

THE NMS EXCHANGE

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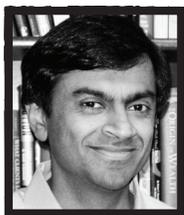
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By Ashvin B. Chhabra
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The Evolution of Modern Portfolio Theory for the Institutional Investor

Most Endowments and Foundations use the policy portfolio as a guiding anchor for setting their investment strategy. The policy portfolio represents the synthesis of a strategic asset allocation anchored by the risk profile and return objectives of the institution, as well as a tactical overlay reflecting their best thinking of current market conditions and future returns.

Such an approach owes its origin to the work of Harry Markowitzⁱ and others in the 1950's, now commonly referred to as Modern Portfolio Theory. Markowitz's work demonstrated the risk-adjusted benefits of portfolio diversification in an unambiguous manner. Today, the implementation of his technique of combining different sources of returns to reduce the overall risk of the portfolio is simply known as Asset Allocation.

The early pioneers of Endowment investingⁱⁱ, notably David Swensen and Jack Meyer, correctly foresaw that certain investment structures and securities could provide different risk-return characteristics than those provided by standard asset classes. The addition of absolute return structures, illiquid private equity, venture capital and timber was

a logical evolution of Markowitz's insight on portfolio diversification. The policy portfolio can thus be viewed as Asset Allocation on steroids, albeit with additional insight and non-trivial implementation hurdles. (Figure 1, Page 8)

The early adopters of Endowment management were also able to successfully deliver excess return (alpha) through astute manager and security selection. However, there is a clear tradeoff between maximizing return and diversifying the overall portfolio.

Concentrating one's chips on a few managers that have the promise to maximize alpha may be the theoretically pure choice, but not without significant downside. Boston University's ill-fated investment in Seragen, in the 1980's, serves as an important reminder of the dangers of over-confidence and concentration. Therefore, most Endowments diversify prudently, thus inevitably reducing both idiosyncratic risk and excess return.

Nevertheless, the notion of delivering superior or even out-sized returns, for one's institution, through a differentiated investment strategy is a powerful one. In a recent paper, Goetzmannⁱⁱⁱ demonstrates [Continued on Page 8]



NMS Management, Inc.
Nancy M. Szigethy
Founder and
Chief Executive Officer

ABOUT NMS

NMS is a membership-based organization serving as the primary educational resource for the endowment and foundation community through its high caliber meetings. Believing that most successful business ventures are built on trust, and trust can only be developed through relationships, NMS strives to facilitate relationships through its membership platform.

As the chief source of unbiased educational forums, NMS promotes high standards of competence and ethics. As part of its mission, NMS provides its members with access to leading thinkers in the asset management industry through its content rich programming in a non-commercial setting of peers. NMS is the bridge to the latest investment ideas and information applicable to the endowment and foundation community.



By Kristin Gilbertson
Former Chief
Investment Officer,
University of Pennsylvania

At press, Ms. Gilbertson
announced her departure
from University of
Pennsylvania at year end.

What about Public Equities?

Much has been made of the endowment model and its heavy reliance on outsized returns from large portfolios of hedge funds and illiquid alternatives. Conventional wisdom has it that there is not much opportunity to add value in public equities and that alternatives are the key to long-term investment success.

This is certainly borne out by recent data. Although real estate has taken its lumps recently, the Cambridge private equity index has outperformed public equities by 5% or more over the past 10 and 20 years. The Cambridge natural resources index has outperformed public equities over the past 10 and 20 years by an even wider margin. And, while the Cambridge hedge fund index only beat out the S&P 500 by a bit less than 2% for the past ten years, hedge funds delivered that performance with less than half the volatility of public equities.

Add to that the fact that the margin of outperformance between the top quartile and the median in private equity and the other alternatives is much wider than for traditional public equities and you have the case for making a significant allocation to alternatives subject to the appropriate caveats on staffing, sophistication and time horizon.

That being said, most endowments and foundations continue to invest a large portion of their assets under management in public equities. According to a recent Cambridge survey of 147 endowments with average assets of \$1 billion, public equities still account for 36% of total assets under management. Even some very large and sophisticated institutions (Harvard and Stanford among them) have a long-term target weight to equities that represents a third or more of assets under management.

They are not new, they are not sexy and no one wants to discuss them at conferences, but public equities do offer the prospect of reasonable long-term returns sufficient to cover the average endowment payout requirement and a great deal of transparency, liquidity and control. It is for that reason they continue to form the core of so many institutional portfolios.

Why then do we talk about them so little?

Part of it is that we all believe that equity markets are pretty efficient and that it is tough to beat the index. That rings true with regard to large cap US equities, but it is possible to find persistent and significant outperformance in international equities and in small cap.

Part of it is that we forget to factor in the value we add through occasional tactical asset allocation or style rotation in the presence of large and compelling misvaluations. Many of our institutions were able to capitalize on the opportunity in emerging market equities in the aftermath of the Asia and Russia crises, with value stocks during the TMT bubble, with oil and gas after prices collapsed at the turn of the century and with high yield in the aftermath of the Lehman bankruptcy.

Part of it is that standard calculations like excess return and information ratio do not capture the value of outperforming in a down market. Given that most of us operate with a value orientation, we are likely to outperform

in down markets. We don't give ourselves enough credit for that.

And, part of it is that we are so conditioned to seek extra return by going out the risk (and liquidity) curve into alternatives that we may not see that public market valuations are reasonably compelling at a time when burgeoning fund sizes may portend lower returns for some alternative asset classes as it did for venture a decade ago.

At Penn, the allocation to public equities is 45% of the portfolio. Over the past decade, Penn's domestic equity portfolio has outperformed the Russell 300 by slightly less than 1%. Over the same period, the international developed equity portfolio has outperformed the MSCI World ex-US by roughly 4% (and with a net return that falls just short of that of the hedge fund portfolio).

Most of this outperformance has been concentrated in the down years when that outperformance was most needed. In FY 2009, the domestic equity portfolio outperformed by 7%, and the international developed equity portfolio outperformed by 20%. In FY 2012, against the backdrop of the European debt crisis, the domestic equity portfolio beat its benchmark by 2%, and the international developed equity portfolio beat its benchmark by 10%.

The outperformance was due to a bet on large cap quality. Starting in 2005, we began rotating the portfolio from traditional deep value stocks (low price to book) and into large cap quality (high return on equity, sustainable earnings growth and strong balance sheets). This led us to a portfolio that was high in consumer staples, high in tech and underweight in financials. Heading into the financial crisis, we exited any index positions (concerned as we were with the heavy index exposure to financials) and had deployed the entire portfolio in more active strategies. Of course, good stock picking by our managers was essential, and they delivered spectacular results.

One could argue that this was a one-time lucky call, and perhaps it was. But, it was motivated by relative valuations. Large cap quality was cheap at the time. Traditional value stocks and small cap looked extended. Financial stocks looked frothy having enjoyed year after year of high margins and record earnings growth. In some ways, it was just a reversal of the value trade that had played out so well in the aftermath of the TMT bubble.

While the quality bet was a major source of outperformance at Penn, returns over the past decade also benefited from a well-timed (or lucky) entry into and exit from an international equity overweight/domestic equity underweight, a well-timed (or lucky) currency hedge and a well-timed (or lucky) increase in allocation to emerging market equities. And, that is before factoring in the value added from having reduced equities to fund credit at the start of the crisis.

Equity markets do seem to give us periodic opportunities to make relatively safe calls with good odds. With the domestic market at 13x forward earnings and with significant dislocation in Europe and emerging markets, public equities may be worth some of our attention today.

Even some very large and sophisticated institutions (Harvard and Stanford among them) have a long-term target weight to equities that represents a third or more of assets under management.



By Mark Baumgartner
 Director, Asset Allocation and Risk, The Ford Foundation

Shortfall Risk: the Grand Unifying Theory for Investments?

The Grand Unifying Theory is a model in particle physics in which the three interactions that govern the forces affecting atomic particles (the electromagnetic, the weak, and the strong interactions), are merged into one single interaction model. The concept of Shortfall Risk has the same kind of unifying potential for investments.

Goals. Benchmarks. Liabilities. Targets. All of these words have different nuances in investment parlance, but all of them can be unified by thinking of them as simply *investment objectives*. Our fundamental task as portfolio and risk managers is to invest our assets in a way that gives us the best chance of outperforming our objectives—or, alternatively, minimizes the risk of underperforming them. This risk, the risk of not meeting our objectives—be it a goal, benchmark, liability or return target—is defined as *shortfall risk*.

Traditionally, investment risk has been thought of as volatility. Since the advent of Markowitz’s Modern Portfolio Theory in 1952, the mean-variance framework has been a dominant portfolio construction methodology, conditioning investors to think of volatility as the primary consequence of investing in risky asset classes.

But what if “risk” is defined as *shortfall risk* instead of volatility? An analysis of shortfall risk offers two important benefits: it focuses attention on what is important—the expected outcome—and it makes trade-offs more tangible and explicit. Instead of saying, “Doing this will increase our overall return,” or, “Doing this will decrease our volatility,” investors can use shortfall risk to say,

“Doing this will improve the chances that we beat our target by 10% over the next three years.” Shortfall risk also underscores the advantages of maintaining a long-term perspective—the longer the timeframe considered, the lower the shortfall risk and the higher the likelihood of achieving the objective.¹

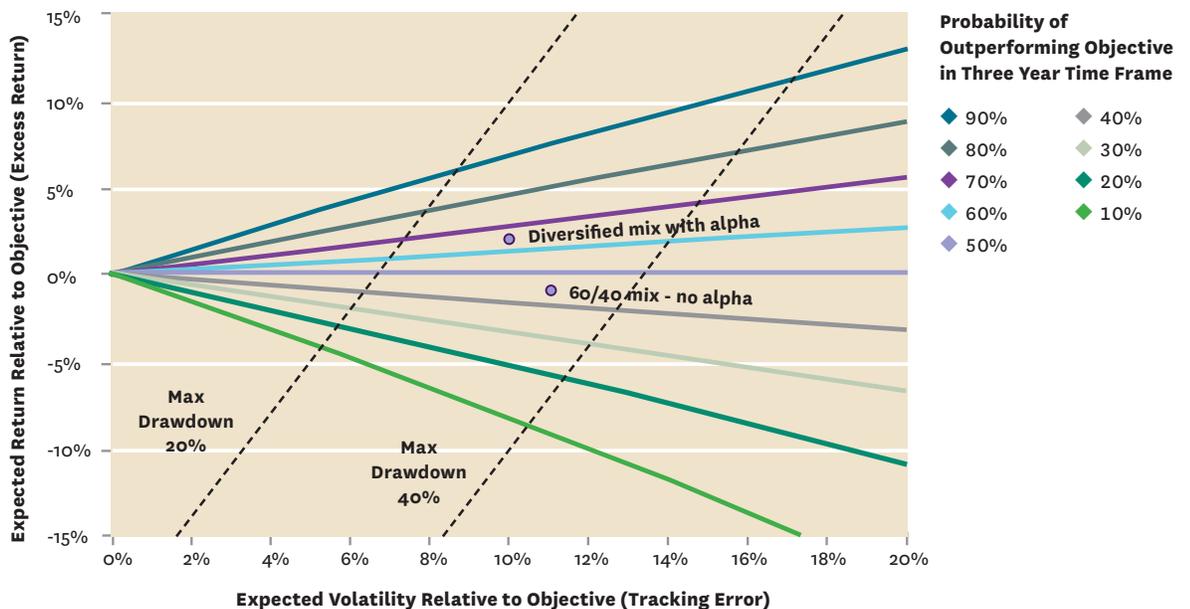
Taking a shortfall risk perspective.

