt investing, managed futures, global macro and commodities long-short.
In some cases, there may not be an effective hedge for investors' liabilities. This may be because no hedging asset exists, or because the size of the liabilities exceeds that of the assets, and leverage would be required to effectively hedge. For these investors, the returns or cash flows of some asset classes may be better suited than others to correlate with changes in liability values, and it may be advisable to "tilt" the portfolio toward these more highly correlated asset classes in a step toward effective surplus management.

In a purely academic world, we would propose that all institutional investors with a common risk tolerance pursue the same allocations to alternative investments. After all, the best risk-adjusted portfolio (assuming a purely quantitative calculation based on data which we've already decided is not fully reliable) to obtain a given level of return is probably the same whether you are a pension plan or a nonprofit organization. Of course, more aggressively positioned portfolios will likely hold more aggressive weights than those of more conservative investors, but—again, in a purely academic world—two investors with the same investment goals and similar investment restrictions should hold the same portfolio.

Practical considerations prevent our dispensing such broad and strictly theoretical recommendations. The difference in portfolio composition for pension plan and nonprofit investors is undoubtedly influenced by a tolerance for illiquidity as well as familiarity and the avoidance of maverick risk. Individuals don’t have access to the economies of scale that allow institutional investors to achieve diversified mixes of Alternatives. We strive to keep the number of variations of investor situations to a minimum and summarize candidate mixes in Exhibit 5 based on the portfolio’s overall exposure to Alternatives.

Conservatively positioned portfolios and portfolios of investors in the early stages of building up an alternatives program are likely to have an overall lower allocation to Alternatives and are recommended to focus on more liquid segments and those with systematically driven return patterns. Moderately positioned portfolios will likely increase exposure to Private Investments and Alpha-Driven Investments relative to Listed Real Assets at the same time increasing the overall Alternatives allocation. More aggressive investors are recommended to hold a greater share of the total portfolio in Alternatives as well as pursuing higher exposures to Private and Alpha-Driven Investments.

Taxable portfolios benefit from the diversification of Listed Real Assets, even with only small exposures to these categories. However, commodities receive particularly disadvantageous tax treatment in the U.S. and are less attractive for taxable investors.

The three portfolios in Exhibit 5 don't cover the entire spectrum of risk tolerance levels that may be considered. As further guidance, we have considered upper ranges on the exposures we would recommend.

For most institutional investors we recommend a limit of 15% to Listed Real Assets. This recommendation is primarily influenced by an assessment of what the market is likely to accept. Liquidity is not typically an issue for these investments; thus, our advice for an upper limit does not vary with the size of the asset base or with the type of investor.

For most institutional investors we recommend Private Investment exposures up to 20% of the total portfolio, but only for experienced investors who can withstand significant illiquidity and who have the understanding and resources needed to manage the allocation. Those with smaller asset bases and fewer resources for identifying and managing promising investments are advised to dedicate no more than 10% of their total portfolio allocation to Private Investments.
The allocation to Alpha-Driven Investments is very dependent on the availability of underlying components. Assuming no restrictions on availability, we suggest up to 20% exposure for the most aggressive portfolios. A range of 5%–15% of the total portfolio may be more typical, with lower allocations for more conservative portfolios and those of organizations with smaller asset bases.

As we map out specific portfolios, we don’t typically reach the upper limits of the allocation ranges discussed above, even for the most aggressive multi-asset portfolios. Aggregating the upper limits of each of the category ranges leads to a portfolio containing up to 50% Alts exposure. While we have not attempted to set a specific limit on total allocation, we have tried to outline the logic behind our approach to these investments in a way that allows each investor to evaluate the needs of a particular portfolio.

Exhibit 5: Alternative investment mixes: Example starting points for portfolio construction

<table>
<thead>
<tr>
<th>Total alternative investments</th>
<th>40%</th>
<th>25%</th>
<th>15%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed Real Assets</td>
<td>10%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Commodities</td>
<td>4%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Global REIT</td>
<td>3%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Global Listed Infrastructure</td>
<td>3%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Private Investments</td>
<td>15%</td>
<td>8%</td>
<td>3%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>8%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Private Real Assets</td>
<td>7%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Alpha-Driven Investments</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
</tr>
</tbody>
</table>

These starting points should be tailored to the particular needs and preferences of each investment portfolio. Investors with a greater tolerance for illiquidity or greater resources for researching and assessing manager skill should consider greater exposure to private and alpha-driven categories.

Of course, this paper doesn’t provide the full granularity necessary to fully implement an Alternatives portfolio. In particular, the roster of strategies within hedge funds and along the Private Investments spectrum must be determined for each investor. Additional categories may be added to the list.

Conclusions

Investors have long sought allocation exposures beyond the bounds of listed equity and bond markets. Alternative investments provide an opportunity to enhance portfolio returns while managing overall risk. While the future behavior of these evolving investment opportunities can’t be precisely forecast, even a ballpark assessment indicates promise for a carefully implemented Alternatives portfolio.

The well-balanced allocations we recommend recognize the varying resources and expertise among different investors and acknowledge the advantages that institutional investors with larger asset bases and larger investment staffs may have in developing and maintaining exposures in this space.

These investments are rarely available in passive or benchmarked implementation and, in fact, an “average” outcome is typically not worth the trouble. Taking full advantage of opportunities in the Alternative Investments space requires the ability to identify, access and monitor strong managers in each of the asset categories.
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Responsible investment: Five tests of an SRI/ESG policy

The question of responsible investment—whether focused on environmental, social or other goals—can be thorny. For advocates and opponents alike, discussions around this topic tend to become more heated than with less emotionally charged subjects.

The paper that follows was our attempt to find the common ground among the many attitudes toward RI. It sets out five tests that can be applied to an RI policy—questions to ask to ensure that a policy is sound. This version is from 2008, but the tests themselves date to 1999. If they’ve helped to generate more light and less heat in discussions around this topic for the past 13 years, then we’d say the tests have been a success.
Responsible investment:
Five tests of an SRI/ESG policy

For a number of reasons—legislation, organized lobbying or simply the desire to do the right thing—responsible investment is growing and becoming harder for many institutional investors to ignore. In this paper we describe a framework—built around five key areas of consideration—for assessing a responsible investment policy within the context of established investment best practices and the broader investment program.

Background—responsible investment is becoming harder to ignore

Responsible investment (RI) is hardly new. Indeed, biblical prohibitions on the charging of interest\(^1\) mean that we can trace that particular form of investment restriction back at least 2,500-3,000 years. (Restrictions on the charging of interest can be found to this day in the practices of those who follow sharia Islamic law.) The influence of various faith-based groups, increasing social activism, the anti-apartheid movement, growing environmental focus and the emergence of organized lobbying efforts—all have played a part in shaping the RI field.

Responsible investment’s demands for the attention of institutional investors have been growing louder for many years and do not appear likely to die down anytime soon. The United Nations Principles for Responsible Investment (UNPRI) were launched in 2006 and by the start of 2008 had been signed by more than 200 investors and investment firms, representing more than $10 trillion. Public awareness and activism around environmental issues has increased. 15 states and more than 50 universities in the U.S. have adopted policies restricting investment in companies linked to Sudan. And according to the consulting firm Celent, the European market for responsible investment already exceeds €1.7 trillion and that of the U.S. is likely to exceed $3 trillion within four years.\(^2\) The field has moved beyond its traditional realm of faith-based groups and mission-oriented foundations and appears set to find its way onto the agendas of an ever-increasing number of investors in the coming years.

As more investors move to adopt explicit policies, our purpose in this paper is to ensure that they do so thoughtfully, and that they do not compromise sound investment principles or their fiduciary duties in doing so. Some will consider RI through choice, others through compulsion; all should approach it in the context of their broader obligations and objectives.

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\(^1\) Exodus 22:25: If you lend money to my people, to the poor among you, you are not to act as a creditor to him; you shall not charge him interest. (New American Standard Bible.)

“Responsible” means different things to different people

Defining responsible investment is fraught with challenges.

Even the way that responsible investment is referred to varies widely. We have chosen to use the term “responsible investment” throughout this paper, following the United Nations’ choice for its own 2006 Principles. More familiar to many is the term “socially responsible investment” (SRI), which has a long history of usage throughout the world. The acronym ESG (environmental, social and corporate governance) is also increasingly popular, reflecting the growing importance of environmental concerns to many investors. Other flavors of responsibility are captured in terms such as sustainable investing, social investing, values-based investing, ethical investing, mission-driven investing and others, all of which are in current usage under the broad umbrella that we will simply refer to as responsible investment.

To a large extent, these differences in terminology flow from the different objectives underlying responsible investment programs. It soon becomes obvious to anyone who studies this field that what one person or group means by “responsible” is not what another means. These differences are more than simply varying views about particular activities, such as the sale of alcohol or tobacco.

For example, at the time of writing, investors who decide to pursue a Sudan-free investment policy are able to obtain, from a variety of sources, lists of corporations that have ties to that state. The lists vary widely, however, in whom they identify as offenders—one source named 35 companies and another more than 200 in one recent comparison.

Another illustrative case is that of Pax World Funds and Starbucks: in 2005, three of Pax’s mutual funds were forced to divest from Starbucks because it was classified as an alcohol stock. This was a consequence of Pax’s zero-tolerance policy on alcohol being applied to the coffee giant’s decision to co-brand a coffee liqueur with Jim Beam. (The Pax funds dropped the zero-tolerance policy the following year.3)

Exclusion and engagement: the tactics of responsible investment

Not only does the definition of responsible investment vary from case to case, but there are also differences in how those policies are implemented. Most importantly, a distinction can be drawn between exclusion-based approaches and engagement-based approaches.

The exclusion-based approach is simple in concept: do not invest in activities deemed beyond the pale. There are all sorts of activities to which this might apply, including the sale of alcohol or tobacco, the use of child labor, the running of a brothel or allowing the same individual to be both Chairman and CEO of your corporation. These exclusionary, or screen-based, approaches have a long history. A variant is the inclusion-based approach, which does not focus on prohibited activities but rather on favored ones (action on climate change, for example, or economically targeted investment). The inclusion-based approach would typically be applied with only a portion of the total assets.

A different tactic, open to larger investors, is shareholder engagement. Here, the investor attempts to influence corporate behavior through proxy voting, shareholder resolutions or other lobbying activities. While this has the same end objective as exclusion-based approaches, it is a quite different tactic and it places a different set of demands on the investor.

Responsible investment policies typically cover the equity or debt of corporations, and could extend also to government-issued debt (for instance, some organizations avoid the government debt of certain countries, because that debt is used to finance war) and even to other areas of investment such as real estate. 4

The role of the five tests

However, among all of the differences between the objectives, terminology and tactics of responsible investment, some things should remain the same. Most importantly, the normal standards of prudent investment should continue to be applied.

This means that investors who decide to adopt some form of responsible investment policy, or who are considering doing so, need a framework for evaluating that policy. We describe below one such framework, built around five key areas that should be considered. We refer to these five areas for consideration as tests although it should be noted that the answers to the questions they raise will rarely be as simple as “yes” or “no.” Rather, fiduciaries should be prepared to think through the issues raised under each of those headings in the context of their own investment program’s goals, resources and other policies.

