

THE NMS EXCHANGE

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Bridging Big Gaps with Strategic and Tactical Allocation

Case Western Reserve University

An endowment is a pool of capital with the ultimate luxury of an investment horizon stretching to perpetuity. Yet the institution served by the endowment's distributions prepares its financial plans in much shorter cycles—perhaps a year or two at a time. And the institution's fiduciaries overseeing investment policy and investment results are accustomed to focusing on portfolio returns over short, rolling periods—usually of three years.

Suffice to say there is a Big Gap between a year or two or three and perpetuity. So, how to align investment policy for perpetual assets with budget planning and investment reviews occurring with much greater frequency.

There is a similar Big Gap, even an outright conflict, between common investment policy goals: How to earn a nominal return that is high enough to support current spending; protect the erosion of real value from inflation; and, not deliver a major drawdown in a serious bear market. Meeting these challenges merely stabilizes the real value of the assets over time. Often, investment

policy calls for more—earning a margin of extra return that delivers “some to grow on” so the real value of the assets actually increases into perpetuity.

Case Western Reserve University (CWRU) has addressed these challenging and sometimes conflicting objectives with by distinguishing more clearly between strategic allocation and tactical allocation. Strategic asset allocation serves the perpetual nature of the assets. Tactical asset allocation tunes long-term strategy to serve the much shorter horizon of the annual distribution liability and the institution's risk appetite. Tactical allocation also disaggregates and expands the traditional high-level strategic labels of equity, fixed-income, natural resources and real estate.

Traditional, long-term strategic asset allocation is a “hope-for-the-best” plan with an overlay of “all things work out over perpetuity.” Setting shorter-term tactical allocations alongside strategic allocations is helpful in closing the two Big Gaps of time horizons and investment goals.

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NMS Management, Inc.
Nancy M. Szigethy
Founder and
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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 David Brief
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The Case for Tail Risk Protection

As a business proposition, insurance is relatively straightforward. The decision to purchase insurance against a given event hinges on three factors:

1. **Probability of the event occurring**
2. **Cost of the insurance**
3. **Potential impact of the event being insured against**

Weighing these considerations leads many Florida homeowners to buy expensive hurricane insurance, young and healthy fathers to purchase relatively affordable life insurance, and most rational travelers to shun cheap offers of plane crash insurance.

Perpetual investment horizons notwithstanding, many endowments and foundations would find a compelling case for adding tail risk protection to their portfolios if they were to seriously evaluate today's circumstances in this three-factor context.

Probability

For the purposes of this discussion, we're going to define "tail risk protection" as a strategy designed to partially offset the impact of a 25% or more drop in the S&P 500 Index over a three-month period. According to the database maintained by Robert J. Shiller, Sterling Professor of Economics at Yale University (<http://aida.econ.yale.edu/~shiller/data.htm>), such a sharp decline has occurred 63 times since 1881. But as shown in the chart below, the incidence of such market upheavals has been anything but a "random walk." (Figure 1)

Shiller pioneered the use of the Cyclically Adjusted Profit Earnings ("CAPE") Ratio, which simply divides the S&P 500 price level by the average of 10-year real earnings and thus provides a more stable valuation measure than others driven by shorter-term trends or analyst forecasts. If we sort historical "tail risk" events based on the CAPE Ratio that prevailed at the onset, we find a straightforward monotonic relationship. The stock market never once dropped 25% or more when the CAPE

Ratio fell in the lowest quintile. The highest quintile of CAPE Ratios, however, saw nearly half of all such declines. Indeed, the incidence of a tail risk event within this highest quintile almost equaled the frequency of such occurrences when the CAPE Ratio was in the 3rd and 4th quintiles combined.

So where are we today? As of September 30, 2014, the CAPE Ratio stood at 26.4, which ranks in the 94th percentile of the 133-year data set—well into the bottom half of the fifth (i.e., highest valuation) quintile. Objectively speaking, this makes the current probability of tail risk protection proving useful quite favorable.