Figure 1 shows what at first glance appears to be a traditional risk-return diagram, but with a slight variation: return and volatility are measured *relative* to the objective (i.e., they become *excess return* and *tracking error*). It doesn’t matter whether the objective is an actuarial return, an absolute return, or a peer return. And it doesn’t matter if the objective itself varies (e.g., CPI + 5%, or the S&P 500), as long as the *difference* between the portfolio and the objective is measured and charted. Individual portfolios are represented by points on the diagram.

Lines of constant shortfall risk are shown on the diagram, originating from 0% on the left side and fanning out to the right.² Portfolios falling on any point on the uppermost line have a 90% chance of outperforming their objective. Portfolios falling on any point on the lowermost line will only meet their objective 10% of the time. Portfolios with a zero expected excess return fall on a horizontal line, and have a 50% chance of either outperforming or underperforming their objective in any timeframe. Also shown on the diagram are two dashed black lines of constant “max drawdown”—an additional concrete measure of risk. Portfolios that fall on [Continued on Page 13]

FIG. 1

Risk-Return Diagram (Relative to Objective) with Shortfall Risk and Drawdown Lines



Shortfall risk provides a way to set realistic expectations for manager outperformance and encourage patience when short-term performance disappoints.

A Framework for Manager Selection



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Mr. Stone, Mr. Bansal and Ms. Carder, oversee the University of Chicago's Public Markets and Absolute Return, or "PMAR", team. Together, they oversee over \$4 billion of investments in Global Equities, Fixed Income, Credit, Absolute Return, and Private Debt. Mr. Stone, as Managing Director of the team, has been with the University for 13 years and has a total of 28 years of experience. Mr. Bansal, Senior Portfolio Manager of Equity Oriented Strategies, has been with the University 10 years and has 18 years of experience. Ms. Carder, Senior Portfolio Manager of Credit Oriented Strategies, has been with the University for 3 years and has 16 years of experience. Mr. Bansal is assisted by analyst Matt Hill, and Ms. Carder is assisted by analyst Chris Ridenour. The PMAR team is charged with selecting the best managers they can find while operating within the overall constraints and mandate of the University's strategic policy and Total Enterprise Asset Management approach. The PMAR team's goal is long-term (three to five year) outperformance versus appropriate benchmarks. Their manager selection process has been successful over a range of market cycles. The most recent three year periods saw excess returns in their asset classes ranging from 130-740 basis points annualized. The five year period ending June 2012 saw annualized excess returns from 290-360 basis points.

Introduction

"A Total Enterprise Approach to Endowment Management", presented by Mark Schmid and Que Nguyen in the January 2012 *NMS Exchange*, introduced the University of Chicago's integrated approach to investment strategy. Total Enterprise Asset Management (TEAM) seeks to frame the investment strategy of the endowment in the context of the long-term operating goals and risks of the University, rather than as a stand-alone, total return fund. In this companion piece, we detail an overarching investment philosophy and manager selection process employed in our Public Markets and Absolute Return portfolios, which we believe supports the TEAM approach and ultimately the University's academic mission.

Two Types of Managers

We begin by presenting an oversimplified view of the investing world as containing two distinct investment styles: "Short-Term" or Trading-oriented and "Long-Term" or Intrinsic Value-oriented. A similar categorization can be found in *Value: The Four Cornerstones of Corporate Finance*, by Tim Koller, Richard Dobbs and Bill Huyett, wherein the authors describe four classifications of institutional investors: Intrinsic Investors, Traders, Mechanical Investors and Closet Indexers.

Short-Term investment managers are plentiful. Generally speaking, they are near sighted by choice; they can see only as far as the next earnings season. This doesn't bother them, as they believe anything that can happen beyond three to six months is unknowable. They are often interested in technical analysis and momentum;

they trade actively and exhibit high portfolio turnover. Earnings revisions and near-term corporate events are viewed as opportunities. When they encounter a stock they believe has a terminal value of zero, but that might experience a positive earnings surprise before that, they enthusiastically invest and trust their market-timing skills for their exit. Put less hyperbolically, they readily invest even when they believe the intrinsic value of the company is far below the current market price, e.g. Internet stocks in the late 1990's.

This investing style is driven by the usual compensation schemes for managers, which unduly reward short-term outperformance. Koller et. al. suggest nearly 80% of all investors, especially in the public equity space, invest with this kind of short-term trading, mechanical or index-oriented approach. Our base assumption is that this style of investing leads to average results. While we believe it is possible to find great managers in this space, it is extremely difficult to do so. This is not our preferred style.

Long-Term investment managers are focused on the intrinsic value of the business and typically are very farsighted, with the professed ability to see three to five years into the future. They are willing to hold positions for extended periods of time. Free cash flow and fundamental business and balance sheet analysis are paramount. When they encounter a stock they believe has a terminal value of zero, but which might experience a positive earnings surprise before that, they politely decline to invest. In the equity space some call this Buffet or Graham & Dodd investing, while in the credit space some would call it a focus on old fashioned credit underwriting. We prefer to think of it as common sense.

While there are fewer managers investing with a long-term approach, our belief is that, as a group, they will outperform the short-term investors. Thus, we believe that **by focusing on managers with long-term perspectives, we are "fishing" in waters where there is a higher probability of delivering strong alpha.**

The D's and the P's

The D's

As noted above, our overarching philosophy is that most of the investing world has a very short-term focus, and that by training our attention on managers with a long-term orientation, we increase our chances for success. Over the course of time, we have come to realize that our manager selection process is greatly aided by having a discipline to follow in manager evaluation. This realization has led us to the development of "The D's and P's".

The D's are our attempt to anchor our philosophical interest in long-term thinkers with concrete descriptions of what kind of investing leads to outperformance. If a manager does not engage in at least one of the four D's, there is virtually no chance we will be interested in that manager for an investment. Whenever we review managers' materials, we are initially checking to see which D's they practice or represent.

[Continued on Page 15]



By David B. Slifka
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Catch-Ups Leave Limited Partners Behind

There are two reasons that LPs should favor private fund fee structures that feature a “hard hurdle” with no catch-up:

- ◆ Catch-ups are more expensive for limited partners
- ◆ Catch-ups misalign incentives of the general partner

Neither issue is overwhelmingly large, but historical data shows clearly that eliminating catch-ups should improve limited partners’ net returns.

1. Catch-ups are more expensive for limited partners

Consider the carried interest structure of two identical private equity funds, one with a catch-up, the other without: (Figure 1)

It’s easy to look at this diagram and figure that if an LP expects their average return to fall around 12% to 15%, that the catch-up adds almost nothing to their costs (or is even beneficial). However, this ignores a nuance; low-returning funds incur the same carried interest (zero) under both structures, whereas high-returning funds produce higher carried interest under the catch-up structure. Therefore, to determine which structure is less expensive on average across a portfolio of funds, one must consider both the portfolio’s average return and the distribution of fund returns that make up that average.

To illustrate this point, imagine the following two portfolios, each with the same 11% average gross IRR. Despite having the same average return, a different fee structure is superior for each one because the distribution

of fund returns is different. (Figures 2–4, Pages 20–21)

For the soft hurdle to be less expensive, two things must coincide: An average return within a narrow range, *and* a narrow distribution of returns around that average. My recent article in the Journal of Private Equity uses historical data to show that this combination has never been observed across any vintage year of funds across four data sets (from Prequin, NCREIF/Townsend and two from PCA)¹. In every vintage year of every data set, the combination of average return and distribution of returns is such that the hard hurdle is less expensive to limited partners. In aggregate, the incremental cost of the catch-up is roughly 2% of an LP’s capital commitment, a modest but certainly non-negligible amount.

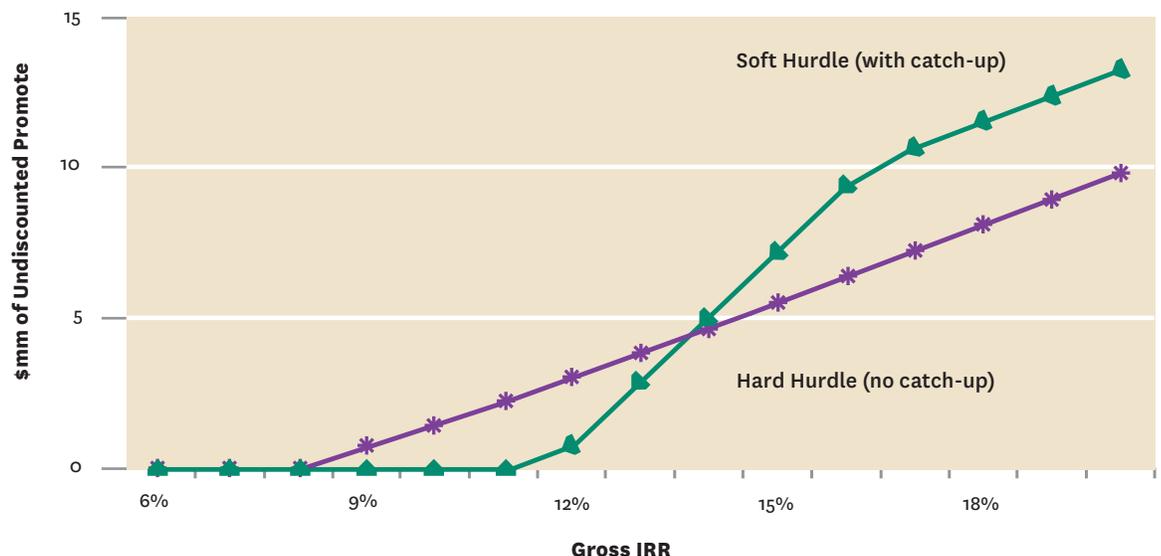
2. Catch-ups misalign incentives of the general partner

Academic theory and empirical observation confirm the intuition that inflection points within incentive structures can generate counterproductive behavior. Put simply, a bonus for selling 100 widgets per quarter will tempt someone who’s sold only 98 widgets to find a way to inflate his numbers; the bonus for selling 100 is an “inflection point.” Rewarding GPs only for returns in the mid-teens or above, as the soft hurdle does, is not the same as aligning their interests with those of limited partners.