This framework is not new; it is a generalization of a framework that was designed specifically for UK pension funds in response to legislation enacted there almost ten years ago. 5 Indeed, the framework is in a sense even older than that: it simply involves asking the same questions that should be asked of any aspect of an investment policy, whether driven by social responsibility or any other consideration.

TEST #1: WHAT IS THE IMPACT ON THE EXPECTED LEVEL OF INVESTMENT RETURN?

When considering whether a proposed policy is sound and prudent, it is natural to look first at its expected impact on the overall level of investment return earned by the program. This is the question that our first test explores.

Fiduciaries need to consider whether a proposed RI policy could have a systematic negative impact on returns. For example, other things being equal, “virtuous” stocks may attract greater interest than “vice” stocks, and hence command a price premium. Put another way: in a world that is moving towards responsible investment the law of supply and demand may mean that lower returns are available from responsible investment strategies in general.

In contrast, the argument is also made by proponents of responsible investment that, far from reducing expected returns, RI policies actually enhance them. Their arguments may rest on better use of resources and risk management, for example. To the extent that those arguments rely on market inefficiencies (e.g., the failure of the market to incorporate into the stock price of Company X the fact that it is attractive to consumers because it has a reputation for excellent environmental practices), we should note that few market inefficiencies are persistent. We prefer to take the view that an RI policy should not attempt to justify itself on the grounds of return enhancement. After all, most investors already have a policy of return enhancement; why go to the trouble of producing another policy if the intent is the same? But while

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4 For a discussion of the increasing importance of environmental issues to real estate investment, see Nikodem, P. Commercial Green Building Update, Russell Research (forthcoming.)

we do not believe a responsible investment policy needs to enhance expected returns, it is usually the case that it would be unacceptable for such a policy to reduce them\(^6\).

It is possible to gain some insight into the likely future impact of RI policies by looking at what has happened in the past. A considerable amount of work has been done on this question.

One theoretical and empirical assessment of this question can be found in a research paper produced by Russell Australia\(^7\). The authors consulted more than 40 empirical studies. These studies varied greatly in their approaches, definitions of RI, robustness, time periods and markets covered. The authors categorized the studies into “negative”, “neutral” and “positive”, with the great majority falling into the “neutral” category—that is, they found that ethical, SRI or sustainable approaches neither materially impair nor materially enhance investment performance. This paper concluded that: “Sustainable investments are unlikely to generate returns statistically different from any other shares when account is taken of different operational risk levels, different industries, capital structure and so on.”

Investors who are seeking to pursue responsible investment policies need to apply our first test to their own specific policy, but general conclusions such as this one provide support for the argument that such policies do not necessarily involve any reduction in expected return.

There is one point of clarification that we should make here: we are not saying that the actual return must be at least as high under the responsible investment policy as without it. That would be an unreasonable hurdle to set in a world in which there are no guarantees. A responsible investment policy, just like any investment decision, may be perfectly appropriate on the balance of probabilities at the time it is entered into, yet still result in a reduced return. Indeed, it is almost certain to do so over some time periods—just as a poorly-designed policy will sometimes enhance returns. That is simply the nature of investments.

**TEST #2: WHAT ARE THE RISKS ASSOCIATED WITH THE POLICY?**

Prudent investment does not concern itself only with returns; it also considers risk. Hence, our second test focuses on what risk(s) might be introduced by a responsible investment policy.

Of particular importance here is the question of diversification, because reducing the opportunity set of investments can clearly reduce the ability of an investor to diversify.

Now, in one sense no investor is ever perfectly diversified because no investor holds every possible investment. So the question of whether a restriction on the opportunity set materially impacts the ability to diversify is to a large extent a question of degree. Of particular concern in this regard should be the possibility that a responsible investment policy may introduce unintended biases at the total portfolio level. For example, some responsible investment policies may lead to the exclusion of a major sector of the stock market (such as oil, power generation or other heavy industry) or to a bias toward medium or small cap companies.

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\(^6\) In some cases, a reduction in expected returns might be acceptable. For example, in the case of program-related investments by a private foundation (i.e., investments directly related to the foundation's mission). And certainly, individuals investing on their own behalf are quite free to decide that an expected return shortfall is an acceptable price to pay for the application of their personal principles. For institutional investors in general that would be very much the exception.

Responsible investment policies may also have other implications for risk beyond simply the question of diversification. There are many facets of risk for an institutional investor and a well-designed RI policy can have a positive impact in some of these areas. For example, company-specific risk considerations lie behind many of the main principles of corporate governance, a field focused on the appropriate management and control structures of a company. Some other facets of risk will be discussed in the next section, which covers the question of implementation of the policy.

TEST #3: HOW WILL THE POLICY BE IMPLEMENTED?

It is not enough to consider only the likely impact on returns and on risk. Indeed, we believe that our third test—which addresses the question of implementation—is the one that usually throws up the greatest challenges for investors seeking to pursue responsible investment policies.

The exact nature of the challenges varies depending on the particular tactics on which a policy is based. Exclusion-based approaches, for example, require both ongoing management of the exclusion list and some way of translating the list into actual portfolios without undermining the established investment process. If this cannot be achieved within the existing investment manager structure, would the required changes compromise the quality of that structure, reducing the ability of the plan to generate investment returns, or increasing manager-specific risks? An RI policy is not a substitute for thorough due diligence of investment managers or other service providers, and should not become an excuse for compromising other elements of an investment program.

We noted above the definitional issues that surround responsible investment. The fact that definitions of “responsible” differ so much makes it harder for the market to produce standardized solutions. Navigating these issues can prove surprisingly time-consuming and frustrating.

Under this test also falls the question of costs, both direct and indirect. Some policies may lead to increased manager fees or other direct expenses. Nearly all policies demand time and attention from the governing bodies and staff of institutional investors. Engagement-based policies can be particularly demanding to put into effect. Even a policy based around increased disclosures (e.g., of carbon emissions) would lead to a need for the disclosures to be subjected to consideration.

Any change to an investment structure or approach carries with it the risk of unintended consequences: an engagement-based policy may, for example, lead to conflict with corporate management, which may in turn lead to negative publicity.

Thought should also be given to how the policy will be monitored. Ideally, the impact of the policy would be clearly identified and tracked. In practice, this is easier to do for some types of policy than for others. Likewise, to the extent that it is feasible, it is desirable to have separate measures of the impact of the policy itself and the impact of the agent(s) retained to implement the policy.

The challenges and demands around implementation of a responsible investment policy can be significant, and they vary greatly depending on the details of the chosen policy and the tactics upon which it is based. Because of this, consideration should be given—before a policy is adopted—to how that policy will be implemented and to what the indirect consequences may be.
TEST #4: DOES THE POLICY HAVE BROAD STAKEHOLDER ACCEPTANCE?

Even where a policy has been weighed against our first three tests and judged to be appropriate, it is still necessary to consider the question of stakeholder buy-in. Responsible investment policies frequently receive a great deal of attention, and can create strong emotions (both in favor and against). And, as we have stated already, RI policies will, like any other investments, almost certainly go through periods of disappointing performance, as well as periods of strong performance. That can be a dangerous combination.

There is the potential to create no-win situations in bad times if key stakeholders feel that they were excluded from the policy decision. It may lead to criticism of those who adopted the policy or pressure to unwind well-designed policies. It is far better to take steps to earn stakeholder understanding and acceptance of the policy at its origin than to attempt to do so after the event if the results turn out to be worse than expected. Stakeholders are, of course, not always resistant to responsible investment policies—in many cases, a policy’s origins lie in stakeholder pressure.

There may be a number of sets of stakeholders to consider, some with a greater say than others. Private foundations have their contributors and beneficiaries; university and college endowments have those, too, and in addition may have a vocal faculty and/or student body; corporate pension plans have their sponsoring corporation and the plan membership; public pension plans have their sponsoring body, plan membership and taxpayers. There may be other stakeholders—some investors in each of these categories are sufficiently large or high-profile that they garner public interest, for example.

The more numerous and more diverse the stakeholders, the harder it can be to reach common ground—a point nicely illustrated by the case of the Dutch civil servants’ pension plan ABP.8 In 2007, the plan was criticized (along with other large Dutch plans) on an investigative TV show9 for investing in companies that produce cluster bombs and anti-personnel land mines. But as a spokesman for ABP pointed out in a written response to Investments & Pensions Europe,10 ABP’s 2.5 million participants include “…pilots that can be asked to drop cluster bombs, the minister of defence who is responsible for contracts to buy weapons on behalf of the Dutch government, all members of the government and all members of the opposition.” This is just one example of different perspectives on what constitutes a “responsible” investment.

How far it is necessary to go to gain stakeholder buy-in to a policy will vary depending on circumstances, but those responsible for the policy must at least take the time to ask the question.

TEST #5: IS THE POLICY PROPERLY DOCUMENTED?

Good documentation is a general principle of sound investment. It is especially pertinent here because subjects like abortion, the environment and war often involve strongly held religious or ethical beliefs (one’s own and those of others) and generate

8 Algemeen Burgerlijk Pensioenfonds, one of the world’s largest pension plans at close to $300 billion at the start of 2008.
strong feelings. Responsible investment evokes human emotions, more than almost any other area of investment. Whatever you do, you can expect to be challenged by those who would have preferred a different approach.

This means that if a responsible investment policy fails to deliver the expected outcomes or comes under subsequent criticism for other reasons, then fiduciaries will be looking for good documentation, demonstrating prudent process. Naturally, that documentation should include the rationale and objectives of the policy. The considerations and expectations arising from our first four tests should also be captured. If it is believed that the policy will not reduce expected returns (while acknowledging that there will be periods when it does reduce actual performance), then the reasons for that belief should be documented. Likewise, an assessment of the issues around risk, implementation and stakeholder acceptance should be documented.

The application of the five tests in defined contribution (DC) plans

We have couched the tests above in general terms and they do, indeed, apply to any type of institutional investor. We should add a few words on the application of these tests within DC plans.

On the surface, DC plan fiduciaries who offer some form of responsible investment option alongside traditional options may feel that they are on safer ground than fiduciaries for other types of investment programs that pursue responsible investment policies. This is because, in a DC plan, the only participants affected by the policy are those who explicitly select the RI options for themselves. This clearly makes our fourth test—that of stakeholder acceptance—an easy one to assess.

However, participant involvement does not remove the fiduciary obligation to ensure that the selected policy is appropriate in other respects—especially when we recall that in a DC plan, unlike in a defined benefit plan, the participant is directly affected by investment returns. DC fiduciaries should therefore pay the same level of attention to our five tests as do fiduciaries for other types of investment program; they should not assume that the existence of participant choice automatically covers all the bases.

Conclusion: A framework for sound decision-making

Responsible investment is a very broad concept that includes many different strategies, with many different end objectives - a concept that is increasingly being considered by institutional investors, for a variety of reasons.