Cost

The simplest and arguably the most common strategy for hedging tail-risk involves the systematic purchase of deep out-of-the-money put options on the S&P 500 Index. Options pricing involves complex mathematics and a sophisticated understanding of a veritable Greek alphabet soup, but in broad brush terms the cost of buying an option is proportional to expected volatility. And over the past 20 years or so, VIX—which stands for the Chicago Board Options Exchange Market Volatility Index—has been the most widely used volatility gauge.

The VIX, which trades in both futures and options markets as well as through various ETFs, relies on current S&P 500 options pricing to calculate the near-term "implied volatility" of the stock market benchmark. Over time the average level of VIX has been 20, which roughly corresponds to the long-term annualized standard deviation of S&P 500 total returns. The graph on Page 8 (Figure 2), shows the VIX from its inception through September.

As recently as September 18th, VIX stood at just 12.0—not far off historical lows. A direct consequence was that on that day tail risk protection was historically cheap. Four weeks later, on October 15th, the Index reached an intra-day peak of 31.1, which means the cost of protection had gone up dramatically. Since that spike, however, market fears seem to have eased. VIX may or may not return to extraordinary low levels any time soon, but there is a point at which the price of put options on the S&P 500 coupled with relative valuation levels makes a tail risk protection program extremely attractive.

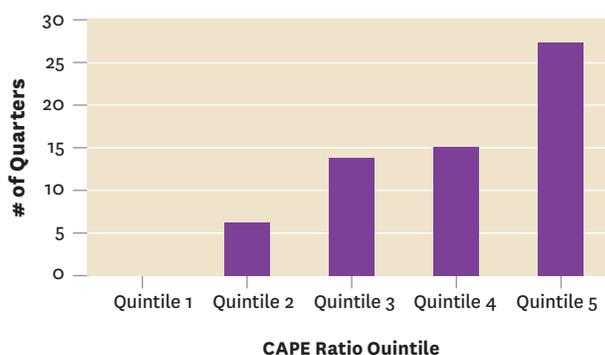
Potential Impact

Even if the probability and cost factors seem attractive, an institution's specific circumstances ultimately will dictate whether a tail risk protection strategy makes sense. At its core, managing assets for an endowed institution entails an inherent tradeoff between the desire to maximize long-term growth and the need to protect against extreme short-term losses that could adversely affect the organization's mission. Perpetual investment horizons do not mitigate the reality of needing to meet operating budget needs on a year-to-year basis.

The value one places on protection against short-term market downturns depends on *[Continued on Page 7]*

FIG. 1

Quarterly S&P 500 Returns < -25% 1881-2014





By Mark A. Schmid
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A Framework for Endowment Risk Management

Introduction

In the waning years of the previous decade, before the onset of the financial crisis, The University of Chicago's Investment Committee decided to take a 'risk view' of the endowment and its governance process. The goal was to have a better understanding of the investment risks faced by the endowment, within the broader context of the strategic mission and overall risks faced by the university. Instead of taking a purely traditional asset class view (e.g., hedge funds, private equity), the investment portfolio and decisions at the governance level would be framed in terms of the key risk drivers affecting risk and return. With a new CIO in place in 2009, the Investment Office transitioned to a risk-based investment model over the next several years, enhancing rather than replacing the traditional endowment model, with a more customized solution.

A risk-based approach is not the subjugation of the pursuit of investment return to the minimization of risk. Instead of chasing the highest return at the exclusion of any consideration of risk, the focus shifts to a conscious choice of the type and size of risks best suited to our University's long-term strategies. Investors may pursue higher returns, but we don't have direct control over the investment outcomes. We can, however, directly choose the risks that we take in pursuit of those outcomes. Risk is not only an integral part of the investment process; the amount and type of risk chosen by managers are the most critical factors in determining their investment success. Risk and return are the yin and yang of the financial universe. And, risk management is not just defensive, but is a key offensive weapon in the investment manager's arsenal.