The inflection points in the graph of carried interest paid under a soft hurdle (Figure 1) misalign incentives in several ways. First, soft hurdles disincentivize investment in low-risk, modest-return investments. For example, a low-risk investment with a targeted 12% return would likely depress the carried interest [Continued on Page 20]

FIG. 1

Catch-Up Structure Produces Greater Carried Interest at Gross IRRs Above 13%





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By Mary Peloquin - Dodd
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Outsourcing — A Road Becoming More Frequently Traveled

NC State University is a land grant university based in Raleigh, NC, and is the largest university in North Carolina, public or private, with 34,000 full time students. NC State is a comprehensive university with strengths in agriculture, engineering and science. It is much like other public universities nationwide in that tuition and fees are the fastest growing source of revenue, state appropriations are falling, and the university is working to increase its endowment through a combination of fundraising and investment strategies. Over the years, the university's endowment investments have evolved from a decentralized investment system to the creation of an external investment pool, the NC State Investment Fund (Fund), which invests the majority of the university's investable assets. The Fund has experienced several different investment models such as the consultant model, a hybrid outsourced model, to the current total outsourcing model. The university's experience in outsourcing its investment management is also a good example for other universities considering different models for investment management.

The NC State Investment Fund

NC State University, like many other public universities, has an endowment that is distributed across a number of related, supporting entities. The University's total endowment at June 30, 2012 was \$635 million. Together, the assets of 11 associated entities comprise the university's reported endowment. The largest of the entities has an estimated endowment of \$285 million at June 30, 2012, with \$138.1 million of investable assets. The smallest has a \$2.0 million endowment as of June 30, 2012. Since its formation, the Fund has provided \$131.7 million in support to its entities in the form of scholarships, fellowships and professorships. The Fund was founded in 1999, and invests the majority of the university's endowment on behalf of its various associated entities. As reported for the June 30, 2012 fiscal year end, the Fund grew to a market value of \$397.2 million and provided a one year net return of 2.6% which was favorable as compared to the BNY Mellon Endowment and Foundation Universe Median Return of .2% for the same time period.

Outsourcing the university's endowment investment program

The Fund's investment history has been characterized by a gradual addition of asset classes and manager changes. Since inception to 2004, under the consultant model, various asset classes and a 10% allocation to alternatives was implemented. In 2005, a private equity program was initiated. However, in 2006, after reviewing the Board's governance and fiduciary responsibilities, the Fund moved the majority of its assets to an outsourced manager while still maintaining control over the asset allocation decisions (hybrid outsourced model). In 2008, organizational and key staff changes prompted the Fund to con-

sider a third investment model—total outsourced manager and asset allocation selection.

Economies of scale, increased diversification of assets, and alignment of interests were among the factors that resulted in the Fund selecting UNC Management Company (UNCMC) as its outsourced manager. In addition, forming a partnership with a sister institution in North Carolina provided a unique opportunity to leverage their talent, investment expertise, and size. UNCMC provides investment management services to NC State and to other UNC System campuses through the UNC Investment Fund (System Fund).

Of the \$397 million in Fund investments at June 30, 2012, 87% is managed by the UNCMC. When the Fund's board made the decision to move to UNCMC, it also adopted the investment policy, asset allocation, and return targets of the System Fund. The Fund began transitioning all non-committed assets to UNCMC for investment in the System Fund, effective July 2008, at the beginning of the credit crisis, although the full transition to the System Fund wasn't completed until December 2009. The UNCMC investment philosophy can be characterized as one that protects against downside risk but doesn't rebound as quickly in up markets.

Today, the Fund represents 11% of the System Fund. The Board of Directors operates in an oversight role as it relates to the System Fund; however, continues to maintain fiduciary responsibility over the entire Fund which includes the preview allocation to three private equity managers and an allocation in cash to fund capital calls.

Where do we go from here?

The university is currently contemplating a major fundraising campaign, which would significantly increase the pipeline of new gifts to the institution. In addition, a significant portion of the university's current endowment is programmatic real estate including a large tract of timber land that has been an active timber investment for many decades and has provided a valuable, but variable stream of revenue to the university's College of Natural Resources. The prospect of a larger endowment as a result of the upcoming campaign and a potential sale of some of the real estate and timber has led university staff and the Fund's Board of Directors to consider whether a larger endowment would, or should, engender a different asset allocation than the one adopted by the System Fund. Other considerations in fiscal 2012 included whether active management was still an important strategy for the Fund, and the Fund's board approved a small allocation of new money to a low-cost ETF product that combined 10 ETF's, representing a 70% equity and 30% fixed income asset allocation. At the same time, the Fund's Board also made a decision to pursue an asset allocation study and to search for a new benchmark in addition to the System Fund's [Continued on Page 22]



By Jennifer S. Bridwell,
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By Neal Reiner,
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Do What the Banks Won't Do: Seeking higher returns in a low-growth, low-rate world

The 30 years preceding the financial crisis were a time of unprecedented de-regulation and consolidation of financial intermediaries across the globe. Now, four years after the crisis peaked, global banks are working to adjust to a very different set of rules governing their regulatory capital and liquidity standards. Although there is wide disparity in the health and preparedness of financial institutions for this new world, there is little dispute over the wake they have collectively left in the capital markets. Scores of individual borrowers, and some corporate borrowers, who routinely accessed cheap funding pre-crisis, now look for new lenders, with little success. Not only are banks hesitant to lend, they are also actively shedding legacy credit risk. We estimate that over \$2 trillion of assets need to be sold or restructured in the coming years – and the buyers/restructurers are simply not that large.

Readers of NMS are undoubtedly presented with countless alternative investment strategies every year – from a wide variety of hedge funds, real estate, residential credit, direct lending, to a mix of distressed strategies. Most of these are things that banks used to routinely do: Lend. Take risk. Provide liquidity. These activities are capital-intensive and generally undesirable for banks now. Although the macroeconomic negatives of bank deleveraging need not be reiterated to this audience, the silver lining of the banks' retreat is quite simply more return for non-bank investors. The cost? Less liquidity, more volatility, and longer holding periods.

In the pre-crisis era, few markets drew more support from big debt than residential real estate, commercial real estate, and corporate credit. Largely because of the retreat of large financial institution balance sheets, we believe segments of these asset classes will continue to offer opportunities to earn attractive returns. Below, we highlight the critical changes in these markets and the opportunities they present.

The **residential credit markets** in the U.S. may require many more years to repair. U.S. housing is currently stabilizing with the aid of unprecedented government support from the Federal Housing Administration, Fannie, Freddie, and the Fed's aggressive battle against higher rates. Most banks aren't taking residential credit risk – the Federal Housing Administration (read U.S. Treasury) is. Only the highest-quality borrowers have access to credit. About 90% of all residential loans made in the U.S. in the last two years were originated specifically for immediate sale to Ginnie, Fannie or Freddie. Why won't banks make more loans at attractive rates to marginally riskier (but still high quality) borrowers? Because loans require much higher capital charges than the same loans packaged into Agency-guaranteed MBS. And would-be new mortgage lenders want clarity on a labyrinth of new regulations (Dodd Frank), on the rules-

of-the-road for loan servicing, and on the ability to foreclose in cases where all other means to work out a loan fail. The result is a relatively uncrowded landscape for mortgage risk-takers. Private capital has filled some of the void in legacy mortgage securities in the last 3 years, but the opportunity remains robust in less liquid forms such as non-performing loans, single family housing, and restructured legacy cash flows.

The **commercial real estate (CRE) market**, by contrast, is relatively free from the web of regulation that surrounds lending to consumers. Private lending has recovered more quickly in this sector, but our theme persists. Banks want to lend now only to the cleanest, best-protected new deals with significantly higher equity than pre-crisis. Large global banks continue to liquidate non-performing loans and complex securities created during the go-go days, because they are both labor- and capital-intensive. We also anticipate that many regional banks will be sellers of CRE-related positions over the coming years; they have come under pressure from shareholders and regulators to exit these businesses as stakeholders recognize that carrying values are based on significantly overstated appraisals. These asset sales will not be limited to U.S. institutions; European institutions hold CRE exposure via subordinate debt positions and legacy CMBS or CDO positions. These sellers typically create attractive return opportunities for investors when liquidity needs are high.

Within the **corporate credit markets**, again, we look to the void in financing and liquidity that the withdrawal of banks and other traditional lenders have created. The high yield market has shown an increased aversion to smaller, less liquid issues due to the decline in market-making from the banks – yet another repercussion of the increased regulatory environment. This has inflated the borrowing spreads that middle market issuers are forced to pay in the public market or has forced them to rely on capital from private market providers. These trends have been exacerbated by a decline in demand for corporate syndicated loans due to the shrinkage of commercial banks' balance sheets as well as the sharp decline in CLO formation. The result has been staggering – nonbank institutions now provide 70% of middle-market loans, according to recent studies.

So where can investors best profit from these disruptions in the corporate financing market? We believe middle market financing can offer investors an attractive risk-adjusted return, either by investing in high yield bonds or by direct lending. Investors in middle market companies are typically very experienced and sophisticated in conducting extensive due diligence and structuring profitable transactions that accurately price corporate credit risk and a premium for illiquidity.

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The Evolution of Modern Portfolio Theory for the Institutional Investor
[Continued from Page 1]

the hypnotic effect this philosophy has had on Endowment investing – leading to trend chasing and herd behavior. In particular, he found that endowments with below median allocations to alternative investments increased their allocations to hedge funds in an effort to catch up with their “school’s nearest competitors”. He argues that

“the dynamic patterns that we see in asset allocations in university endowments are consistent with an arms race model of universities ...”

A fair question to ask is whether this kind of trend chasing and herd behavior led to the exacerbation of the problems experienced by Endowments and Foundations in 2008?