To help investors considering the adoption of a responsible investment policy we have described in this paper five tests to be used in assessing such a policy. Together, these tests provide a framework for ensuring that best investment practices can continue to be applied.
Volatility-responsive asset allocation

Sometimes, you arrive at a single idea from two completely different starting points. Volatility-responsive asset allocation (or VRAA)—the subject of the next paper—is an example of this.

One perspective is a chain of academic research into the persistence of volatility, which includes Nobel Prize-winning work by Robert Engle, a chain of research summarized by André Perold thus: “An alternative to a static asset allocation is to seek to maintain the same level of portfolio risk at all times. Such an approach would hold lower exposures to equities and other risky assets in more volatile times and higher exposures in calmer environments. A stable risk policy is less prone to fat tails…”

The second perspective is rooted in our experience of how clients react to different environments—of the human tendency to overestimate our ability to tolerate tough times, which can lead to the abandonment of strategies at the wrong time and shifting to a conservative stance only after a negative market event has occurred.

These perspectives come together in VRAA, a strategy which offers a disciplined and systematic response to changes in market volatility.

Volatility-responsive asset allocation

A stronger link between asset allocation policy and the market environment

Market volatility is itself volatile; markets can be relatively stable at some points in time and explosively volatile at others. This means that the risk associated with a traditional (fixed-weight) strategic asset allocation policy can be highly variable over time. This paper explores the possibility of a dynamic asset allocation policy that varies as market volatility changes. We find that a volatility-responsive asset allocation policy can lead to a more consistent outcome and a better trade-off between risk and return.

Context: Strategic asset allocation is becoming more dynamic

An institutional investor’s strategic asset allocation is generally set by an investment committee or another high-level decision-making body. As a result, it is typically reviewed infrequently: no more than once a year. This contrasts with the very dynamic approach that is taken to implementing the investment program once the strategic policy has been set, with full-time specialists (either investment staff or external money managers) continually reviewing and adjusting their parts of the portfolio in response to a constantly changing world.

In recent years, however, strategic asset allocation practices have evolved. The decision remains a high-level decision, but the policy is no longer necessarily a set of fixed weights that are held constant until the next review. Rather, it can be designed to respond to changes in the investor’s experience or to changes in market valuations. Examples of such strategies are described in recent Russell Research papers such as “Liability-Responsive Asset Allocation” and “Dynamic LDI with a View”, and in other work such as Bill Sharpe’s “Adaptive Asset Allocation Policies”. Brief summaries of these three papers are provided in Appendix 1.

In this paper, we explore the case for making the strategic asset allocation policy responsive to another sort of change: variations in market volatility.

Volatility is itself volatile

The foundation of the strategic asset allocation decision is a trade-off between risk and reward. Reward is often expressed in terms of expected return and risk as the volatility of that around that expected return. Where a different measure of reward is used,1 volatility remains either the primary measure of risk or a key contributing factor. To manage volatility, therefore, is to manage risk.

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1 Perhaps based on a pension plan’s projected funded status or an endowment’s ability to support a targeted level of spending, for example.
Chart 1 shows a typical presentation of this trade-off between equity and fixed income, in this case based on the returns experienced by the Russell 3000® Index and the Barclays Capital U.S. Aggregate Bond Index over the 30 years 1981–2010. The portfolios represented range from 20% to 80% equity.

Chart 1: A 20% reduction in equity allocation reduces risk by about 2.5%
Risk/return frontier (30 years ended 12/31/10)

Note that the difference in risk between candidate portfolios is relatively small. Reducing the equity allocation by 20% reduces the standard deviation of returns by about 2.5%. For example, the difference in standard deviation between a 40/60 portfolio and a 60/40 portfolio is 7.6% compared to 10.1%.

In Chart 2 we see quite another picture when we look at how one of these candidate portfolios—a 50/50 portfolio—behaves over time.

Chart 2: The risk experienced by a static 50/50 portfolio varies by almost 10%
Annualized standard deviation (rolling 24-month period)
This illustrates that volatility is itself volatile. While on average the standard deviation has been close to the 8.4% implied by Chart 1, it has varied considerably over time: over 13% at its high and below 4% at other times. So the variation in the risk of this portfolio is several times greater than the difference between two portfolios whose equity allocations differ by 20%—two portfolios that are quite different from each other. Is it reasonable to expect fiduciaries to stick with a policy portfolio when it starts behaving like a portfolio they rejected in the strategic planning process?

These variations in volatility are extremely important. We find that the most impactful events in a portfolio occur at the extremes—10 years of well-behaved markets can have less impact on the ultimate success or failure of your portfolio than can a couple of outlier months of extreme returns. And these extremes tend to be marked by high volatility.

Therefore, when volatility is high, the stakes are high. Even if the volatility of volatility is built into the modeling of market behavior, a fixed mix will take on a different nature in different market environments. As shown on Chart 2, there are times when a 50/50 portfolio behaves how we would expect a 90/10 portfolio to behave, and at other times it behaves how we’d expect a 100% bond portfolio to. Like the proverbial actuary with his feet in the oven and his head in the fridge (“on average, I’m just right”), fixed weights that deliver the right level of risk on average may be alternately undershooting and overshooting their intended position. This is why it is worth exploring the possibility of using changes in market volatility as the basis for a dynamic strategic asset allocation policy.

We would note, however, the danger of a policy that is driven by emotional reactions. The reason why volatility of volatility is so problematic is that, all too often, fiduciaries respond to extreme volatility with ad hoc changes to their investment strategy. This can mean selling near market bottoms. So a volatility-responsive approach needs to be as systematic and disciplined as any other strategic policy.

Sources of insight into the volatility environment

Volatility is an appealing foundation for a dynamic strategy because, unlike the outlook for returns (which are notoriously difficult to forecast), we can be relatively confident in our assessment of the volatility environment.

One reason for this confidence is that changes in volatility are more persistent than changes in returns. We can see this persistence in volatility (and the absence of persistence in return patterns) in Charts 3 and 4 on the next page.

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2 The volatility that is experienced from the portfolio should be expected to vary somewhat just from random fluctuations, even if there is no change in the underlying market environment. The extent of the variation that is observed here is greater than would be expected from random fluctuations alone.

3 This is a feature, for example, of Russell’s strategic forecasting assumptions.
Charts 3 & 4: Returns in one quarter are no guide to the next… but volatility is

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.

On the left we see a comparison of returns on the Russell 1000® Index in each quarter to those in the following quarter, from the start of 1979 through June 2011. The $R^2$ of the two data series is just .007, implying that what we have just experienced provides essentially zero information about upcoming returns. On the right, we plot a comparison of the volatility of the daily returns experienced in each quarter with the volatility in the following quarter. Here, we can observe a stronger relationship. In this case, the $R^2$ is .348, which implies some degree of explanatory power. Additional charts, based on monthly rather than quarterly experience, are included in the appendix.\(^4\)

So even a simple look at recent returns gives us useful insight about the immediate volatility environment. That is not the only source of information. For example, the Chicago Board Options Exchange Market Volatility Index, better known as the VIX, is a measure of the market volatility that is implied by the price of 30-day options to buy or sell the S&P 500 Index.\(^5\) A comparison of the level of the VIX at the start of each quarter with subsequent volatility implies that the VIX has explanatory power similar to trailing volatility. Being a market-based indicator, it responds instantly to changes in the outlook caused by a shock to the system. As such it is a useful complementary source of information about the volatility environment, especially if a volatility-responsive asset allocation program were to be based on a daily analysis of the volatility environment, rather than on the monthly approach we describe here.

Likewise, further data on market volatility is available by looking at other markets: bond markets, international markets and so on.\(^6\) All of these can add to a more complete picture of the market environment. For the purposes of this paper, however, we will keep things simple by using the trailing volatility of the U.S. equity market as the indicator of general market volatility.

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\(^4\) The $R^2$ values for returns and volatility are .005 and .448 for monthly data.

\(^5\) The VIX is not, strictly speaking, a direct forecast of volatility, but rather a number derived from the demand for (and willingness to supply) options contracts that offer protection against changes in market levels. One feature of the options market is that the implied volatility tends to be higher than that which is actually experienced.

\(^6\) The Merrill Lynch Option Volatility Estimate (MOVE) index is a measure of the market volatility that is implied by the price of 30 day options to buy or sell Treasury securities. There are also volatility indices (similar to the VIX) on a number of international markets, although most of these are fairly recent in origin. Clearly, if trailing volatility is being used to gauge the environment, then this is easy to calculate for any significant market.
Reducing volatility and improving the risk/return trade-off

The principle that underpins volatility-responsive asset allocation is to reduce exposure to risky assets when volatility is high, and to increase that exposure when volatility is low. This might result in a portfolio that averages, say, 50% exposure to the equity market, but which has more than that at times of market stability and less during volatile markets. Even though the average allocation to the equity market is 50%, the resulting pattern of returns would be different. As we see below, this volatility-responsive portfolio would have been less volatile, on average, than the fixed 50% mix. The portfolio's volatility would also have been more stable.

Chart 5: The risk experienced by a volatility-responsive portfolio is lower and more stable than that of a fixed-weight portfolio
Annualized standard deviation (rolling 24-month period)

Chart 5 repeats the analysis in Chart 2, and adds a second strategy. This strategy is a deliberately simplified example of a dynamic approach, one that is invested 30/70 a third of the time, 50/50 a third of the time and 70/30 a third of the time. Which of these three allocations is chosen depends on the trailing 60-day volatility at the start of each month: following high trailing volatility, we adopt the 30/70 allocation; following moderate volatility, the 50/50 allocation; and following low volatility, the 70/30 allocation. We observe that this would have led to a reduction, on average, in volatility (in this case a reduction of about 6%) and, equally important, to a more stable pattern: volatility is no longer as volatile as it was before.

However, this is only half of the story. Asset allocation is not about risk alone, but about the trade-off between risk and expected return. If the rewards for taking risk are highest at the times of high market volatility, then the reduction in volatility shown above would come at too high a price: a drop in returns that more than wipes out the risk benefit. So we need to consider also the relationship between market volatility and expected returns.
Chart 6: Volatility is not a guide to subsequent returns

INDEXES ARE UNMANAGED AND CANNOT BE INVESTED IN DIRECTLY. PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS.

In Chart 6, we show analysis similar to that in Charts 3 and 4 earlier, this time comparing volatility in one quarter to returns in the next. There is no obvious connection (R² is just .002.)

The simple volatility-responsive strategy described above also points to no obvious return penalty: indeed, it would have delivered a higher return than the fixed 50/50 strategy over the period in question (roughly 17 basis points a year higher).

This question of the risk/return trade-off is, however, critical. The relationship between risk and return is subtle and complex, and we will explore this question in more depth in the next section. We will also look more closely at how a volatility-responsive asset allocation strategy might, in practice, be implemented.

Volatility-responsive asset allocation

The analysis that follows is based on two assets only: U.S equity and U.S. fixed income, as represented by the Russell 3000® Index and the Barclays Capital U.S. Aggregate Bond Index. It covers the period April 1979–June 2011, the period for which data on the Russell 3000 is available (the data starts at January 1979, and the strategy starts once 60 days’ return data is available from which to calculate trailing volatility.)