The financial crisis provided a litmus test of the importance of risk management in the long-term outlook of endowed universities. In the financial crisis, the largest endowments reported FY2009 returns ranging from -15% to -28%. From peak-to-trough, the typical large endowment losses were in the mid-30s range, as reported. Given the return lags present in reported returns, though, these reported returns suppressed the true economic losses. Including lagged or suppressed losses, the typical endowment's economic loss estimate for the crisis exceeds -40%, with a couple of large endowments estimated at over -50%. These were real losses, with real impact on universities for a number of years. This highlights the need for a top-down proscription of adverse investment impact, which helps inform the overall risk framework. At the University of Chicago, our endowment risk management and investment strategy are driven by an enterprise view of the entire university, including the Medical Center.

Endowment Risk Management for the Enterprise

"A Total Enterprise Approach to Endowment Management," by Mark Schmid and Que Nguyen in the January 2012 *NMS Exchange*, introduced our integrated approach to investment strategy. A couple of examples will serve to illustrate this enterprise view of the endowment within the context of the university's overall business and risk profile. First, suppose the present value of the university's future gifts is directly affected by the market return environment (i.e., gifts have 'equity beta'). When considering the amount of overall exposure of the university's wealth to the vagaries of the market, it would be wrong to focus on a partial analysis of the endowment's equity risk alone—one must consider the market exposure inherent in gifts as well. A degree of equity risk that might seem acceptable to a stand-alone portfolio, may in fact be overly aggressive in an enterprise context, when considering the additional equity exposure from the gifts' value, which is sizable and illiquid. Second, suppose the university's debt issuance is sizable relative to its financial base. This financial leverage could be compounded, or offset, by the cash, fixed income, or leverage within the university endowment. Making a standalone decision on the endowment's asset allocation could leave the university far too levered, or even not levered enough. An integrated look at the risks across the enterprise should result in the right amount and right types of risk to support a university's long-term needs and risk appetite.

Our own top-down analysis of key risk sensitivities showed potential tangible adverse impact in the event of: (1) too much equity risk, (2) too much illiquidity, (3) too little equity risk, (4) excessive leverage, and (5) nonlinear pain response to the degree of market decline. Thus, even if a stand-alone endowment manager were somehow unconcerned with these five parameters, these sensitivities would have to be considered in the endowment's asset allocation and governance, to have any hope of leaving the university in its comfort zone. These issues should be considered in the endowment's risk framework to give the university it serves the best chance of achieving its strategic goals.

Risk Framework (Risk Management Process)

Consistent with the TEAM strategy and vision of our administration and governance body (investment committee), we have developed a comprehensive, formal risk management framework at The University of Chicago. Risk management is not a "one size fits all" solution, but is customized and essential to the enterprise's needs and goals. But every risk management framework should address the following key factors:

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Risk management is hard work, requiring both deep and broad expertise.



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Chief Risk Officer
The University of Chicago





By David Slifka
Senior Portfolio Manager
YMCA Retirement Fund

Investment Governance: Easier Said than Done

Summary

A surprising disconnect faces institutional asset owners. Governance best practices are widely published and agreed upon, yet I hear many of my industry colleagues dissatisfied with their institutions' governance. Evidently there is some barrier to executing widely agreed-upon governance ideals. In this literature review, I draw from roughly 90 books, articles, and interviews covering both general governance and investment committees (IC) specifically. In each of six areas, I share the consensus view, and some thoughts on how to execute it. The six areas are: Role Clarity, Agenda, IC membership qualifications, Role of the chair, IC size, and Service length. I hope that readers will reach out to me to share their own thoughts, particularly on why IC best practices are not more widely adopted.

Introduction

"Good governance is having the right people making the right decisions about the right issues."—Myra Drucker (Griswold 2014)

Boards are sometimes described as a ceiling on quality, e.g. "A nonprofit organization, in the long run, is no better than its board." (Boardsource 2012) But a more compelling view is one of opportunity, e.g. "One of the structural advantages endowments... have is their boards. Members... have likely attained a measure of success. They have broad experiences, developed networks, and a deep and emotional investment in the institution." (Roundtable 2014) However, the mere presence of capable individuals on a board is insufficient to produce superior organizational leadership. The critical additional ingredient is governance skill, as practiced both by trustees and senior executives of the institution.