The purpose of this article is to stress that the source of the problems experienced by Endowments and Foundations in 2008 is much deeper than what one might first imagine and has its roots in how we understand Modern Portfolio Theory in the context of Institutional Investing. Given the continued economic uncertainty and fragility of financial markets, I hope that the formalism discussed below can be helpful in setting an appropriate investment strategy for institutions.

To begin, one must note that maximizing returns through any particular investment strategy is merely part of a greater objective of meeting a series of (often conflicting!) goals for the underlying institution. The most immediate and essential of these goals is to provide cash flows, as much and when needed, for an individual or institution to function effectively. Thus both the Markowitz framework (Asset allocation) and the Endowment model (policy portfolio) need to be understood within a larger framework of institutional needs.

An important step in connecting the diversified market portfolio with the particular needs of the investing institution was taken by James Tobin^{iv} a few years after

Markowitz wrote his famous paper. Tobin pointed out that corporations had well defined liabilities that needed to be met with certainty. This certainty was at odds with the uncertainties of even a well-diversified market portfolio. Tobin’s solution involved creating a bond portfolio that matched the near term liabilities. This technique is now known as bond immunization. Through duration matching, the coupons of the bond portfolio match the firm’s short to medium term liabilities and protect those liabilities from market fluctuations.

In the broader context this step led to a framework that combined two distinct approaches; asset-liability management (the riskless portfolio) and the standard diversified market (risky) portfolio. Of course, the two distinct portfolios can be visually represented by a single pie-chart, but the distinction is of critical importance.

Why is the distinction so important?

Detailed historical studies of global financial markets^{vii}, show quite clearly that financial markets are susceptible to instabilities of all magnitudes. Markets, as Mandelbrot^{viii} emphasized, are not just mildly random but wildly random.

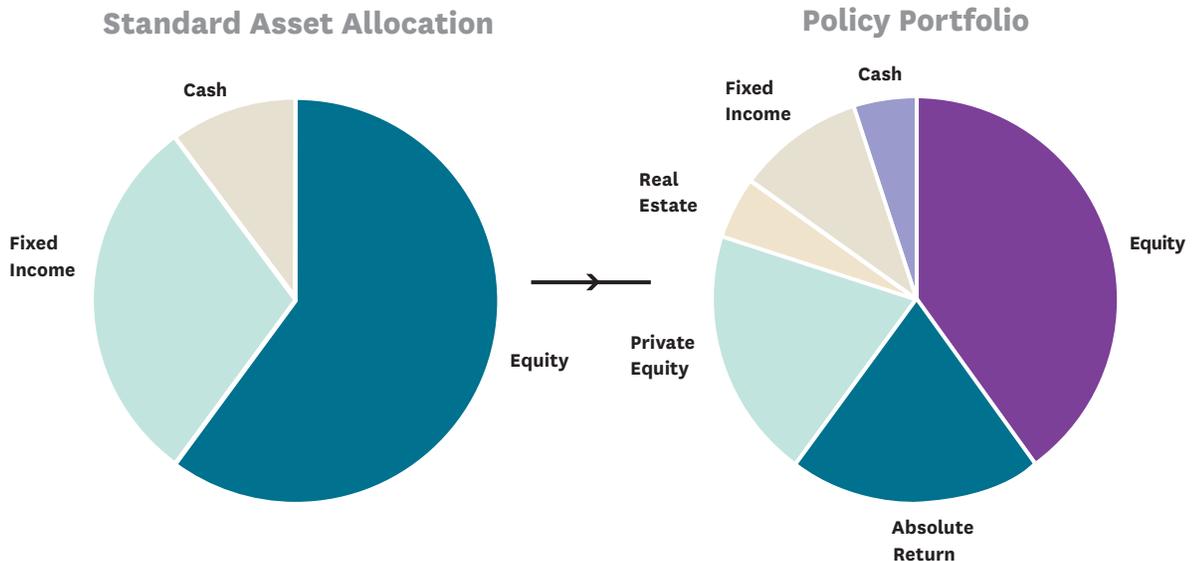
In return distributions these instabilities are evident as fat tails. However, the fat tails do not do justice to these instabilities, as such events do not occur randomly. Rather, these instabilities are highly correlated and come in clusters. In extreme cases, financial markets simply go out of existence.

The riskless portfolio concept thus deserves serious consideration. The generalization of bond-immunization is immunization (whenever possible or affordable) against all the kinds of risks that an institution can face.

A second point worthy of further discussion is the impact of idiosyncratic risk and return. CIO’s spend a great deal of effort in selecting managers that provide the promise of significant alpha to the portfolio, while at the same time judiciously combining them to create a diversified

FIG. 1

The Policy Portfolio is Asset Allocation on Steroids



The policy portfolio can thus be viewed as Asset Allocation on steroids, albeit with additional insight and non-trivial implementation hurdles.

FIG. 2

NAACUBO-Common Fund Study of Endowment Performance (2011)

Endowment Performance (%)	10 Year Return (Annualized)
25%	4.6%
50%	5.5%
75%	6.4%

portfolio. However, the role (and impact) of alpha in the Endowment approach has been fundamentally misunderstood by the slew of new adopters.

Let us consider what impact alpha, within the context of a diversified portfolio, can have on an institution.

First, let us consider the increase in alpha that can be added by superior performance, relative to an already sophisticated peer group. (Figure 2)

Given this data^{viii}, we can ask the following question:

What impact can this superior performance have on the size of the total endowment over time?

To answer this, it is instructive to examine the size distribution of the list endowments covered by NACUBO in their annual survey. (Figure 3)

Let us now assume that an institution of median size (50th percentile) would like to grow their Endowment aggressively. Assume further that, by investing aggressively in illiquid and alternative strategies (within the diversified framework), it is able to systematically deliver *top quartile* performance. At the same time consider an Endowment size in the 75th percentile that is sluggish in its strategy and only manages *bottom quartile* performance. Let them do this year after year.

Neglecting any additional risks arising from this out-performing strategy adopted by the smaller endowment, let us compute how many years it takes before the median sized Endowment breaks into the top quartile sized group?

The answer to when the smaller institution will catch up (even under these very favorable assumptions) is about 65 years. The time frame is also similar for an institution

FIG. 3

Distribution of Endowment Sizes

Endowment Size (%)	Endowment Size
25%	\$37MM
50%	\$90MM
75%	\$299MM
90%	\$870MM
95%	\$1,600MM

in the 75th percentile chasing one already in the 90th percentile.

In retrospect the answer is obvious. The distribution of Endowment sizes is not normally distributed but instead has a very long tail. Consistent out-performance is hard to come by and it is hard to move the needle unless one takes a lot of idiosyncratic risk and veers off the beaten path. This observation is consistent with what is seen when studying Endowments, Foundations or the net-worth of individual investors^{ix}.

Endowments may have a long-term view of their institution, but the day-to-day reality of the investment process has a much shorter time frame. Studies have shown that after three years of under-performance CIO's exit an under-performing manager or strategy. In summary, an aggressive investment strategy stuck within a diversified framework is not the ticket to wealth mobility, or to breaking out of your peer group. This is true for both individual investors and for institutions. However, the desire to provide top quartile performance within an already sophisticated peer group can lead to some pretty skewed strategies – leading many to forget the Hippocratic admonition of first doing no harm.

In order to better analyze the overall portfolio, it turns out to be important and useful to separate out investments that have exceedingly high return expectations into a third portfolio bucket, as they come with a risk-return profile different from that of a diversified market portfolio.

The three portfolios together create a framework for understanding the entire portfolio in terms of objectives,

FIG. 4

The Wealth Allocation Framework^x



FIG. 5

Evolution of the Policy portfolio?

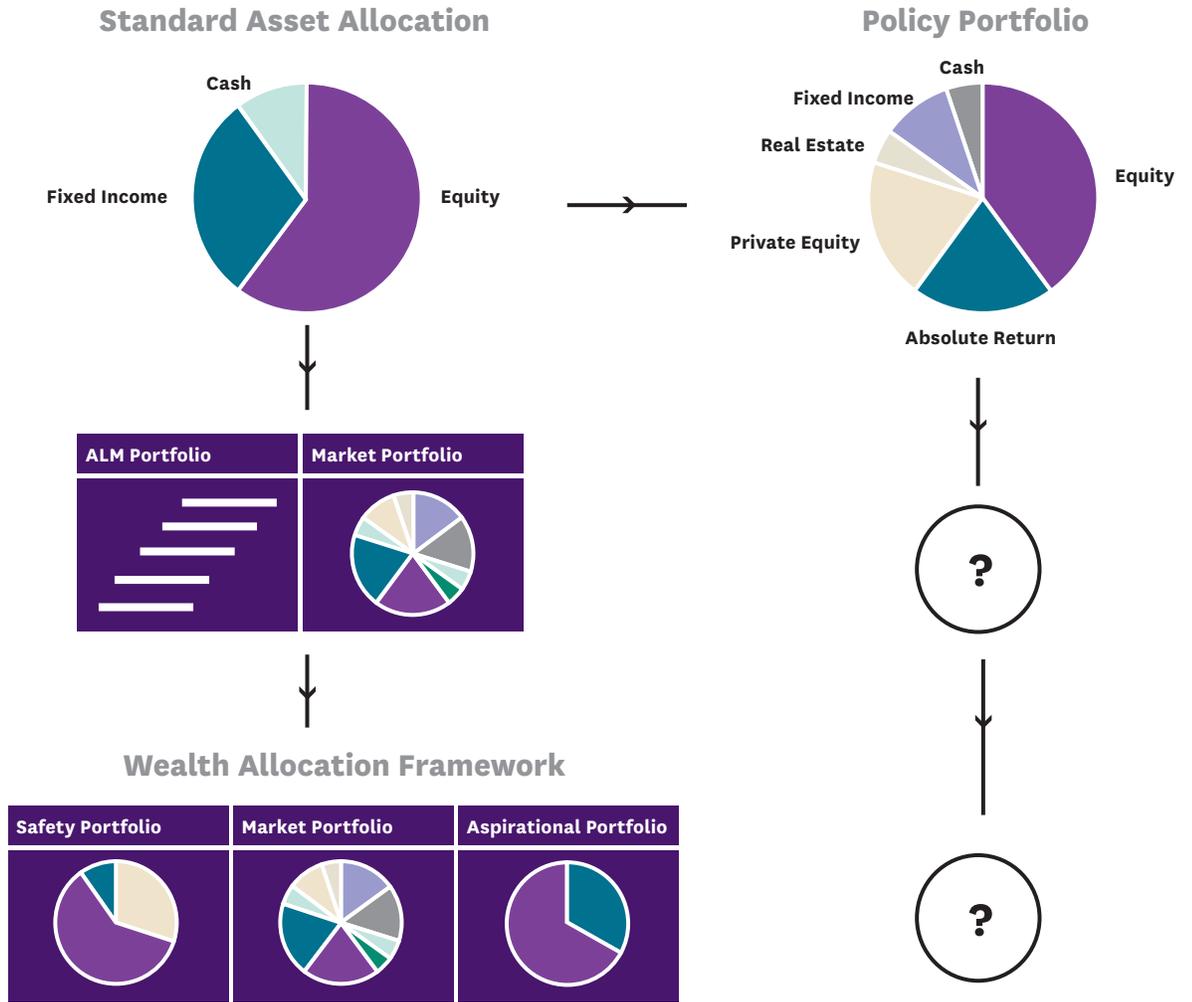


FIG. 6

A Risk Balance Sheet Approach

	<p>Safety Portfolio</p>	<p>Market Portfolio</p>	<p>Aspirational Portfolio</p>
Assets			Seed & Co-Investments
			Patents
			Sizable Donor Gifts
Liabilities	3 Year Spending (-15%)		
	3 Year PE Commitment (-30%)		

risk and return within the context of fat tails and black swans. (Figure 4, Page 9)

BUCKET 1: A Safety portfolio: A Risk Mitigation portfolio that may include Asset Liability Management and other protective strategies including tail risk hedging.