At the start of each month, the volatility of the daily equity market returns for the previous 60 trading days is calculated. If that volatility lies in the range 10.3%–16.9%, then a no-trade zone applies; this level of volatility is not regarded as being unusual enough to merit a deviation from the default asset allocation of 50% equity/50% fixed income. (This range was chosen so that the no-trade zone applies half of the time.)

\[ \text{Volatility in quarter} \]

\[ \text{Return in subsequent quarter} \]

Notwithstanding our argument that volatility varies over time, for presentation purposes here, and in keeping with convention, we have annualized the 60-day volatility by multiplying by SQRT(252).
As volatility rises beyond 16.9%, the allocation to risky assets is decreased. Conversely, as volatility falls below 10.3%, the allocation to risky assets is increased. Graphically, this trading rule is illustrated below.

Chart 7: Allocation to equity at varying levels of market volatility

Note that the size of the no-trade zone, the minimum and maximum allocations to risky assets and the rate at which those minimum and maximum positions are achieved are parameters that can be customized to the specific situation.

The resulting mix between equity and fixed income is shown in Chart 8 below, along with the trailing volatility on which it is based.

---

8 For the analysis shown in this paper, the rule applied was, in full:

If trailing volatility is higher than 16.9%, then the equity allocation is reduced according to the formula:

\[ \text{Allocation} = 50\% - \frac{\text{TrailVol} - \text{TrailVol}75}{\text{TrailVol}95 - \text{TrailVol}75} \times 30\% \text{ (with a minimum allocation of 20\%).} \]

If trailing volatility is lower than 10.3%, then the equity allocation is increased according to the formula:

\[ \text{Allocation} = 50\% + \frac{\text{TrailVol}25 - \text{TrailVol}}{\text{TrailVol}25 - \text{TrailVol}5} \times 30\% \text{ (with a maximum allocation of 80\%).} \]

Where:

- TrailVol is the 60-day trailing volatility on the Russell 3000 index.
- TrailVol95 is the 95th percentile of TrailVol for the historical period and is equal to 28.1%.
- TrailVol75 is the 75th percentile of TrailVol for the historical period and is equal to 16.9%.
- TrailVol25 is the 25th percentile of TrailVol for the historical period and is equal to 10.3%.
- TrailVol5 is the 5th percentile of TrailVol for the historical period and is equal to 7.8%.
Chart 8: Equity/bond allocation under the VRAA strategy
VRAA when volatility outside range of 25th percentile and 75th percentile

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.

Just as in the simpler simulation above, the volatility-responsive strategy described here produces lower volatility than the fixed mix, and its volatility is more stable and predictable. And, once again, there was no return penalty over the period analyzed; the volatility-responsive strategy delivered an average 40 basis points higher return after accounting for trading costs.9

The results are summarized in the table below, which compares the return pattern of the volatility-responsive strategy to that of a fixed 50/50 mix.

Table 1: Summary statistics of volatility-responsive strategy, April 1979 – June 2011

<table>
<thead>
<tr>
<th></th>
<th>Fixed mix (50% equity)</th>
<th>Volatility-responsive strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annualized return</td>
<td>10.28%</td>
<td>10.68%</td>
</tr>
<tr>
<td>Annualized standard deviation</td>
<td>8.99%</td>
<td>8.43%</td>
</tr>
<tr>
<td>5%ile monthly return</td>
<td>−3.41%</td>
<td>−3.05%</td>
</tr>
<tr>
<td>Worst monthly return</td>
<td>−10.05%</td>
<td>−9.44%</td>
</tr>
<tr>
<td>Worst three-month return</td>
<td>−16.86%</td>
<td>−12.16%</td>
</tr>
<tr>
<td>Biggest drawdown</td>
<td>−27.25%</td>
<td>−14.48%</td>
</tr>
<tr>
<td>Longest drawdown</td>
<td>38 months</td>
<td>33 months</td>
</tr>
<tr>
<td>Average equity allocation</td>
<td>50%</td>
<td>50.35%</td>
</tr>
</tbody>
</table>

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.

9 Assumptions regarding trading costs were based on the average cost of trading and rolling futures contracts and had the effect of reducing the return for the volatility-responsive strategy by an additional 0.6 bps per year compared to the fixed-mix strategy (1.8 basis points versus 1.2 basis points)
Let us consider each of these statistics in turn.

**Annualized return:** Even allowing for the cost of trading, the volatility-responsive strategy delivered a return over the full period that not only matched but beat that of the fixed mix. We will see below, however, that this can be episodic: there are periods of reduced return as well as periods of enhanced return.

**Annualized standard deviation:** For the reasons described earlier in this paper, we would expect the volatility-responsive strategy to deliver a more stable return stream than the fixed mix, and this was indeed the case. Note that not only is the standard deviation of returns over the full period lower, but the variability of the standard deviation over short periods is also materially lower, as shown in Chart 10 below.

**5%ile monthly return:** Roughly one in 20 of the monthly returns were −3.05% or worse under the volatility-responsive strategy, while roughly one in 30 were −3.41% or worse under the fixed mix. Thus, using this as a definition of a bad-case scenario, the volatility-responsive strategy fares slightly better, mitigating downside risk.

**Worst monthly return:** A more extreme bad-case scenario is provided by a look at the lowest monthly return. For the volatility-responsive strategy, this would have occurred in October 1987, when the portfolio value fell by 9.44%. (As a point of comparison, in that month the fixed-mix value fell by 9.43%.) The worst month for the fixed mix was October 2008, when it fell by 10.05% (By comparison, the volatility-responsive strategy fell by 5.44% that month.)

**Worst three-month return:** For the volatility-responsive strategy, this was a September through November 1987 decline of 12.16%. (As a point of comparison, over that same period, the 50/50 fixed mix declined by 14.37%.) The worst three-month return for the fixed mix, a loss of 16.86%, occurred in September through November 2008 (By comparison, the volatility-responsive strategy would have declined by 8.77% over that three-month period.)

**Biggest drawdown:** The drawdown is the loss incurred by the portfolio compared to its previous high. The biggest drawdown for both strategies occurred in February 2009, with the 50/50 strategy posting a 27.25% drawdown and the volatility-responsive strategy posting a 14.48% drawdown. More detail on drawdowns is shown in Chart 9 below.

**Longest drawdown (longest period below high water):** This statistic measures the length of time from a high-water mark until the strategy regains that high value. The longest such period for the fixed 50/50 mix was September 2000 through October 2003, 38 months in all. In other words, the strategy did not show a positive return relative to a starting point of September 2000 until more than three years later. The longest period below high water for the volatility-responsive strategy was 5 months shorter, at 33 months (also beginning at September 2000.)

Chart 9: Shorter and less severe drawdowns under the volatility-responsive strategy—Drawdown

![Chart 9: Shorter and less severe drawdowns under the volatility-responsive strategy—Drawdown](image-url)
In summary, then, each of the measures points to the volatility-responsive strategy having been effective in reducing and stabilizing risk, without incurring any overall reduction in returns.

Chart 10: Volatility of returns is more stable under the volatility-responsive strategy
Trailing 24-month standard deviation of returns, annualized

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As mentioned above, however, these benefits are somewhat episodic, especially with regard to the effect on returns. This can be seen in the chart below, which shows the month-by-month excess return of the volatility-responsive strategy relative to that of the fixed mix.

Chart 11: Difference in returns between volatility-responsive and fixed strategies
Excess of VRAA over fixed 50/50

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Thus, even though the volatility-responsive strategy would have delivered a better risk/return trade-off, it would also have created tracking error relative to the fixed mix. Thus, if it is judged only on the basis of its impact relative to the default strategy, there will be times when it underperforms. Now, it really makes no more sense to look at the tracking error of the volatility-responsive strategy compared to a fixed mix than it would be to move from, say, a fixed 60/40 mix to a fixed 50/50 mix and then judge...
the 50/50 mix on its tracking error relative to the higher-risk strategy. It is, however, a comparison that some will make, and it is sensible to be prepared in advance for what that comparison will show.

This highlights the difference between judging a strategy in terms of its absolute return (in which case the overall performance is used to assess risk) and judging it in terms of its relative return (in which case tracking error is used to assess risk.)

This difference in perspective is illustrated in Chart 12 and Chart 13 below.

Chart 12: Attractive risk and return pattern when measured in absolute terms…
Trailing 36-month returns, annualized

![Chart 12](image)

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.

Chart 13: …but periods of underperformance if judged in relative terms
Excess of VRAA over fixed 50/50, rolling 36-months, annualized

![Chart 13](image)

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.

Chart 12 shows the rolling three-year returns of the two strategies. It is during times of market decline—notably 2000-2003 and 2008—that the volatility-responsive strategy would have offered the greatest benefit, with the three-year-average return at no point falling significantly below zero. The return pattern of the volatility-responsive strategy shown in Chart 12 is, for the reasons summarized above, very appealing compared to the fixed mix.
However, if we look only at the relative performance (Chart 13), there were multi-year periods during which the fixed mix did better. So, judged by this yardstick, there were periods when the strategy would have appeared to be ineffective—even though it achieved exactly what we hoped it would in terms of its effect on the overall return pattern. Therefore, those who follow a volatility-responsive strategy need to take care to create the right framework for monitoring its effect. This is, in turn, tied to the objectives and expectations that are set.

**Clear objectives should be set**

There is, in fact, more than one way in which a volatility-responsive strategy could be structured. An improvement in the risk/return trade-off might mean increased return, it might mean reduced risk or it might mean some combination of the two. Different objectives can lead to different structures for a volatility-responsive asset allocation program and to different measures being emphasized in monitoring the results.

The analysis above is based on maintaining a similar overall allocation as a given fixed mix: 50/50 in this example. The objective is lower (and more stable) volatility of returns and, in particular, improved results during the worst markets—but with similar average returns over the long term. Against these objectives, monitoring would focus both on key risk measures (such as those shown in Table 1) and on returns.

It would, however, be possible to change the emphasis of the program from risk reduction to return enhancement. This would involve targeting a higher return, subject to similar levels of volatility and downside risk. For example, in the analysis above the volatility-responsive strategy had a standard deviation of returns similar to that of a 45/55 fixed mix. Compared to that mix, the volatility-responsive strategy is now aiming for higher returns at similar levels of risk. The excess return of the strategy over the 45/55 fixed alternative would now become a more significant metric.

Another possibility is to focus on the downside-protection aspect of the strategy. Here, the investor would want a reduced exposure to risky assets when the environment is unusually volatile, but would not target a higher exposure during unusually stable times. This would lead to a one-sided version of the strategy described earlier, with different return characteristics. In this case, the investor might be willing to accept a reduced return on average from the strategy—with downside protection being paid for, in effect, by a premium manifested in losses when markets are volatile but rising. The results under this one-sided approach are shown in Appendix 3.

**Conclusion**

In summary, the use of fixed weights in strategic asset allocation policy does not result in a stable risk/return pattern over time, but rather leads to greater risk at times of high market volatility and to lower risk in unusually stable markets. For investors who are sensitive to volatility, a more consistent outcome can be achieved—both in terms of the volatility of returns and in terms of how volatile that volatility itself is—by adopting a dynamic, or volatility-responsive, approach.