After reviewing roughly 90 sources on governance, I learned something surprising; the principles expressed are clear and consistent across sources. Yet after spending a day speaking with CIOs and senior staffmembers of large institutions, Cathleen Ritterer observed that

"Governance turned out to be... the leading component that both needs fixing and promises to give investment officers what they most need to succeed." (Ritterer 2013) To the extent that institutions wrestle with governance, the problem is not a lack of consistent and well-documented best practices. Instead, the challenge appears to be executing on this guidance. And this challenge has a real cost; Ambachtsheer, Capelle and Lum (2008) found "a positive correlation between governance quality and fund performance."

To help support greater adoption of investment governance best practices, I assembled this literature review. Each section highlights some ideas from my sources regarding how to execute best practices.

Role Clarity: What is Governance?

Consensus View: Overwhelmingly, sources state the importance of clear roles for the IC and staff.

Suggestions to execute:

- 1. Define Governance.** I was surprised to learn that there is no widely shared definition of governance. Among the many thoughtful definitions that I found were these:

"Governance is anything that lasts five years or more." — Interviewee

"The management team runs, the board course-corrects, offers advice and guides. Governance is setting standards, advising how to live up to them, and reviewing how well they are lived up to—not making decisions. A trustee's job isn't to make things exactly as they want it, just not too far off." — Interviewee

"Discuss guardrails, not specifics of where within those guardrails to be." — Interviewee

[Continued on Page 17]

Overview of Sources

My sources include 55 books and articles on investment governance, roughly a dozen conversations with individuals experienced with investment and general governance, and 20 books and articles on general governance. The sources reflect a wealth of knowledge across constituencies: Investment consultants (e.g. Cambridge, Russell, RV Kuhns), Industry groups (e.g. CFA Institute, Association of Governing Boards), Asset managers (e.g. Howard Marks, Arnold Wood), Investment trustees (e.g. Charley Ellis, Myra Drucker), CIOs (e.g. David Swensen, David Salem), academics (e.g. Yale and Harvard business schools)

and others with broad perspective (e.g. McKinsey, Korn/Ferry). Many of the sources are themselves surveys, making the aggregate data set quite rich. Sources cover endowments, foundations and pension funds, mostly but not exclusively in non-profit or government contexts. Of the sources that address general governance, I found their advice equally applicable to ICs, and their advice regarding chair/CEO relationships equally applicable to IC-chair/CIO relationships. The full bibliography is available upon request; many more contain valuable insights than could be cited in this document.

With so much at stake, why do so many institutions not yet execute on governance best practices?



By D. Ellen Shuman
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Taxes, Liquidity, The Investment Arms Race, Cost Structures and the Dependency Ratio: Surprising Differences between Endowments and Foundations



By Nina Scherago
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Endowments and foundations with a perpetual life are identified as generally having the same investment objective, which is to generate a real return net of spending in order to preserve purchasing over multiple generations of students, faculty or grantees. In practice, different tax and legal requirements, and circumstances such as a lack of new gifts, apply to foundations relative to endowments, which should result in endowments and foundations having meaningful distinctions in asset allocation.

We also note some differences in culture and circumstances between foundations and endowments. For example, foundations tend to be more collegial, while endowments—and especially the elite institutions—have created an investments arms race that emanates from direct competition and a need to meet ever-rising costs of a college education. Competitiveness among colleges for faculty and students (and especially football or field hockey players), plays a role in determining the greater level of resources that academic institutions dedicate to managing their investment portfolios relative to foundations.

We think that these circumstances, combined with the elevated sensitivity to the generous compensation of investment professionals at foundations, have an impact on the level of resources that these two groups of otherwise similar institutions devote to managing their endowed assets.

We also conclude that the largely variable cost structure of foundations is more influential on how a foundation manages its investment portfolio than its dependency ratio of 100%. Conversely, the largely fixed cost structure of a college is more influential than its dependency ratio, typically below 50%, on how a college manages its investment portfolio.