BUCKET 2: A Market Portfolio: A Diversified Market portfolio where the source of return is driven by various market betas with an overlay of some alpha

BUCKET 3: An Aspirational Portfolio: This is the alpha portfolio, but a high return strategy often comes with even higher risk.

The critical piece in this three-portfolio framework is the concept of Risk Allocation.

Risk Allocation is a fundamentally more important concept than Asset Allocation. In fact Asset Allocation^{vi} is simply a special case of Risk Allocation. The policy portfolio is a piece, albeit an important one, within the overall framework. The optimal Risk Allocation involves balancing allocations among the three (inter-related) risk buckets and must be set in the context of meeting the goals and objectives of the institution.

Failure to understand Risk Allocation can lead to structural imbalances in the investment portfolio, as evidenced by the liquidity crisis in Endowment portfolios during the 2008 crash. The following example may be illustrative:

In the quest to increase returns, many endowments embarked on an aggressive program to capture the illiquidity premium through investments in Private Equity. In 2008, the policy portfolio of several institutions indicated that illiquid securities ranged from a third to a half of their holdings. Furthermore, these institutions had PE commitments approximating about 10% a year over the next three years. These commitments were either to be balanced by expected distributions or were part of an overall strategy to increase exposure to Alternative strate-

gies. While this situation may look like a sensible diversified investment strategy in terms of the policy portfolio, it is instructive to look at it in the context of the Wealth Allocation Framework. (Figure 5, Page 10)

The Wealth Allocation Framework forces the portfolio to separate out the risk-mitigation assets from market assets and aspirational assets. One then adds the liabilities associated with contributions to the operating budget and commitments to Private Equity capital calls. Since Private Equity commitments are firm commitments, they force one to debit the safety portfolio/bucket (rather than the market portfolio) by the same amount. This is not true for other non-recourse leverage that may be tied to a particular investment. Hence the critical distinction between recourse and non-recourse leverage is evident in this framework. (Figure 6, Page 10)

Most institutions were highly under-allocated to bonds and cash (Harvard's 2008 cash allocation was -5%). This led to an overall net negative safety portfolio for many institutions. The Equity and Equity like market portfolio had an approximately 50% allocation to illiquid assets. When the total value of the market portfolio decreased by 30% to 40% (a major instability or market crash) illiquid investments as a percentage of the total balance sheet went up sharply. This was accentuated by the fact that the dollar amount of the PE commitments did not go down at all. This de-correlation between the size of the PE Commitments and that of the PE portfolio itself is evident in the Wealth Allocation Framework.

The emergent picture clearly indicates that such a risk allocation cannot withstand a major market downturn without severe stress.

Additional comments

True alpha comes from idiosyncratic investing – tactical asset allocation, security selection and so on. However, for it to make a difference in the aggregate to the institution, this strategy must be accomplished at a large scale i.e.

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at a scale comparable to the institution's wealth. This is neither desirable nor feasible for most Endowments and is accomplished only occasionally. Successful examples are few and far between and, in most cases, it means charting your own course and having the backing of your institution to stay the course for many decades^{xii}.

As a rule, idiosyncratic return from superior investment and manager selection will only contribute a small percentage to the total wealth of an institution. Therefore, the risks taken to achieve these excess returns should be small in the aggregate. Not every investment portfolio can execute well on the Aspirational portfolio. Instead, an institution may try to fill this bucket by other activities such as through the development office working on large donor gifts or by identifying intellectual property within an institution that may yield potentially lucrative patents.

The overall portfolio construction should focus on achieving institutional goals. In the institutional sense, this demands a closer connection between the investment strategy and other activities of the institution. For an excellent article on building an enterprise-wide approach the reader need look no further than the excellent article by Mark Schmid and Que Nguyen in the previous issue of *NMS Exchange*^{xiii}.

There is a choice of how much exposure to equity markets one may want in the market portfolio. The total exposure can also be quantified as a single number, beta (sensitivity to the equity market), in order to incorporate other sources of return (as credit spreads) that may be correlated to equity markets. It is somewhat surprising to see that many institutions with widely varying risk profiles and dependencies on their endowments all seem to have similar betas ranging from 0.6 to 0.75. This may have its origin in the common historical starting point for most Endowments and Foundations, the conventional 60:40 stock & bond portfolio. For an understanding of what happens to these high beta portfolios, that contain a large percentage of alternative assets, in extreme market conditions, the concept of stress beta introduced by Leibowitz^{xiv}, is important and especially useful.

Risk Parity is a special case of risk allocation. However, one may ask parity with respect to what? In some cases it may be useful to think about a target volatility to compare different sources of return while building a portfolio. In the broader context, however, it may be more useful to an institution to develop the right risk sensitivities or allocation with regard to a series of possible economic and market scenarios that the portfolio or institution may be exposed to.

In the end the institution's investment strategy is simply part of a much broader effort to control the risk of not achieving institutional goals under a variety of pos-

sible market scenarios. The Wealth Allocation Framework clarifies the role of an investment strategy within the broader context of essential and aspirational goals and stable and unstable economic scenarios.

Acknowledgements: Aspects of this work were conducted in collaboration with Ravindra Koneru and Lex Zaharoff. I would also like to thank Ravindra Koneru for assistance with the figures and calculations for this paper.

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Shortfall Risk: the Grand Unifying Theory for Investments?

[Continued from Page 3]

these lines are expected to underperform their objective by 20% and 40%, respectively, in a severe crisis.³

As in the traditional risk-return framework, portfolios that lie in the diagram’s upper left area offer higher likelihoods of outperforming their objective. No surprise there. But a number of more subtle conclusions can also be drawn from this diagram: (1) increasing tracking error (moving to the right) does not necessarily result in a decreased chance of success or even larger potential drawdowns as long as the increased tracking error produces enough additional excess returns, (2) the sensitivity of the shortfall risk to changes in excess return increases as objective-relative volatility decreases (that is, the fan becomes narrower toward the left), so small changes in excess return (alpha) can have a great impact on the likelihood of success as tracking error is minimized.

We use shortfall risk in two ways at The Ford Foundation: (1) at the overall portfolio level, to analyze the impact of strategic asset allocation changes on the likelihood of meeting the Foundation’s objectives and (2) at the fund level, to estimate the probability of our managers outperforming their benchmarks.

Challenging traditional allocation practices.

Considering decisions from a shortfall risk viewpoint can help make asset allocation trade-offs more tangible. In today’s low expected return environment, it is natural to try to stretch for return or yield. Some investors are choosing to increase equity risk in order to capture incremental upside, rationalizing that they can withstand the significant additional volatility because they are “investing for the long term.” While this approach is technically sound, the drawbacks are clear, as the shortfall risk diagram explicitly reveals: chasing returns with higher equity allocations doesn’t materially improve the likelihood of success,

but substantially increases the severity of the drawdown experienced during a crisis.

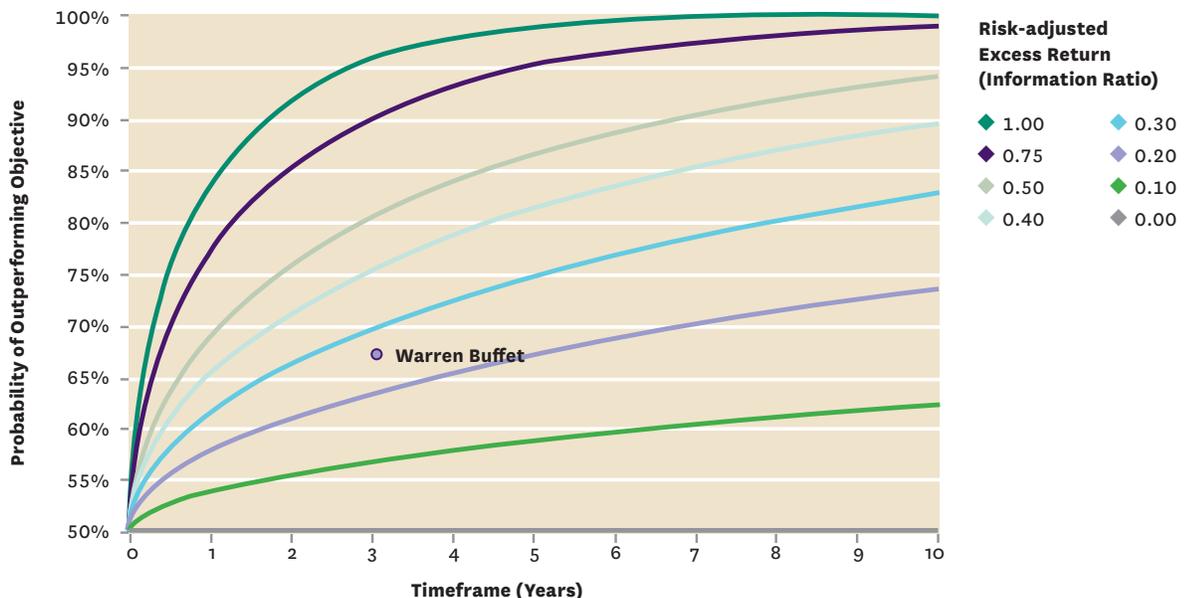
An alternate way to address the challenge of a low-return environment is to consider the use of leverage in a portfolio. Traditionally, leverage has been thought of as a doubled-edged sword, increasing potential returns but also increasing volatility and solvency risk. However, using a shortfall risk lens, leverage can be viewed as a friend instead of an enemy. If leverage in the form of futures or swaps is used to reduce objective-relative risk, manage beta exposures, or enable alpha transport, it can materially increase the likelihood of success while potentially decreasing drawdown severity. Counterintuitively, the use of leverage can actually *reduce* shortfall risk.