An early version of the analysis of the effect of variations in volatility over time (under the working title “Ambient Risk Allocation”) was performed by Marco Diolosa. Significant contributions to the development of this idea were also made by Greg Nordquist.

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10 The return on the 45/55 fixed mix over the period of analysis was 10.13%, which the volatility-responsive strategy beat by 0.55% a year on average. Annualized standard deviation was, by construction, similar between the two strategies. Against the other risk measures shown in Table 1, the volatility-responsive strategy was generally superior.

11 We should note, however, that over the period tested the one-sided volatility-responsive strategy actually outperformed the 50/50 fixed mix by 15 basis points a year—slightly less than half of the outperformance shown by the two-sided strategy.
Appendix 1: Other examples of dynamic asset allocation policy

“LIABILITY-RESPONSIVE ASSET ALLOCATION”

Strategic asset allocation for defined benefit pension plans has evolved to focus increasingly on surplus management rather than on assets in isolation, and the asset allocation decision now depends more than ever on a plan’s funded status. In this paper, the authors note that “if a pension plan decides to allocate 60% of its portfolio to return-seeking assets (such as equities) when its funded status is 70%, but knows that it would have only a 20% allocation if its funded status were 110%, then why would that plan not track its funded status and dynamically adjust the allocation accordingly?”

Liability-responsive asset allocation allows a plan to adopt an appropriate level of equity investment at a particular funded status, while also allowing for automatic adjustment of that strategy if funded status changes materially. The paper notes that the potential benefits of such a strategy are greatest for frozen plans and other plans with low rates of new benefit accruals.

“ADAPTIVE ASSET ALLOCATION POLICIES”

Asset allocation policies that call for investing a fixed percentage of a portfolio in each of several asset classes are inherently contrarian in nature in that they require selling assets that have had relatively strong performance and buying others that have performed relatively poorly. As a result, it would be impossible for all investors to follow such policies.

This article proposes an asset allocation policy that adapts to market movements by taking into account changes in the outstanding market values of major asset classes. Under this approach, the asset allocation policy becomes responsive to changes in the investment opportunity set, i.e. the market value of available assets in each asset class.

“DYNAMIC LDI WITH A VIEW: MARKET TIMING IS TOO RISKY. RIGHT?”

This paper examines the effect of a very simple dynamic asset allocation that responds to changes in interest-rate levels and to spreads between corporate bonds and Treasury bonds. It is based on the notion that liability hedging for defined benefit pension plans is more attractive and potentially more important when interest rates and spreads are high and expected to fall, and less important when rates and spreads are low and expected to rise.

While this strategy would have produced strong returns in recent years, probably the more remarkable finding is its impact on risk. When looked at in terms of the stability of the funded status, the dynamic strategy was found to reduce volatility. This challenges the commonly held view that market-timing strategies are necessarily risky.

All three of these papers describe asset allocation policies that are dynamic, in that they vary the asset mix in response to changes in some external variable. The variables to which they respond are, respectively: a pension plan’s funded status; the market value of available assets; the level of interest rates. A variant on this theme—an asset allocation policy that is responsive to changes in market volatility—is described in the body of this paper.
Appendix 2: Relationship between return patterns from one month to the next

Charts 3a & 4a: Returns in one month are no guide to the next… but volatility is

Chart 6a: Volatility is not a guide to subsequent returns

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.
Appendix 3: One-sided volatility-responsive asset allocation

The analysis below follows the same approach as that set out in the body of this paper, but does not make any adjustment away from the 50/50 fixed mix when trailing volatility is lower than average.

The resulting mix between equity and fixed income is shown in Chart 8a below, along with the trailing volatility on which it is based.

Chart 8a: Equity/bond allocation under the one-sided VRAA strategy
VRAA when volatility outside range of 25th percentile and 75th percentile

The results are summarized in the table below, which compares the return pattern of the volatility-responsive strategy to a fixed 50/50 mix. (Because in practice the volatility-responsive strategy resulted in an average 46% allocation to equity over this period, we also summarize, for completeness, the returns of a 46/54 fixed mix.)

Table 1a: Summary statistics of one-sided volatility-responsive strategy, April 1979–June 2011

<table>
<thead>
<tr>
<th></th>
<th>Fixed mix (50% equity)</th>
<th>One-sided volatility-responsive strategy</th>
<th>Fixed mix (46% equity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annualized return</td>
<td>10.28%</td>
<td>10.43%</td>
<td>10.16%</td>
</tr>
<tr>
<td>Annualized standard deviation</td>
<td>8.99%</td>
<td>8.23%</td>
<td>8.54%</td>
</tr>
<tr>
<td>5%ile monthly return</td>
<td>−3.41%</td>
<td>−2.92%</td>
<td>−3.28%</td>
</tr>
<tr>
<td>Worst monthly return</td>
<td>−10.05%</td>
<td>−9.44%</td>
<td>−9.47%</td>
</tr>
<tr>
<td>Worst three-month return</td>
<td>−16.86%</td>
<td>−12.16%</td>
<td>−15.68%</td>
</tr>
<tr>
<td>Biggest drawdown</td>
<td>−27.25%</td>
<td>−14.48%</td>
<td>−25.08%</td>
</tr>
<tr>
<td>Longest drawdown</td>
<td>38 months</td>
<td>33 months</td>
<td>37 months</td>
</tr>
<tr>
<td>Average equity allocation</td>
<td>50%</td>
<td>46.20%</td>
<td>46.20%</td>
</tr>
</tbody>
</table>

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.
Chart 9a: Shorter and less severe drawdowns under the volatility-responsive strategy

Drawdown

- VRAA strategy loses less money in bear markets

Chart 10a: Volatility of returns is more stable under the volatility-responsive strategy

Trailing 24-month standard deviation of returns, annualized

- VRAA strategy reduces volatility from high levels

Chart 11a: Difference in returns between one-sided volatility-responsive and fixed strategies—Excess of VRAA over fixed 50/50

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.
Chart 12a: Attractive risk and return pattern when measured in absolute terms…
Trailing 36-month returns, annualized

Chart 13a: …but periods of underperformance if judged in relative terms
Excess of VRAA over fixed 50/50, rolling 36-months, annualized

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.
Currency exposure for nonprofits

The old cliché that “what gets measured gets managed” has some truth to it. And, as the next paper highlights, currency risk represents a significant exposure in most nonprofit investors’ portfolios that has long been left both unmeasured and unmanaged. The roots of this situation lie in the way by which currency risk found its way into portfolios—as a side effect of international investing, which has been a growing facet of institutional portfolios for 30 years. We have reached (indeed, passed) the point at which currency needs to be considered as a risk on its own account, and not merely an adjunct to something else.

Once this risk is acknowledged, it can start to be addressed. Hence Ian Toner asks: How significant is this risk? And what do we want to do about it? The first question turns attention to the measurement of currency risk; the second, to its management.
Currency exposure for nonprofits

By: Ian Toner

JULY 2012

International investment is here to stay. Few institutional investors, if any, follow a domestic-only investment policy. It is well recognized that accessing a broad and deep range of diversified investment opportunities and strategies gives investors the best chances of achieving their return objectives. The ability of a nonprofit to accomplish its mission depends on those objectives being met.

However, international asset investment comes with a potentially evil twin: currency exposure. Views vary widely as to whether or not exposure to currency risk can provide a benefit; whether or not currency is an asset class (see “The outcome of the new approach,” below); whether or not currency investment managers can add value; and which, if any, investment managers should be allowed to build views on currency risk into their portfolio.

It is important to note that currency exposure is not just an academic issue for the nonprofit marketplace. A recent Commonfund study¹ showed that foundations had an average 16% exposure to international equities. They also had an average 38% exposure to alternatives strategies, a good part of which will involve additional currency exposure. A similar study of endowments² found an average 17% allocation to international equities and 53% to alternatives.

Such exposure constitutes a significant part of a nonprofit’s portfolio. While the challenges involved in managing it will vary, based on the specific source, currency exposure should be taken seriously.

A previously published Russell Research paper,³ summarized and extended here, takes an entirely new approach to these issues: Conscious Currency™. The goal of our work has been to:

• Look at anomalies in the standard approach to describing, measuring and understanding currency risk;
• Foster increased understanding of currency risk, using terminology that better aligns with how we discuss other risks in the portfolio management process; and
• Create a framework that enables investors to be sure the portfolios they build are based on what they actually think about currency markets.

Russell simulations have shown that over many time periods, a fund that followed this approach may well have experienced better returns than those achieved via the traditional approach. Yet the new approach is not based simply on an expectation of better returns; going forward, we can expect to see periods of both good and poor returns, just as investors have experienced historically in all parts of their portfolio. Rather, our call is for increased understanding, which will enable investors to make decisions more clearly and confidently. The better we can accurately assess the risks we face, the better we can design investment strategies to meet our needs.

Nonprofit investors spend significant time in the search for new asset classes, exposure sets or betas that can be incorporated in a portfolio to enhance risk-adjusted returns. Our work suggests that some of that time should be devoted to rethinking an exposure that’s already in the portfolio, but is currently described (and therefore managed) suboptimally.

Over the last year, in conversations on this topic with clients around the world, we have received a great deal of positive feedback. Many currency specialists have been particularly supportive, and we have even been asked to run money for a number of clients based on the new approach outlined here.

It is our hope that in summarizing the Conscious Currency approach, this brief note will help put the key ideas in context for the nonprofit sector in particular. As well, we expect and hope that this conversation will yield useful insights for other concerned investors—and that the conversation will continue.

The standard approach to analyzing currency risk

The standard analysis of currency risk can be described quite simply: currency exposure is a part of the international investment decision, and:

- Unhedged benchmarks are often used to describe the behaviors of international asset classes.
- Currency risk is generally defined as the risk and return streams related to currency holdings experienced by investors who hold their international assets on an unhedged basis.
- Currency risk is generally measured by comparing the hedged and unhedged returns of asset class benchmarks.
- Investors may consider managing currency risk through a hedging process.

The standard analysis assumes that over the long term, the currency market in aggregate is a zero-sum game, and that investors (who are assumed to be long-term investors) therefore need to be concerned with currency risk only when they have very high exposure to it, or only when they are investing on a short-term basis.

Investors who do consider taking some action relating to currency risk in this approach will consider hedging, and may adopt one of a number of possible standard approaches to hedging that risk.

Nonprofit investors spend significant time in the search for new asset classes, exposure sets or betas that can be incorporated in a portfolio to enhance risk-adjusted returns. Our work suggests that some of that time should be devoted to rethinking an exposure that’s already in the portfolio, but is currently described (and therefore managed) suboptimally.
Hedging

As outlined above, the standard analysis of currency risk involves hedging. There are four main approaches to hedging.

1. Let it ride
   In this approach, an investor simply “leaves alone” the currency exposure sustained in the purchase of international assets, without attempting to manage it. This has the advantage of reflecting the way the initial allocations were performed, and the obvious disadvantage of carrying a potentially large amount of associated risk in the portfolio.