The authors recognize that there will be many exceptions to the generalities we describe, and that individual treatises could be written on each of these topics. The spirit of this article is to stimulate thinking and discussion within the endowment and foundation communities, and not to prove without a doubt any of these points, especially given the many unique circumstances among institutions represented by our readers.

Foundation Headwind: Taxes

Foundations are subject to Unrelated Business Taxable Income (UBTI) to a much greater extent than their academic peers.

Foundations are subject to an annual excise tax of either 1% or 2% on income and realized gains from investment returns.

Consequence: Foundations often generate lower after-tax returns than their endowment brethren on *identical investments* in private real estate, and *also on private investments that utilize an LLC structure*. In addition, foundations have wisely shied away from UBTI-generating investments, which are concentrated in real estate and other real assets, causing them in aggregate to be less diversified than colleges and universities.

Federal UBTI is paid at the institution's corporate rate, and not the capital gains rate. An increasing number of states, ravenous for tax revenue, have imposed UBTI requirements of up to 11%. Many institutions with diversified portfolios now file state tax returns in a majority of the 50 states. While institutions typically do not report their investment returns net of taxes, the direct and indirect burden of taxes on foundations is costly relative to endowments.

Foundation Headwind: Greater Liquidity Needs

Mandated Minimum Spending: Private foundations are required by the IRS to spend 5% of average assets each year in order to maintain their tax-exempt status, whereas endowments do not have a minimum spending requirement.

Consequence: Foundations do not have the luxury, like their academic brethren, of spending at a rate lower than 5%, and thus foundations have a lower probability of maintaining the purchasing power of the corpus. Moreover, foundations are required to spend 5% *each year* and may need to over-ride the smoothed spending formula if it results in persistent under-spending relative to the 5% IRS-mandated requirement.¹

Both endowments and foundations typically utilize a smoothing function for their spending formula to create a sustainable flow of funds into their operating budgets or their programmatic initiatives. Smoothing creates counter-cyclical spending rates—when asset values are rising, spending is lower as a percentage of the total market value, and when asset values are decreasing, spending is higher as a percentage of the total market value.

Restricted Borrowing Capacity

Foundations engage in very limited borrowing because of the tax consequences of UBTI.

Consequence: Having little or no borrowing capacity means that foundations have [Continued on Page 22]

Liquidity is not the only headwind faced by foundations in their effort to generate strong investment returns.



By Oleg Nodelman
Founder and
Managing Director
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A Value Approach to Investing in Biotech

Investing in biotechnology does not need to be a series of binary bets. I have been investing in biotechnology companies for 13 years, first at BVF Partners, one of the first dedicated biotech hedge funds. And, most recently at a new fund that I launched last spring, EcoR1 Capital a value-oriented biotech focused hedge fund.

I am always on the lookout for asymmetric opportunities, or those investments or companies that I believe have a potential return that is exponentially greater in probability and absolute dollars than the potential loss. Ideally, the potential loss will be negligible for a variety of reasons that I discuss later. This strategy of identifying and investing in asymmetric opportunities is important because it makes investing in biotech less risky and more sustainable. Although there is always considerable investment risk in biotech, mine is a highly differentiated approach to that of most biotech investors for many reasons.

Typically, biotech investors find a molecule or technology that they think will ‘work’ and ‘bet’ on the various stages of clinical outcomes, terminology overheard as frequently in this sector as in Las Vegas. In most cases, a trip to the casino would be more worthwhile—at least there you get free drinks while losing your money. I have never subscribed to ‘betting on biotech,’ largely because of the unpredictable nature of biology and the human body.

This gambling style is not the only pitfall of the sector. Biotech investors tend to travel in herds; as a group they either love or hate companies with no room in between. Valuations follow suit, dramatically over shooting reality based on both perceived successes and failures. To add to the inefficiencies, many biotech companies are off limits to traditional funds due to both the long time horizons between new data announcements and to market caps that are lower than institutional limits.

The core business of investing for EcoR1 Capital is very different than most other funds. My goal is to find extraordinary companies that have been caught in an extraordinary time and help ensure that exceptional people are involved to enable those companies to be a success. Ideally I will hold my investments for the long-term.