The important role alpha plays in a portfolio is also underscored by a shortfall risk analysis. Adding alpha is typically expected to increase portfolio efficiency—that is, boost returns substantially with an incremental increase in volatility (in some cases, adding alpha can even *decrease* portfolio volatility). Because the shortfall risk fan narrows over longer time periods (this is not demonstrated in Figure 1), adding alpha to a portfolio can radically increase the likelihood of outperformance, especially as timeframes lengthen. If by adding alpha the change in the portfolio’s position on the shortfall risk diagram is steeper than the slope of the drawdown curves, then both expected shortfall risk and max drawdown severity can be reduced.

Consider what is conveyed by the two portfolios indicated on the diagram. The 60/40 portfolio is expected to lag its Inflation + 5% benchmark in over half of rolling three-year periods, and risks a maximum drawdown of 35% in a crisis. The “diversified mix”—which uses leverage to decrease objective-relative volatility and alpha to increase returns—is expected to lag its benchmark in only one-third of periods, and risks a max drawdown of less than 30% in a crisis. Which is the riskier portfolio?

FIG. 2

Probability of outperforming objective over various timeframes for various risk-adjusted excess returns.



Setting expectations and staying long-term focused.

A year can feel like a long time for a manager to underperform their benchmark. Three years can seem like an eternity. But even the best managers can lag their target for extended periods. Shortfall risk provides a way to set realistic expectations for manager outperformance and encourage patience when short-term performance disappoints.

Figure 2 (Page 13) shows the likelihood of managers with various skill levels (as proxied by their Information Ratios, or risk-adjusted excess returns) outperforming their benchmark over various timeframes.⁴ Warren Buffett's performance in rolling three-year timeframes is shown on the diagram as a point of reference.⁵

The importance of maintaining a long-term evaluation timeframe is evidenced by the steepness of the curves. Even the most skilled (highest Information Ratio) managers are not guaranteed to beat their benchmarks in shorter timeframes. And it is far from certain that a manager who has lagged their benchmark over a period even as long as three years lacks skill or has done something wrong. Take the example of Warren Buffett. Buffett is widely recognized as a premier investor, yet Berkshire Hathaway lagged the S&P 500 in more than one-third of rolling three-year periods in the twenty-five years since 1987—something to keep in mind when trying to gauge manager skill over shorter time periods.

Using shortfall risk in the investment process.

In asset allocation, estimating shortfall risk and max drawdown potential can help make the impact of different options more concrete and trade-offs more explicit. Shortfall risk can also be used to help set reasonable expectations for manager outperformance and keep investors focused on the long-term. As with any quantitative approach, the conclusions and output from a shortfall risk analysis are only as good as the assumptions and input used to build it, but given its potential benefits, shortfall risk should be a weapon in the arsenal of any investor seeking to outperform their objective—be it their return target, their benchmark, their spending rate, or their liabilities.

The author would like to acknowledge the contributions of his colleagues Chris Doheny, Jeff Gatto, Zach Mees, and Sarah Young to this article.

Footnotes

- 1. As long as excess return relative to the objective is positive, shortfall risk decreases as timeframes lengthen.*
- 2. Technically, the lines of constant shortfall risk aren't lines—they are curves. Their non-linearity becomes more pronounced for longer timeframes. It should be emphasized that the curves show the likelihood of underperforming an objective, but not the magnitude of the underperformance.*
- 3. The term "max drawdown" is not meant to be absolutely precise, but is an attempt to characterize what might occur in an extremely adverse scenario, such as the 2008 credit crisis. The max drawdown lines shown on the chart represent annual three standard deviation downside moves for "normal" distributions, and can also be interpreted as a measure of Value at Risk (VaR). In reality, departures from normality (e.g., skewness, kurtosis, and optionality) make estimating severe drawdowns an inexact science, but the dashed lines are intended to roughly represent the magnitude of the drawdowns that portfolios that fall on those lines might have experienced during the recent credit crisis.*
- 4. Even if a fund manager does not explicitly seek to outperform a specific benchmark or state a return expectation, the analysis can be conducted. The manager's excess return and tracking error can be measured relative to any objective (e.g., 90-day T-bills, the S&P 500, or LIBOR + 5%), and the likelihood of them outperforming that objective in a given timeframe can be estimated. The "normal" return distribution assumption is a reasonable simplifying assumption, but is not required to make shortfall risk a useful metric—return distributions with skewness, kurtosis, and/or optionality do not invalidate the methodology and can also be analyzed using shortfall risk.*
- 5. Buffett's performance is proxied by the performance of Berkshire Hathaway relative to the S&P 500.*

A Framework for Manager Selection

[Continued from Page 4]

The first D is **Discount to Intrinsic Value**. We believe the best way for managers to generate alpha is to identify assets that trade at a significant discount to intrinsic value. This strategy does not lead to style bias in equities, as it includes both value and growth managers. What it does lead to are managers who invest in companies with high free-cash flow, defensible brands, wide economic moats, low capital expenditure needs, and reasonable leverage — companies that are trading at a substantial discount to the manager's estimate of intrinsic value, usually due to a perceived short-term challenge in the business. Companies, in short, that tend not to be very interesting to short-term investors. On the credit side, this strategy leads to a focus on covenants, cash flow, balance-sheet strength, recovery value and liquidation value. To assess a manager's commitment to Discount to Intrinsic Value, we look for a long track record and an investment philosophy clearly articulated through years of investor commentaries. We ensure that the manager has created a systematic way of assessing the discount level and tracking it over time. Furthermore, we need to have the ability to go back in time to understand what they were thinking in the past when positions were initiated or passed over. We like to see and discuss specific examples of successful and failed investments to further assess manager skill.

The second D is **Deep Research**. This often means that we have a focus on managers who perform their

own fundamental bottom-up analysis. This is true across our asset classes. In Global Equities, for example, we tend to prefer portfolio managers who still function as company analysts. We are often led to managers with concentrated holdings and constrained assets under management. Of our 15 Global Equities managers, seven own 10-20 stocks, three own 30-50 stocks, three own 100-200 stocks and two (the more macro or index like) own more than 450 stocks. Our managers use sell-side research sparingly, if at all. We are looking for managers who will happily make 100 phone calls, and consider 30 resulting conversations a victory. Crucially, we are always asking this type of manager what he sees in a stock that the market doesn't see; i.e. what makes his point of view different than the market consensus? Deep research on the credit side means managers who do not rely on rating agencies but do their own intensive in-house credit analysis. However, deep research does not always mean a concentrated portfolio or a sense that the manager knows the company better than anyone else. It can include managers who have superior quantitative systems to analyze large numbers of equities (or credit or derivatives). Even here, though, we prefer fundamentally based systems to technical systems. You are unlikely to ever see us being impressed by the "years of research" that have led to a moving average crossover commodity trading system.

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The third D is **Driving Outcomes**. Here we are looking for managers on the equity side who practice activism or constructivism, managers on the distressed-debt side who control the bankruptcy process and managers on the direct-lending side who can structure and define terms of the loans they make. These managers tend to be on the larger AUM side, with enough capital and reputation to force situations to their advantage. In this area we will hire both operationally and financially focused managers. As with our other D's, this is a strategy best effected with a long holding period in mind.

The final D is **Dislocated Markets**. We firmly believe that specific market segments can occasionally exhibit unfair pricing. Sometimes this is caused by a preponderance of non-economically motivated transactions. Sometimes there is a behavioral element at play, driven by investors' misunderstandings and fear. Sometimes there is something structural going on — witness the withdrawal of banks from middle-market lending in both the U.S. and Europe and how that has created an opportunity for non-bank lenders to swoop in and make high interest rate, over-collateralized loans to strong borrowers. Most of the managers we like in this area tend to have very specific areas of expertise. Interestingly, the actual securities purchased—or loans made—in this area are often quite illiquid, even though the resolution of the dislocation may occur rapidly. Thus, this area, more than any other, is best effected via a locked-up investment vehicle. Most endowments have been seeking to reduce their level of illiquid investments, which makes it difficult for many of them to build up a large position in dislocated market opportunities.

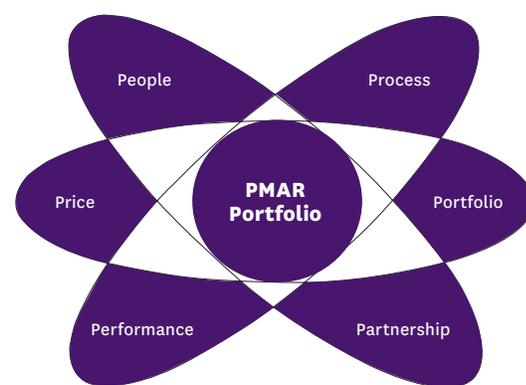
The P's

Once we have assessed a manager's suitability for our portfolio based on her D's, we move on to analyzing how well she scores on our P's. The P's are our mnemonic for making sure we cover a variety of important questions whenever we are conducting due diligence on a potential investment manager. Each P has a large subset of related questions and measurements, some quantitative and others more qualitative. (Figure 1)

Our first P is **Process**. When evaluating investment managers, process is not only key, but refers to everything from investment decision-making to trading to risk management to operations. We believe that a strong focus on process leads to repeatable success in idea generation, investment analysis and portfolio construction. As a result, we want to understand the day-to-day details of all the manager's processes. Where do people sit? How many screens are in front of them? What are they looking at on those screens? How do personnel in different offices communicate with each other? How does money move between accounts? Who has signing authority? Who can initiate positions? Who can terminate them? Is lunch brought in? How about dinner? What kind of fire suppression system do they have in their computer room? Does the door lock? Who has the key? Who can physically make changes to computer models? Questions like these are only a fraction of what we want to know in our quest to understand a manager's process.