2. Manager decision
   In this second approach, the investor gives managers permission to change currency exposure in the parts of the portfolio they manage, while not mandating that they do so. This enables the managers to build views on currency into the portfolio, even though they are primarily focused on (other) asset or exposure classes. Their decisions about currency exposure will be in the context of the exposures of the underlying assets: a neutral position will be having currency exposures that are identical to the underlying assets’ exposures.

3. Static portfolio hedging
   This third approach involves the investor setting a standard hedge ratio, usually across the entire portfolio. The hedging will be performed either by the individual investment managers, the investor, or a third party (often, a custodian or a currency specialist).

4. Dynamic currency hedging
   This final approach is typically thought of as hedging, but more accurately falls into the category of active management. The investor (or more often, a manager appointed by the investor) varies the degree of hedging over time in accordance with insights (either opinion-based or model-driven). Those insights will in some cases be at the total portfolio level, and in others will involve taking views on specific currency pairs. The starting point of this decision process, however, will be the inherited currency exposure from the investor’s asset positions.

In the U.S., most investors follow the first approach. Because they use unhedged benchmarks when constructing their portfolios, they tend to use the same benchmarks to measure performance, and therefore a decision to alter currency exposure by means of hedging is regarded as a significant bet. These investors simply accept whatever currency exposure comes with the international assets they purchase.

Elsewhere, investors tend to see currency as an important factor in the investment decision-making process, and to spend more time in understanding the risks involved and in designing approaches to managing those risks. They will often seek to hedge away most or all of their currency exposure, but may also adopt a more dynamic approach.

Problems with the current approach

There are a number of problems associated with the current approach to analyzing currency risk. While they are explored in detail in our prior research on Conscious Currency paper, we think it is useful to touch on them here.

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5 “Hedging” is an approach to currency risk management whereby an investor with exposure to a foreign currency enters into a contract with a third party, which is designed to remove the “currency surprise” risk (the risk of movements in exchange rates that are not already captured in the exchange rate pertaining at the time of the transaction). This is often done by use of “currency forwards.”

6 Toner (2010)
LONG-TERM INVESTORS STILL EXPERIENCE CURRENCY RISK

Even long term investors often have to behave in ways that take short term issues into account.

Investors who review their portfolios on a quarterly or annual basis, with a view to changing allocations as a result of their observations, have to be very careful to make sure that they’re not simply reacting to market noise. If they are, they will find it hard to say that they are acting as truly long-term investors. While they may have long term goals, those goals can be derailed by short term market behaviors.

This is particularly true in the currency market, where trends can last for 7 to 15 years. Being on the wrong side of a trend of that length poses challenges for investors with long term time horizons. Although the goals are long term, asset allocation policies, funding ratios and solvency questions are all dependent on regular valuations, and those valuations rely on values at different points in time. An investor who has to change their behavior due to short to medium term pricing anomalies does not always have the flexibility to act as a long term investor.

Now, the fact that a nonprofit or pension fund is not acting as a long-term investor with respect to currency exposures does not mean that it is acting in an inappropriate or imprudent manner. Indeed, it is quite possible that adhering to current regulations and best practices makes it very challenging for such nonprofit or pension fund to act as a truly long-term investor: when spending, investment or funding policies need to change in response to short-term market anomalies leading to apparent portfolio funding problems (which may be irrelevant over the long term), then the only appropriate course is to take account of those short-term market moves. In such case the investor should simply recognize the fact and move on, but ought not to assert “because I’m a long-term investor” as a reason for excluding currency risk from consideration.

Finally, there is another important point: volatility is itself inherently expensive, whether you are a short or a long term investor. Controlling that is in the interests of investors in general, no matter what time frame they apply.

PICKING HEDGE RATIOS

Picking hedge ratios turns out to be a challenging exercise. Static portfolio hedging requires picking a single ratio, while dynamic approaches require an element of active investment decision making. All approaches carry their own challenges. Static hedging requires a one-time decision that will be “correct” in all market environments, while dynamic hedging approaches require active investment management insight, which is well understood to be difficult to find in the currency market. To complicate matters even further, dynamic approaches beg a fundamental question: if you are comfortable with relying on active investment management insight in the currency space, why would you confine that to a hedging construct—why not simply hire an active currency manager?

Russell’s advice has typically been to use a static 50% hedge, to minimize the possibility of regret; we believe attempts to pick more effective optimal hedge ratios tend to result in greater regret.

Although the goals are long term, asset allocation policies, funding ratios and solvency questions are all dependent on regular valuations, and those valuations rely on values at different points in time. An investor who has to change their behavior due to short to medium term pricing anomalies does not always have the flexibility to act as a long term investor.

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7 Investors will typically answer that it may be cheaper, may appear less risky, or may have a variable hedge ratio that seems more manageable.


WHY HEDGING, ANYWAY?

It’s not clear why hedging is the correct way to think about the currency exposure problem in the first place. A hedging approach starts with the currency risk inherited from an investor’s international asset exposures, which are a result of a planning process wherein currency and asset exposure have been bundled throughout. Hedging takes this as the starting point, and then selectively reduces some of these foreign currency exposures: an investor’s maximum exposure to any specific foreign currency is determined by the total exposure to assets denominated in that currency in the rest of the portfolio, while the minimum exposure is zero.

But why take this approach? We don’t tie the sector weightings in an equity portfolio to the weights we hold in a fixed income portfolio. Why should we do the equivalent with currency?

An alternative approach

Russell has begun to consider an alternative approach to currency risk: Conscious Currency.

The Conscious Currency approach is to recognize that whenever we build a portfolio, two things are important for the outcome: the contents of the portfolio, and the weightings of the individual holdings that make up those contents.

This recognition applies at the total portfolio level, and within each individual asset class or exposure set. So: we care about which stocks we own, and we care about the relative weights of each of those holdings. We understand that both issues matter and that they will affect the returns we experience.

We use special portfolios (called benchmarks) to help measure asset classes, as well as specific exposure sets that don’t meet the definition of “asset class.” These benchmark portfolios are constructed to give the clearest practical description of each asset class or exposure set possible.

We measure behavior against those benchmarks. Active management is defined as the taking of positions which diverge from those benchmarks: we always want to be sure that such divergences have been carefully considered and based on actual insights, rather than merely fortuitous or accidental.

The key insight of Conscious Currency is simple: if we take this approach with everything else we do, why not with currency?

TWO PORTFOLIOS

Whenever we purchase a portfolio of international assets, we also effectively purchase a portfolio of currency exposures. That portfolio has the same size and structure as the asset portfolio.

Why do we buy a currency portfolio of the same size and structure as our other international asset portfolios? For two main reasons:

1. Doing so is built into our benchmarks and portfolio construction approach.
2. Because it “all comes out in the wash.”

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9 By “exposure set” we mean a specifically defined set of investments that may or may not have all of the characteristics of an asset class, but that can be thought of as acting in similar ways. Hedge funds can be seen as an example of this.
Russell’s new approach puts forth responses to these two reasons:

1. We should change our benchmarks to reflect the reality of currency risk, and build portfolios using these benchmarks.

2. We can only choose to ignore the effects of currency exposure if we believe that the weights in which we hold currencies are irrelevant to the portfolio outcome and the total amount of currency exposure is also irrelevant. This does not appear to be a reasonable position to take.

In the Conscious Currency framework, both the size of the currency exposure portfolio to which the fund is exposed, and the weighting structure within that currency portfolio, matter.

To put it another way: being exposed to the currency markets is equivalent to investing in currency. What matters is that you decide what kind of investor you’re going to be.

A CURRENCY BENCHMARK

The starting point of our new approach is simple: identification of a benchmark that can be used to describe currency markets in their own terms. There are a number of options, including well-regarded Deutsche Bank and Citibank indexes. These benchmarks are based on the nature of the currency markets, and have nothing to do with the structure or behavior of the other holdings in the portfolio.

Unhedged equity, fixed income and other international asset class benchmarks are made up of two equally weighted portfolios: one of the assets concerned, in local currency terms, and one of the currency exposures created by those holdings. The inclusion of these two quite different exposures in the benchmark significantly distorts the true risk and return picture related to the underlying assets themselves. Only half of the content of an unhedged international equity benchmark is in fact equities.

WHAT IS CURRENCY RISK?

In our new framework, “currency risk” is easily identified by the following process:

• Investors choose a benchmark, based on the actual structure and nature of the currency markets, which they feel best describes those markets.

• We describe equity risk by use of a metric based on the risk characteristics of the equity benchmark. We should do exactly the same for the currency markets: define currency risk based on the behavior of the currency benchmark.

Currency risk, then, can be defined as simply the risk (standard deviation of return, or a similar metric) associated with the benchmark an investor uses to measure currency markets.

THE CONSCIOUS CURRENCY FRAMEWORK

Our new framework suggests that investors consider doing the following:

• As described above and in our prior research on Conscious Currency paper, identify a benchmark, based on the actual structure and nature of the currency markets, to describe the currency markets.

• When modeling possible portfolio structures and investment market behaviors using fully hedged benchmarks for all international assets and the chosen currency benchmark.

• Appoint asset managers for international asset classes using hedged benchmarks—or, alternatively, give them unhedged benchmarks, but centrally hedge the currency exposures in the parts of the portfolio they manage.

Details of these benchmarks can be found in our prior research on Conscious Currency. See footnote 3.
• Allocate to currency markets when the portfolio construction model deems it appropriate.

• The more conscious allocation to currency exposure allocation can be done on a passive, beta-replication basis by making an allocation to a manager who simply tracks the index that’s been used to describe currency markets: this requires no belief in active currency management.

• Investors who believe in active currency management can hire an active currency manager. If this approach is taken, manager performance should be measured against the currency benchmark concerned.

THE OUTCOME OF THE NEW APPROACH

The goal of Russell’s new approach is not to treat currency as an asset class: there are many reasonable investors who feel it does not have all of the characteristics of an asset class, and others who do. However, we must recognize that many investors, including those who do not believe it is an asset class, have significant currency exposure. To that end, we focus our attention on how to manage that exposure.

As outlined in our prior research, over many time periods this approach has appeared to improve diversification and risk adjusted return at the total portfolio level. Yet our new approach is founded on more than performance enhancement. Instead, a clearer definition and understanding of risks and returns, and of the opportunity sets available, will give investors better tools for decision making, and should allow them to take more clear-sighted (and, ideally, more accurate) positions that are truly based on their investment beliefs and opinions.

A NEW STRUCTURE PROVIDES NEW OPPORTUNITIES FOR NONPROFITS

This new thought process is particularly important for nonprofit investors, for two reasons.

First, as outlined above, these investors have material exposure to currency in their portfolios today. This exposure represents a sizable element of their total portfolio risk—risk for which there is typically no particular expectation of reward. Put simply: the new structure is designed to help investors describe and manage a risk they already have today.