I start with a wholly unique function set from most investors—the un-followed, unloved, misunderstood and generally orphaned companies that make up the bulk of the 800 or so public globally-traded biotechnology companies. This is an ever-changing landscape as new data are generated daily creating perceived winners and losers. The strategy is more akin to traditional Graham & Dodd style value investing than anything in biotech as I am typically buying companies trading below intrinsic value with a large margin of safety. Most value investors tend to stay far away from biotech and for good reason. Based on my analysis, someone buying a biotech stock whose compounds have failed clinical development the day it dips below liquidation value is still likely to lose another 75-99% of her capital over the following 2 years. Hic sunt dracones!

A common question I have gotten is whether now is a good time to be investing in biotech. My answer is always the same; I am not basing my decisions on what is going to happen in the market tomorrow or a year from now. For the types of companies I am investing in, it doesn’t matter (beware anyone whose strategy relies on fortune telling).

Gated liquidity allows me to take the long view and be aggressive when fear-mongering rules the day. But, market turmoil isn’t the only wellspring for opportunities. Sources for new ideas range widely; from dramatic price changes that put a previously expensive company on sale to findings generated during deep scientific due diligence. However, this is just the beginning. Once an opportunity has been identified, I consider the basic tenants of the business: reasonable spending that could lead to positive NPV one day, a solid cash position, hidden intrinsic value in the form of Intellectual Property or intellectual capital. We validate partnerships with industry leaders and, of course, an alignment of incentives between investors and management. The companies I invest in are often so under-valued and unpopular that even if nothing works out, it is still possible for investors to make money.

The next step in the investment cycle is a long and deep diligence dive, coming up for air on a regular basis to triangulate various sources of publically available data and primary intelligence. The product of all of this work is a painting that tells the story of a company, with color and details constantly added. On some occasions research takes place over many years before the first investment is made. It is not uncommon that the diligence process leaves me with more insights about a company than the management team itself has—and certainly more than other broadly focused investors possess.

The most important factor in any investment opportunity is the people involved. Through an extensive network, I work with many portfolio companies to help identify and recruit exceptional people to fill gaps in the management team or Board.

It is an interesting fact that among the biggest and most successful biotech companies, few are currently focused on the technologies or molecules around which they were founded. Most of these successful companies experienced periods during which they were orphaned by Wall Street due to short-term failures of molecules or technologies. Exceptional management and leadership, however, are able to find new opportunities to build a company through new indications or new molecules and technologies.

Uniquely, this is an industry in which the decision of one individual can affect the lives of many people. Over the last decade, drugs for CML, lung cancer and melanoma as well as many other diseases were developed and brought to market solely because of the instincts and knowledge of specific individuals. Knowing that my work not only creates wealth but might play a role in finding answers for many untreated diseases drives my passion for this industry after more than a decade of investing.

On some occasions research takes place over many years before the first investment is made.

Bridging Big Gaps with Strategic and Tactical Allocation

[Continued from Page 1]

The first consideration was strategic asset allocation. Here the challenge was to develop a policy portfolio calibrated to deliver on two of the five objectives specified in CWRU's Investment Policy Statement: 1) Produce a return of at least 8% over rolling three- and five-year periods and 2) Avoid a drawdown of more than 15%. The first step was to articulate the purpose of each asset class along with the usual expected returns and volatility, but also including drawdown and factor exposures. Public market equivalents were used for private sectors. The calibration modeling produced appropriate weights for each asset class and created the strategic asset allocation or policy portfolio.

What differentiated this from the usual process was the clear articulation of the role of each asset class along with the explicit identification and separation of betas to reduce confusion about risk/return/drawdown profiles. Hedge funds had always been categorized as an asset class in CWRU's portfolio but were assigned the new role of seeking uncorrelated alternative risk premia with exposures beyond the long/short bond and equity positions.

The asset classes used in the calibration modeling process were the usual long-only equities, fixed income, natural resources and real estate. But the traditional macro-level categories masked the richness of the opportunity sets they contain. So CWRU also sought to disaggregate the usual broad universes into smaller components that might have tactical opportunities. This disaggregation process is useful at the total portfolio level and within the marketable asset classes.