FIG. 1

The P's



Our second P, arguably just as important as the first, is **People**. We are looking for teams with experience, preferably through more than one market cycle. We expect relevant education and training. We want appropriate staffing, in both front and back office, given the manager's strategy and assets under management. We try to gain insight into the manager's motivations and ethical code, as we demand integrity of the highest order. We prefer low turnover in investment personnel and we want to be able to have an expectation that the management team will be in place for at least the next five years. We require that significant senior level attention be paid to the portfolio, but we are also cognizant of key man risk. It is vitally important to us that we feel like we understand our managers' motivations, so we spend a lot of time talking about non-investment issues. We care about what books they are reading, what their hobbies are, what kind of cars they drive and houses they live in. We want to know what led them to start their own firms and why and how they left their prior firms. We want to understand why, if they are among the managers who are already monetarily successful, they are still managing outside money and whether we can count on them to continue doing so.

Our third P is **Partnership**. We expect to have long-term relationships with our managers, so we want to ensure that we agree with how they are running their firm today as well as with their growth plans. We look for a significant commitment of the manager's personal assets to the strategy. Alignment of interest should also extend to the compensation structure for all employees. We prefer compensation based on total long-term fund performance, not employee- or group-specific annual returns. The manager should have assets under management that are appropriate for the strategy (e.g. small cap investing is done best with a small asset base). Focus should be on one or a few related products, and AUM growth should be controlled. It is essential that redemption terms be in line with the liquidity of underlying securities. We also seek out evidence that the manager will continue to be solicitous and attentive to us once we are a client.

Our fourth P is **Portfolio**. This is the most objective and quantitative of our P's. We factor-map the manager's holding to a set of indices so we can determine the theoretical beta to global equity markets, as this is one of our key metrics across the endowment. We then run an analysis to make sure we won't be over-concentrated in specific trades or names across the endowment. We also seek to ensure that managers are actually doing what they tell us they are doing. If they are active, we need to make sure they are not closet indexers. We prefer consistency in strategy over time; managers can shift asset allocations as opportunities arise but should not exhibit strategy drift. We look for adequate transparency so that aggregation of our risk metrics across all funds can be accomplished. We avoid excessive leverage in those cases that leverage is employed. We discourage the use of recourse, short-term, mark-to-market leverage at the fund level or the asset level. We expect the fund to have adequate liquidity to pay for redemptions but also to take advantage of opportunities. We want to invest in managers who have rigorously monitored risk across portfolio positions, including currency, political, valuation, liquidity and correlation risks.

Our fifth P is **Performance**. With respect to performance, we look for a long-term track record relative to appropriate strategy benchmarks. We want to understand what, if anything, has changed with respect to the

manager's strategy or personnel. But the reality is that no matter how well a manager fits our D's, and no matter how much we like our assessment of them with respect to Process and People and Partnership and Portfolio, historical performance does matter. We certainly recognize that past performance is not necessarily an indication of future performance, but demonstrated success as an investment manager generally is required. That does not mean that the manager can't have hit some bumps along the way, but a three-year losing streak is much more palatable as part of a ten-year track record than as the only record they have.

Our sixth and final P is **Price**. By price we mean management and incentive fees. In general, our preference is to hire the best managers we can at the best fees. In a perfect world, for example, the best long-only equity managers would charge only management fees, as is often the case for UK-based equity managers. Barring that, we desire that the management fee alone not be a source of significant profits for the manager, especially if incentive fees are charged as well. When there is an incentive fee, we prefer a hurdle rate or preferred rate of return. Lastly, there should be a claw back of incentive fees over the lockup time frame, i.e. a three-year lockup should charge incentive fees only on the three-year return, not annually.

FIG. 2

Investment Q&A Checklist

Due Diligence Step	Completion
Receive investment manager marketing presentation	
Conduct initial meeting with investment manager	
Place initial reference calls	
Review PPM and LPA, prepare due diligence questions	
Prepare and distribute deal summary to Investments Staff	
Review investment opportunity with CIO and receive feedback	
Place investment opportunity on PUC report and review Investment Committee feedback	
Visit manager on-site for full due diligence meeting	
Investment manager meets with CIO	
Place in-depth reference calls	
Have legal documents reviewed by outside counsel	
Prepare and distribute an updated and more extensive deal summary	
Engage Investigator to conduct background check on new investment managers	
Distribute internal recommendation to Investment Staff and solicit feedback	
Present internal recommendation to Asset Allocation Committee for approval	
Negotiate legal docs and side letter	
Complete internal operations process	
Deliver signed documents to manager	

The Approval Process and Ongoing Monitoring

A clear process for manager selection and monitoring is crucial to our internal success at the endowment. We need to be able to clearly articulate and document why an investment is appropriate for our portfolio. Internally, a strong process gives us a checklist by which to proceed, to ensure that we don't accidentally skip any steps in our due diligence. The approval process we are about to describe applies to each of our internal groups when making manager selection decisions.

In the first step of our internal approval process, we prepare a "Partnerships Under Consideration" document that lists basic, salient features about every new fund that we might be considering. This document is sent to all members of our Investment Committee, which is comprised of University Trustees. The Investment Committee members do not actively weigh in on manager selection, but this process allows them to know what we are evaluating and to alert us if they have any relevant knowledge about a manager we are considering.

As the second step in our process, we create a one-pager describing the manager's strategy, firm, and funds. We use this as a talking sheet during our weekly Investment Staff morning meeting.

If a manager passes through our previously described due diligence hurdles (the D's and the P's), we prepare a longer PowerPoint document, usually 15-30 pages. We present this PowerPoint document at an "Investment Q&A meeting" which is open to all investment staff. Detailed questioning is welcomed. In this document we de-

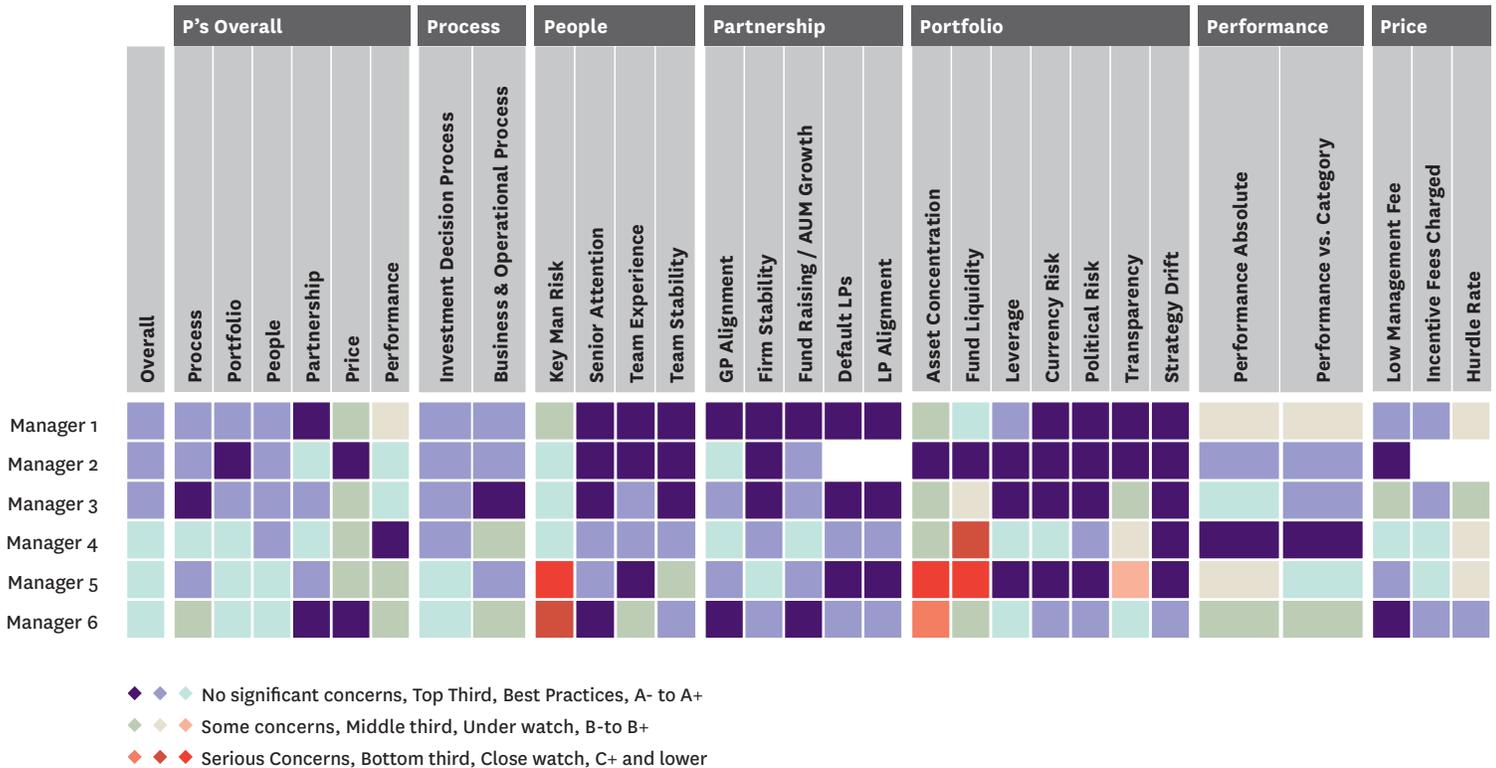
scribe the manager's strategy in greater detail, discuss the terms and conditions, evaluate the investment strengths and weaknesses, summarize our assessments of the D's and P's, show performance, and go through some investment examples. We also include a checklist so everyone can see where we are in the process. (Figure 2, Page 17)

After the optional-attendance investment team meeting described above, we either decide to continue with more due diligence or we decide not to pursue the manager. If we continue, and eventually decide to make a recommendation, we prepare a formal investment recommendation write-up of 40-50 pages. The write-up includes sections on the firm, the management team, investment philosophy, process and portfolio. It concludes with a section containing outside counsel's legal review of the fund documents. The write-up is presented to our internal Asset Allocation Committee, co-chaired by our Chief Investment Officer and our Managing Director of Strategy, whose voting members include our CIO and our six Managing Directors. The appropriate asset group presents the write-up to the Asset Allocation Committee, after which a formal vote is taken, with the CIO having final approval and veto power.