Second, and at least as important: the Conscious Currency approach provides an effective framework for investors who are seeking to be rewarded for their currency exposure, whether from improving the diversification benefit involved or from generating return (whether beta-like or alpha). Rather than simply regarding currency exposure as a potentially damaging risk source that should be eliminated, nonprofits may begin to treat currency exposure similarly to other market exposures—by deciding whether to take market-based exposure or to hire active managers to try to outperform the benchmarks selected to represent the currency market. This also should result in active managers being paid only for true insights, and investors being better able to identify and capitalize on those insights.

Within a Conscious Currency framework there is plenty of room for investors to more effectively express their views on currency exposure. The framework’s key contribution is in its ability to help them do so more readily, more intuitively and more efficiently.

RELATED READING


Available for download at: http://www.russell.com/institutional/research_commentary/conscious_currency.asp
Modeling illiquidity in a multi-period stochastic projection

Asset allocation policy cannot be based on models alone. The investment world is too uncertain for any single model to be relied upon for the complete picture—but models play an important role in highlighting likely behaviors and enabling better-informed decisions to be made. As illiquid assets have become ever more important in nonprofit asset allocation, there has been a growing need to bring liquidity considerations into asset allocation modeling. This was hard to do in many traditional approaches, from Markowitz's mean-variance modeling on.

In our next paper, Jim Gannon describes how that shortcoming can be addressed in the context of modern asset allocation modeling best practices.
Modeling illiquidity in a multi-period stochastic projection

Issue
When projecting portfolio values for the purposes of an asset allocation study or strategic review, the calculations become more complex if illiquidity is taken into account. How can illiquidity be modeled in this context?

Response
A multi-period projection model (such as that used by Russell) which allows for rebalancing or other changes to allocations at future points can be adapted to include total or partial restrictions on the future buying or selling of specific asset classes—i.e., to take illiquidity into account.

Background
THE STRUCTURE OF A STOCHASTIC MODEL
A Monte Carlo stochastic projection of assets (and liabilities, in the modeling of a pension plan) is the projection of a large number of paths, where each path has a certain number of periods, which are typically of equal length (one year).

For the periods in each path, the model produces a return for each asset class being modeled, so each path can be thought of as one possible economic future.

In these projections it is common to include cash flows, whether they are inflows or outflows from the fund.

The output of a stochastic study is a summary of the hypothetical outcomes of each of those randomly generated paths—for example, asset returns during a certain period, or market value of assets at a certain time point. The statistics summarized usually include the mean and standard deviation of the outcomes as well as percentiles (5th percentile, median, or 95th percentile).

In performance of these calculations, the projection requires an asset allocation strategy that may be static through time or that could evolve based on changing circumstances along each path. The simplest approach is to assume the same asset mix in each period. Implicit in this is the assumption that the asset allocation is static across all paths and for all periods, and that each asset class is fully liquid—i.e., that there are no restrictions on the asset class that would keep it from being part of the periodic rebalancing process or part of the annual cash-flow payments or receipts. So that at the end of each period, regardless of how much a particular asset class has increased or decreased relative to the overall portfolio, the portfolio is allowed to return to its specified asset mix.

WHAT CAN ONE DO IN A STOCHASTIC PROJECTION THAT CAN ACCOUNT FOR THE FACT THAT CERTAIN ASSET CLASSES MAY BE LESS LIQUID THAN OTHERS?
Seeing that many projection models are written in environments that allow for logic type programming (“if...then” statements, for instance), we include an indicator to designate certain asset classes as liquid (equities, fixed income, etc.) and other as illiquid (private
equity, private real estate, large blocks of company stock, etc.). We then create rules around what it means for an asset class to be liquid or illiquid. A very simple rule would be the following:

Any asset class labeled as illiquid is separated from the rest of the asset classes and not involved in the cash flows (inflows or outflows) of the plan, and cannot be rebalanced back to target. Therefore, all cash flows are paid (or received) by the liquid asset classes, and rebalancing takes place among the liquid asset classes.

An example is shown in Exhibit 1.

Exhibit 1:

<table>
<thead>
<tr>
<th>BOY Allocation</th>
<th>BOY $ Value</th>
<th>Return</th>
<th>Outflow ($8 total paid at EOY)</th>
<th>EOY $ Value</th>
<th>EOY Allocation (pre-rebalancing)</th>
<th>EOY $ Value (post-rebalancing)</th>
<th>EOY Allocation (post-rebalancing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>50%</td>
<td>50</td>
<td>10%</td>
<td>5</td>
<td>$50</td>
<td>50%</td>
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<td>Fixed Income</td>
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<td>30</td>
<td>0%</td>
<td>3</td>
<td>$27</td>
<td>27%</td>
<td>$28.875</td>
</tr>
<tr>
<td>Illiquid</td>
<td>20%</td>
<td>20</td>
<td>15%</td>
<td>0</td>
<td>$23</td>
<td>23%</td>
<td>$23.000</td>
</tr>
</tbody>
</table>

BOY allocation = beginning of year percentage of total assets; BOY $ value = beginning of year amount of total assets; Return = investment return earned in the year; Outflow = payments withdrawn from these assets; EOY value = end of year value, calculated as BOY $ value plus return less outflow; EOY allocation (pre-rebalancing) = end of year percentage of total assets, prior to any rebalancing activity; EOY value (post-rebalancing) = EOY value, adjusted for effect of rebalancing activity; EOY allocation (post-rebalancing) = end of year percentage of total assets, after rebalancing activity.

Notice that in the outflow column the $8 is spent only from the equity and fixed income allocations (the liquid allocations) and not from the illiquid allocation. Also notice that the rebalancing happens only between the liquid assets (equities and fixed income), and that those assets are rebalanced back to their percentages of the liquid portfolio. Equities are then always 5/8ths of the liquid portfolio and fixed income is always 3/8ths. The illiquid allocation is whatever it happens to drift to, based on its asset returns.

Over time, a stochastic example of an allocation to an illiquid asset may look like this:

Exhibit 2: Evolution of percent allocation to private equity as a percent of total portfolio value

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>95%</td>
<td>13%</td>
<td>16%</td>
<td>21%</td>
<td>26%</td>
<td>33%</td>
<td>38%</td>
<td>45%</td>
<td>50%</td>
<td>58%</td>
<td>66%</td>
</tr>
<tr>
<td>75%</td>
<td>12%</td>
<td>14%</td>
<td>17%</td>
<td>20%</td>
<td>23%</td>
<td>26%</td>
<td>30%</td>
<td>33%</td>
<td>38%</td>
<td>44%</td>
</tr>
<tr>
<td>50%</td>
<td>11%</td>
<td>13%</td>
<td>15%</td>
<td>16%</td>
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<td>19%</td>
<td>22%</td>
<td>24%</td>
<td>26%</td>
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<tr>
<td>25%</td>
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<td>13%</td>
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<tr>
<td>5%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>9%</td>
<td>9%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Example provided for illustration purposes only.
Exhibit 2 shows the allocation to private equity (which started at 10% in this hypothetical example) through time, assuming that private equity is illiquid. This can be read as: in 2020 the median allocation to private equity is 17%, and the 95th percentile allocation is 33% (only 5% of our paths would have a higher allocation to private equity). The illiquid asset classes tend to increase as a relative percentage of the portfolio for two reasons—first, private equity tends to have a higher assumed return than the portfolio as a whole, and therefore it increases in value each year relative to the other pieces of the portfolio (the opposite effect would occur if the illiquid asset had a lower assumed return than the overall portfolio); and, second, no cash flows are funded from these assets, and therefore, while other assets are reduced by cash flows, private equity keeps on increasing in value.

This shows that we need to refine the rule a little, because even the median path ends up with 30% of the portfolio in private equity by the 20th year (2030). If we go out further in the chart, we may see scenarios wherein private equity could be 90% or more of the portfolio. That is not a realistic situation, for the most part because the asset class would eventually have some liquidity to it, or because the plan would simply sell its stake in the fund to achieve the necessary liquidity.

We would need to relax the constraint of asset classes being either fully liquid or fully illiquid.

**Can that restriction be relaxed?**

That primary restriction is not really reflective of the real world. Asset classes are not always illiquid, lock-up periods end, and more trading would be allowed. Also, some illiquid asset classes (private equity)—when they are fully mature and diversified across time (vintage years)—generate annual cash flows back to the investor. These cash flows can be used to pay outflows and can also be used to rebalance the portfolio.

Ways to relax the initial restrictions would be through adding other logic to the methodology, such as the following:

1. **Lock-up periods**—a period after which an illiquid asset turns into a liquid asset can be defined. After this period, the illiquid asset becomes eligible to participate in the cash flows and is part of the rebalancing process. This accounts for the fact that assets, even illiquid ones, are not locked up forever.

2. **Partial liquidity (pre-lock-up period)**—this variable is a percentage that applies to the asset during the lock-up period. It (the variable) specifies a percentage by which an asset class can rebalance back to its target allocation. This would attempt to acknowledge that even during the lock-up period, an investor in an illiquid asset class might be receiving cash from the investment that would represent initial public offerings (IPOs) or income. The percentage would estimate the amount of cash received each year from the investment—cash that could be used to rebalance and make payments. This amount would generally start off low and increase over time.

3. **Partial liquidity (post-lock-up period)**—this variable is analogous to the previous variable, but it applies to the liquidity after the lock-up period. It still places some restrictions on the asset class, just not as great as during the lock-up period. In this case, it would represent a higher value than in the pre-lock-up period, because (presumably) the illiquid investment is at a mature state, and cash flows may be more readily available to the investor.

4. **Different variables across illiquid assets**—it may be necessary to give different variables to different assets classes, or even to different asset managers within an asset class, depending on the characteristics of that asset class.
What would the above look like?

Exhibit 3 shows the evolution of the allocation to private equity for a situation where private equity begins at 10% of the portfolio and has a 10-year lock-up period. Further, it can rebalance 10% of the way back to the desired allocation during the lock-up period and 25% of the way back after the lock-up period. Notice that the allocation never gets to be quite as large as in the fully illiquid version and that the liquidity issue tends to be less of a problem after the 10-year lock-up period ends. However, there are still times when the allocation to private equity increases from 10% to near 20%. That may not be a problem for some investors, but others may feel that allocating 20% to an asset class when they wanted to allocate only 10% is a problem. Either way, being aware of the situation is important.

Exhibit 3: Evolution of private equity—current allocation

Example provided for illustration purposes only.

What more can be done with liquidity/illiquidity rules?

Logic-type programming really allows for many different rules-based algorithms—each having a good, but not exact, representation of reality—to be programmed and analyzed. Notice how the above rules are applied uniformly across all economic environments. It can happen that certain economic environments will cause an asset class to become more liquid or less so. Therefore, if such environments could be defined, a certain variety of modeling could change a liquid asset to an illiquid asset.
Correlations have fat tails, too

One of the fundamental considerations in asset allocation policy is how asset classes interact with one another. As volatility management and diversification have come more into focus in recent years, the question of how assets interact with each other has become central to the case for a number of popular strategies.

Often, investors measure this interaction of asset classes using the correlation statistic—a simple, easy-to-understand measure. Our closing paper in this compendium argues that this statistic is relied upon too heavily, and that even though Nassim Nicholas Taleb’s *Black Swan* has made investors very aware of the fact that the volatility statistic can understate the true risks in a portfolio, the equally fallible correlation statistic is too often left unquestioned.