With an endowment's unique access to data from many brokers, exchanges and research houses, CWRU assembled a data set of the monthly return histories of 1,400 (and growing) global style, geographic, sector, rates, spreads (and more) indexes that are accessible and available for actual transactions.

At the total portfolio level, CWRU created an additional "slice" of the asset allocation pie to sit alongside hedge funds as a risk management tool. This additional asset class has a return objective of 8%, drawdown objective of less than 10-12%, and volatility of about 6%. The purpose was to create a single, dynamic "slice" with multi-asset-class

components to behave like an endowment replicator with less risk. Importantly, the slice also had to complement the hedge fund allocation as a diversifier. It provided the additional attractive feature of total liquidity by virtue of its index components. This new slice of the total allocation has been in place for about 20 months and will be reviewed and dissected after its 24-month anniversary.

Using the same investment goals and calibration process as for the strategic policy portfolio, CWRU also has begun to designate a portion of the global public equity allocation for investment into liquid and dynamic sub-indexes that can be combined and transacted into a tactical component of this major asset class. This dynamic sleeve fits well alongside the two existing sleeves of active funds/managers and a traditional passive index sleeve based on the asset class' Global ACWI benchmark.

Within the global public equities asset class, the importance of the dynamic sleeve is to produce alpha return alongside active funds/managers. The appropriate weightings for the three sleeves—passive, active, and dynamic—are being further modeled and discussed.

Fundamentally, CWRU has sought changes to the traditional strategic asset allocation process to introduce dynamic, tactical ability at the total portfolio level and within the marketable asset classes beginning with public equity. The benefits would be greater control of investment results versus investment objectives, total liquidity, lower management fees, and the ability to notice and capitalize on opportunities around the globe without the long process of manager due diligence.

The model so far can be characterized as a slow momentum-based strategy across the various risk premia of style, geography, region, sector, country, rates, spreads, duration and carry. It has a wide set of potential portfolio construction applications for CWRU's endowment and could be useful for building a cash management tool, ESG-compliant portfolio, hedge fund replicator and more. Most importantly, it has already provided a new perspective on how to bridge the Big Gaps of mis-matched time horizons and competing investment goals that are the fundamental challenges facing endowments and other pools of global, institutional capital.

The Case for Tail Risk Protection

[Continued from Page 2]

myriad factors, some quantifiable and others psychological. The most salient of these are as follows:

◆ Degree of reliance on annual distributions.

A public school that obtains 5% of its revenue from endowment funds has much less sensitivity to market declines than does a private school whose endowment provides 40% of revenues. Obviously a private foundation that has a budget supported only by investment-related income is even more sensitive. Another way to look at this issue is to think about the magnitude of market decline that would translate into a 1% hit to the annual budget. Again, the school with a budget that is 95% covered by non-endowment sources could afford a much bigger hit before feeling the pain.

◆ **Sensitivity of other income.** During a broad market downturn, other sources of revenue may be pressured as well. But some will hold up better than others. For example, schools get much of their income from tuition and government grants. At selective schools, demand for admissions vastly exceeds the supply of spots and this demand is relatively price-inelastic. So while net tuition may decline slightly, due to perhaps increases in financial aid, there exists a significant cushion. Many charities, on the other hand, rely on annual fundraising campaigns for the bulk of their revenues. A steep market decline makes donors feel poorer, which leads to fewer of them writing checks—and those that do often write smaller checks than they otherwise would have.