As part of our due diligence and ongoing monitoring process we construct a risk matrix, which outlines our perceived exposures to different forms of risk for each investment. A sample matrix can be seen below. For each of our P's we rate the manager's riskiness on a 1-9 scale, with 9 being the least risky. We present this information to our internal Asset Allocation Committee when we bring a manager forward for investment approval. Then, on a quarterly basis, we present the risk matrix for every one of our investments

FIG. 3

Risk Matrix



to our internal Risk Management Committee, co-chaired by our Chief Risk Officer and Chief Operating Officer, with whom we discuss any upgrades, downgrades, flagged concerns, or other changes that might have occurred in our thinking. Here is a sample, colorized on our 1-9 scale, of what we present. (*Figure 3, Page 18*)

Conclusion

When it comes to selecting managers for the Public Markets and Absolute Return portfolios at the University of Chicago endowment, we try to apply a consistent philosophy and approach. We seek long-term oriented managers who invest with an eye towards at least one of our D's. We evaluate managers on how well they satisfy our P's. We factor map each manager to some combination of the over 150 indices we track to get an idea of how the manager's current portfolio would have performed in the past and how it might perform in the future. We gather our thoughts and impressions and rate the managers in a risk matrix on an initial and ongoing basis.

With more than 80 managers in our PMAR portfolio, and with 300-500 meetings per year with potential managers, it is vitally important that we have a solid process in place with which to make our evaluations. It is worth noting that one of the reasons we are able to do this is the resources that the University has made available to our office. The PMAR group has five people, and the most senior three have a combined 55 years of experience. We think this gives us the ability to question managers in a probing manner that might not be accepted from less experienced allocators. In addition, we have the means

to take multiple international trips each year, exposing ourselves to investment thinking from around the globe in an effort to identify the most promising themes and managers. The same is true of our very experienced Private Equity and Real Assets teams.

It is important to point out that one of the chief reasons we can focus on manager selection (the focus of this article) and thematic investment opportunity identification is because of the overall strength of our office. Roles are well defined, but collaboration is the order of the day. We never have to worry whether an operational issue is going to divert our attention, we have a team dedicated to operations and operational due diligence led by our Chief Operating Officer. We don't have to build our own computer models to measure the calculable risk of our managers — we have a risk team headed by our Chief Risk Officer with more programming and mathematical firepower than most hedge funds. We don't have to concern ourselves on a day to day basis about our overall levels of manager driven market exposure —, we have a strategy team led by our Managing Director of Strategy to tactically reallocate among global equity and fixed income markets based on our office's market views. We are fortunate to have the support and leadership of a Chief Investment Officer who has built a well-conceived organization and new processes in the last three years that allow us to concentrate on what matters to our team and the University's endowment. Finally, the University's Investment Committee includes very experienced and knowledgeable business and investment leaders who effectively empower and collaborate with the Investment Office.

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FIG. 2

Soft Hurdle Produces Lower Carried Interest if Fund Returns are Tightly Clustered Around 11% Average Return

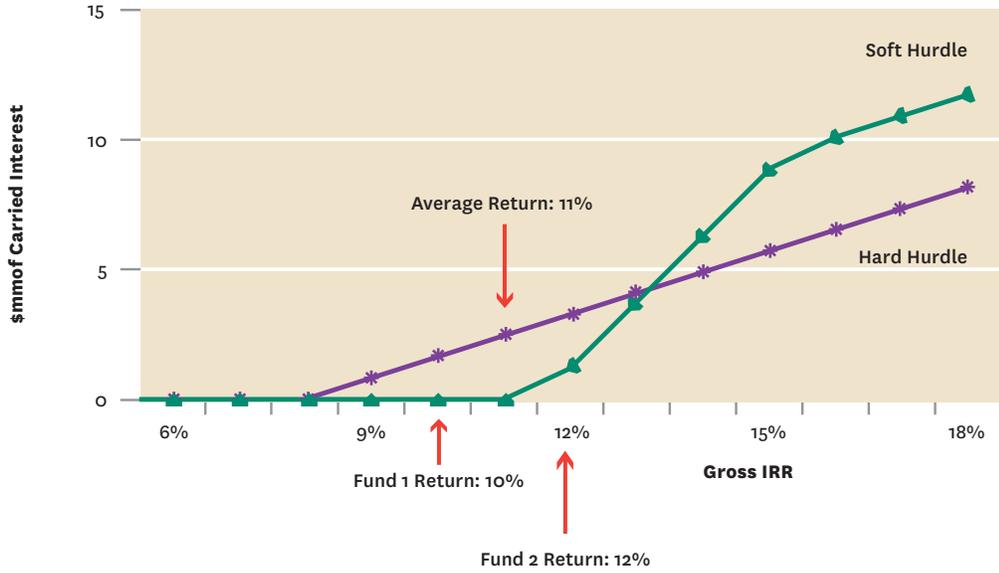
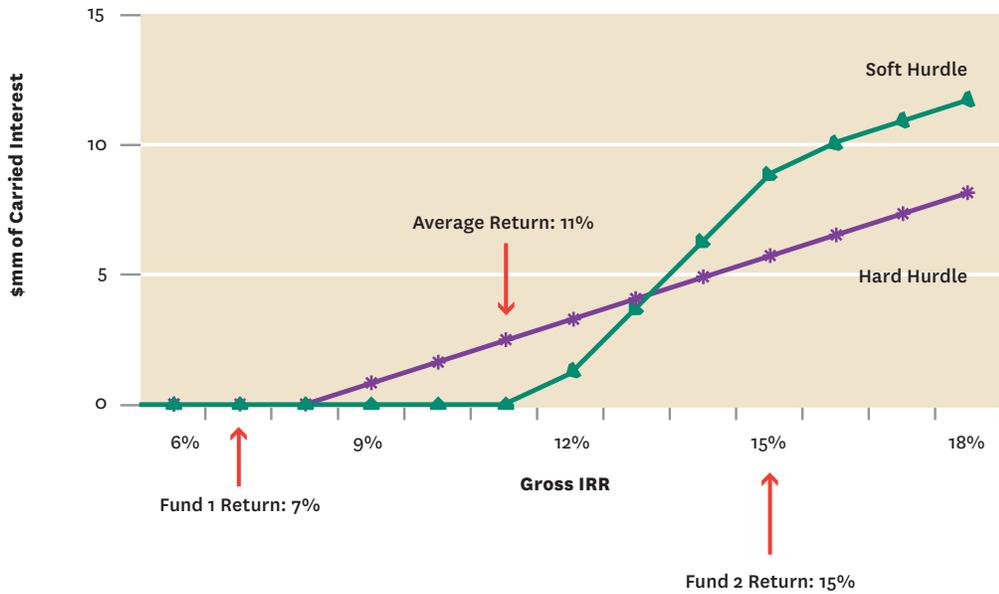


FIG. 3

Hard Hurdle Produces Lower Carried Interest if Fund Returns are Widely Distributed



Portfolio Comparison

	Portfolio 1	Portfolio 2
Fund 1 Return	10%	7%
Fund 2 Return	12%	15%
Average Return	11%	11%
Total Fees	Lower with catch-up	Higher with catch-up

of the sample fund in Chart 1. At the time of sale, soft hurdles pose a strong incentive to sell assets rather than risk a fund falling below the gross return at which the GP starts losing catch-up. These misalignments are widely noted in published works by academics and practitioners, most recently in a study by Landmark Partners.

The hard hurdle offers some benefits for general partners, including greater certainty of receiving at least some carried interest (which may aid in employee retention) as well as greater alignment with their LPs. There is also an argument of simple fairness, as the opportunity cost of LP capital makes it unfair to pay carried interest on every dollar of profit.

Over time, some limited partners have expressed to me several reasons that they prefer catch-up structures. Some of these are reasonable; for example, an investor seeking to maximize IRR at the expense of multiplying equity may be comfortable rewarding their GPs only for performance that matches this preference. Other reasons are more questionable; because the soft hurdle is more expensive

on successful funds and less expensive on modestly-returning funds, it has the effect of moderating the spread between net fund returns. Some limited partners claim to appreciate the “insurance” or “downside protection” that this provides, although such reallocation of returns within a portfolio produces dubious institutional benefit.

Conclusion

Limited partners can benefit in several ways from favoring hard hurdles. In addition to the lower cost, the presence of a hard hurdle is a useful way to screen for GPs that seek maximum alignment with their LPs. Expanded awareness of the hard hurdle’s benefits will benefit the limited partner community.

Footnotes

1. “Why Most Limited Partners Should Avoid Catch-Ups” *Journal of Private Equity* (Spring 2012, Vol. 15, No. 2: pp. 41-50)

**Outsourcing —
A Road Becoming More
Frequently Traveled**

[Continued from Page 6]

benchmark. As such, a decision was made to collaborate with the university's Poole College of Management, in creating an MBA case study for course credit. The one hour course, featured as part of the graduate course in Investment Theory and Analysis, includes eight MBA students working in two groups. The students have been asked to model various endowment asset allocation strategies that, along with a \$100 million influx of new endowment assets, would produce the university's desired 8% nominal long term return.

The Fund's decision to outsource the majority of its non-committed assets during the credit-crisis of 2008, which brought ensuing losses to portfolios, including endowment portfolios definitely built character. However, as Confucius quoted, *"By three methods we may learn*

wisdom. First, by reflection, which is noblest; second, by imitation, which is easiest; and third, by experience, which is bitterest". As the world's financial and economic markets continue to develop and evolve, the Fund's Board continues to provide a well-defined governance structure, challenge current investment and asset allocation policies while ensuring the Fund maintains adequate liquidity. Given the System Fund's favorable ten-year return of 8.3%, it is not entirely clear that a revision in asset allocation policy would lead to a greater likelihood of achieving the desired long term return. However, the additional research produced by the MBA case study may provide information that confirms the university's current strategy and will certainly help to bring students and administrators closer together.

**Do What the Banks
Won't Do**

[Continued from Page 7]

European corporate distressed markets may present an opportunity over time. While corporate asset sales from the European banks have been relatively muted over the past 18 months, we expect these sales to accelerate over time now that there has been some improvement in pricing generally for risk assets. We believe that this opportunity will be quite broad and include non-performing loans, non-core business lines, non-core asset divestitures and banks returning to their home markets (particularly in Europe).

Given the variety and complexity of these opportunities, we feel investors are best served by a manager that has the expertise to source, perform due diligence and

structure complex loan pools where pricing can be less efficient than the public markets. The manager should have a global platform with broad access to various public and private markets and established relationships with source opportunities. With the public market's aversion to illiquidity and complexity, this premium should persist for the foreseeable future.

The build-up to the financial crisis took decades. Although four years have passed, it will likely take many more to unwind a financial system built on debt and leverage. It's a process that will likely create higher return opportunities for many years to come.

Want higher returns? Do what the banks won't do.

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