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Correlations have fat tails, too

Why this matters to nonprofit organizations

The investment community is, by now, familiar with the idea of fat tails. The concept moved beyond the domain of actuaries and quant geeks with Nassim Nicholas Taleb’s book *The Black Swan* (2007). Taleb drove home the point that volatility does not tell the whole story of the uncertainty associated with asset returns. In particular, extreme outcomes occur more frequently (i.e., tails are fatter) in practice than implied by a normal distribution.

This observation—that the simple risk measure does not capture the full distribution—applies also to the interaction between assets. In other words, correlations have fat tails, too.

Traditional modeling falls short

So not only is the normal distribution a poor model of the returns expected from an investment, the traditional model of asset class interaction also falls short. But this is not widely recognized. Somebody who argues that “strategy X has such-and-such a volatility, so the potential downside is Y” is likely to find themselves challenged because of fat tails. Yet no such challenge is made when correlation is used to describe the relationship between assets.

This matters a great deal in today’s investment world. Interaction between investments has grown in importance in recent years for two reasons. First is the quest to spread risk through diversification because diversification requires assets that behave unlike other assets. Second is increased interest in hedging, which requires assets that behave like the exposures being hedged.

With so many investment decisions being driven by these considerations, a solid understanding of the interaction between investments has become critical.

A powerful illustration of this is provided by the events of 2008.

Table 1 shows year-by-year performance of the Russell 3000® index and other asset classes that might be diversifiers to the U.S. stock market since 2000. Table 2 shows how the Russell 3000 and the other asset classes performed in the bull and bear markets of the same time period, as well as the correlation of monthly returns of each asset class from 2000 through October 2007 with the returns on U.S. equity.
Table 1: Calendar year returns 2000–2011+

<table>
<thead>
<tr>
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<tr>
<td>US equity</td>
<td>−7.5</td>
<td>−11.5</td>
<td>−21.5</td>
<td>31.1</td>
<td>11.9</td>
<td>6.1</td>
<td>15.7</td>
<td>5.1</td>
<td>−37.3</td>
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<td>16.9</td>
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<td>−15.4</td>
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<td>22.0</td>
<td>15.6</td>
<td>25.9</td>
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<td>−44.2</td>
<td>37.5</td>
<td>11.6</td>
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<td>Emerging market</td>
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<td>24.8</td>
<td>33.2</td>
<td>33.7</td>
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<td>84.2</td>
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<td>37.1</td>
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<td>12.2</td>
<td>35.1</td>
<td>−15.7</td>
<td>−37.7</td>
<td>28.0</td>
<td>27.9</td>
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<td>11.5</td>
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<td>3.5</td>
<td>2.7</td>
<td>3.5</td>
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<td>12.4</td>
<td>−2.2</td>
<td>5.5</td>
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<td>2.0</td>
<td>4.3</td>
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<td>−3.1</td>
<td>16.0</td>
<td>8.5</td>
<td>8.4</td>
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<td>15.7</td>
<td>−0.8</td>
<td>14.2</td>
<td>28.8</td>
<td>11.8</td>
<td>11.9</td>
<td>10.5</td>
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<td>26.0</td>
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<td>Commodities</td>
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<td>−35.6</td>
<td>18.9</td>
<td>16.8</td>
<td>−13.3</td>
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</tbody>
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+ The indexes used are as follows:
U.S. equity—Russell 3000 Index
International. equity—Russell Developed ex-U.S.
Emerging market—Russell Emerging Market
REITS—NAREIT Index
Treasuries—Barclays Capital Government Bond Index
Credit—Barclays Capital U.S. Credit Bond Index
Emerging debt—JP Morgan Emerging Markets Bond Index
Commodities—Dow Jones-UBS Commodity Index Net

Table 2: Total (non-annualized) returns over various time periods

<table>
<thead>
<tr>
<th></th>
<th>Bear I</th>
<th>Bull I</th>
<th>Correlation</th>
<th>Bear II</th>
<th>Bull II</th>
<th>Total</th>
</tr>
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<tr>
<td>US equity</td>
<td>−40.5</td>
<td>115.6</td>
<td>1.00</td>
<td>−51.2</td>
<td>100.3</td>
<td>15.5</td>
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<td>International equity</td>
<td>−44.8</td>
<td>225.4</td>
<td>0.86</td>
<td>−56.9</td>
<td>105.1</td>
<td>27.1</td>
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<td>Emerging market</td>
<td>−49.0</td>
<td>469.6</td>
<td>0.70</td>
<td>−63.0</td>
<td>166.8</td>
<td>120.6</td>
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<td>REITS</td>
<td>48.8</td>
<td>167.9</td>
<td>0.34</td>
<td>−64.8</td>
<td>182.5</td>
<td>280.2</td>
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<tr>
<td>Treasuries</td>
<td>34.4</td>
<td>19.6</td>
<td>−0.34</td>
<td>12.5</td>
<td>7.2</td>
<td>109.2</td>
</tr>
<tr>
<td>Credit</td>
<td>29.5</td>
<td>29.2</td>
<td>−0.09</td>
<td>−3.8</td>
<td>31.4</td>
<td>123.6</td>
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<tr>
<td>Emerging debt</td>
<td>14.4</td>
<td>116.8</td>
<td>0.44</td>
<td>−10.5</td>
<td>45.2</td>
<td>244.8</td>
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<tr>
<td>Commodities</td>
<td>28.3</td>
<td>100.1</td>
<td>0.12</td>
<td>−41.0</td>
<td>66.0</td>
<td>101.6</td>
</tr>
</tbody>
</table>

Bear I = January 2000–September 2002
Bull I = October 2000 –October 2007
Bear II = November 2007–February 2009
Bull II = March 2009–April 2011
Total period = January 2000–December 2011
Correlation = Correlation of monthly returns with U.S. equity January 2000–October 2007

Based on the correlations over the period to January 2000–October 2007, one might conclude that a portfolio spread across these various asset classes was well-diversified and hence protected against a market downturn. As we all know, it wasn’t. Every asset class except Treasury bonds fell sharply in the Bear II period (the 16 months around 2008) and correlations spiked.

These events serve as a reminder of the complexity of markets. Authers (2010) has described the dynamics behind the crash of 2008 and the impact of institutions’ search for diversification on the interaction of asset prices. He concludes, “The crash
demonstrated what might be called a new paradox of diversification; the more investors bought in to assets on the assumption they were not correlated, the more they tended to become correlated.”

This illustrates the unstable patterns and feedback loops that can arise when market participants’ behavior adapts over time. If a particular relationship exists (in this case, low correlation) and that relationship causes investors to take certain steps (in this case, to diversify across the various assets), then those actions themselves can destroy the very relationship on which they were based (in this case, the uncorrelated assets became correlated as falling values in one market led to institutional money leaving other markets, leading to falling values there, too.)

Thus, while the mean-variance model of portfolio construction introduced by Markowitz (1959) has proved valuable in the development of investment practice, it can provide an inadequate description of the behavior of markets at times of stress (extreme events). But the view of a market as a complex adaptive system makes modeling challenging, as noted by Lansing (2003): “If the system is sufficiently complex, it may not be practical or perhaps even possible to know the details of each local interaction. Moreover, local interactions can produce nonlinear effects that make even simple systems impossible to solve (as Newton discovered in attempting to solve the three-body problem).”

In the case of the use of correlation, this challenge is compounded by the growth in the importance of asset class interaction. In the mean-variance model, correlation was regarded as the least important of the input assumptions. For example, Chopra and Ziemba (1991) found that “for the typical risk tolerance of 50, errors in the forecasted means are about 11 times more damaging than errors in forecasted variances, and over 20 times as damaging as errors in covariances.” But, as noted above, asset class interaction has taken on greater importance as investors have come to focus more on liability-hedging and diversification in their portfolios.

And it’s not only low correlations that can deceive: High correlations cannot be depended upon to tell the whole story, either. For example, from the start of 2000 through the end of 2006, corporate bond yields had a correlation to Treasury bond yields over 97 percent. However, in 2007 and 2008, Treasury yields fell but corporate yields remained steady and then spiked, with the corporate yield hitting a high (above 7 percent) in October 2008, barely two months before the Treasury yield hit a low (below 1.5 percent). Likewise, two currencies might have a period of exceptionally similar behavior due to the economic policies of one or other government, yet that relationship can change dramatically should those policies change. Thus, the correlation between the exchange rates of the U.S dollar and the Chinese Yuan Renminbi against other major currencies over the period from the start of 2000 to the end of June, 2005 had a correlation of roughly 99%. A naïve consideration of that high correlation would have left an investor unprepared for the appreciation of more than 30% in the Renminbi/Dollar exchange rate over the next 7 years.

Reliance on the persistence of high correlations can lead to one asset being used as a proxy for another, which can lead to large losses should the relationship break down. This can present particular danger for investors who allow themselves to become too dependent on risk models based simply on historical relationships; it can, for example, lead to significant misstatement of the risk inherent in a pairs trade (such as LTCM’s position in Russian bonds, offset by short positions in UK and U.S. bonds and in the ruble1).

1 As readers are unlikely to need reminding, these positions led to large losses and the collapse of the hedge fund when the Russian government defaulted on those bonds in 1998.

While the mean-variance model of portfolio construction introduced by Markowitz (1959) has proved valuable in the development of investment practice, it can provide an inadequate description of the behavior of markets at times of stress.

It’s not only low correlations that can deceive: High correlations cannot be depended upon to tell the whole story, either.
The year 2008 and the other examples mentioned here provide unusually clear examples of the dangers of relying on correlation as the only measure of asset class interaction. This article is not, however, intended to be just a history lesson. Simple correlation statistics continue to be used widely in the analysis (and the marketing) of various investment strategies and products, and this practice can lead to incorrect conclusions.

Because understanding the interaction between assets has become so important, greater care needs to be applied in the use of correlations. Correlations are a simple (and often useful) measure of the degree to which assets move in line with one another in typical times, but that's all they are. They do not fully describe the nature of the relationship between two different asset classes or accurately indicate what is likely to happen in extreme events.

Investors rely too heavily on correlation statistics when making decisions about hedging and diversification. Because these decisions depend fundamentally on the interactions between asset classes, a deeper understanding of the true nature of the relationships is needed.

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About the authors

RUSSELL ASSOCIATES

Janine Baldrige, CFA, CAIA  
Managing Director,  
Alternatives Investment Practice

Bob Collie, FIA  
Chief Research Strategist,  
Americas Institutional

Yuan-An Fan, Ph.D.  
Senior Research Analyst

Heather Myers  
Managing Director,  
Non-Profits

Greg Nordquist, CFA  
Director,  
Overlay Strategies—Americas

Leola Ross, Ph.D, CFA  
Senior Investment Strategist

FORMER RUSSELL ASSOCIATES

D. Don Ezra, FIA  
Co-Chairman, Global Consulting

John H. Ilkiw, CFA  
Director Global Consulting Practice

Aurea Astro  
Intern
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