The Case for Tail Risk Protection

- ◆ **Flexibility.** Schools don't have all that much leeway to adjust budgets in the short term. Salaries tend to be sticky, academic departments cannot easily be re-sized, and ancillary activities like athletics form an important part of the overall college experience. Many Foundations, though, focus on making annual grants. These organizations may have the flexibility to cut back on expenditures without compromising the institution's long-term goals. Operating charities face a more challenging situation, because the needs they serve often increase when the economy is doing poorly, and reducing social services during such times would run counter to their mission.
- ◆ **Spending rate.** Distribution policy is a topic unto itself, but it plays a critical role in the overall equation. Most institutions rely on a fixed or semi-fixed spending rate, even though evidence suggests that a more flexible framework better aligns the goals of endowed organizations with the dynamics of market volatility. Regardless, if an institution's spending rate is at the low end of what would be considered feasible—i.e., in the neighborhood of 4%—then it has more breathing room than one who is spending at a rate of 6% or 7%. But if spending rates are already high, tail risk protection becomes even more valuable.

So at one extreme, a selective private school whose endowment funds a relatively small portion of the annual budget and that distributes a modest percentage of endowment assets does not have as great a need for tail risk protection. At the other end of the spectrum, protection will be much more valuable to an operating charity that distributes 7% of assets and that relies on annual donations from philanthropists (who derive much of their wealth from the stock market) to fund a broad range of social service needs in the local community.

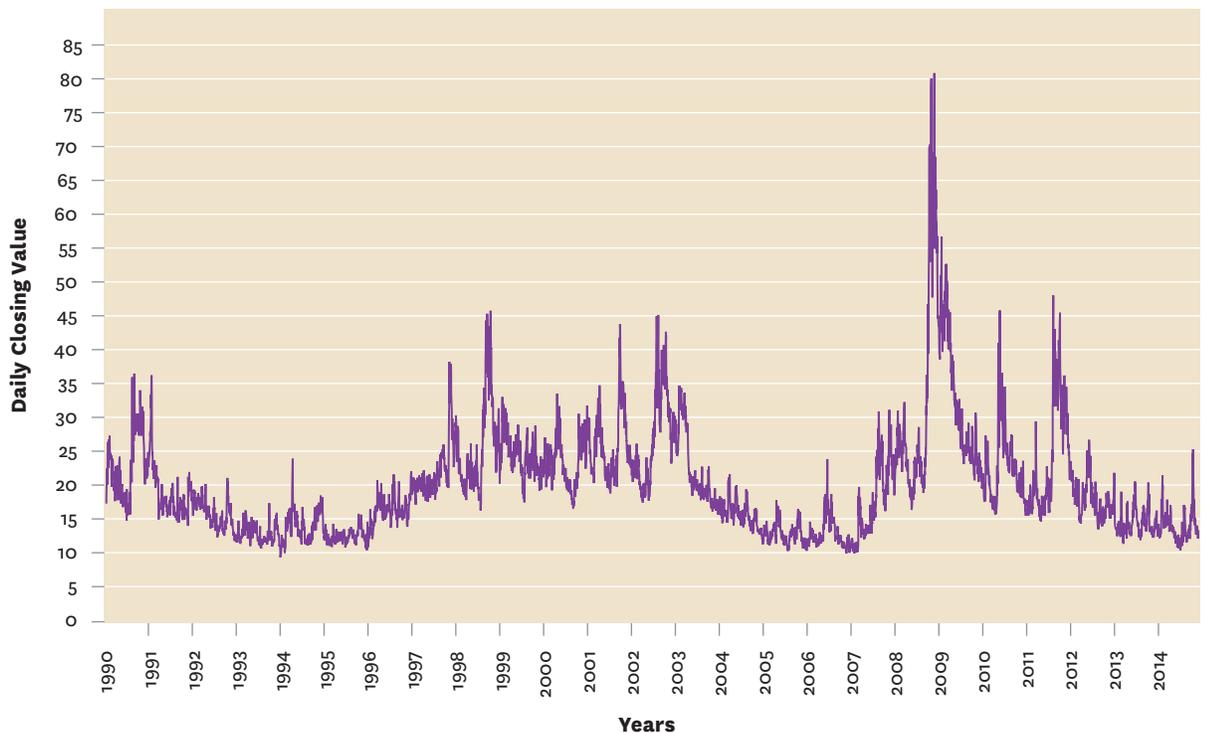
Conclusion

Even after the steep negative returns of 2008, relatively few organizations have put in place any sort of tail-risk protection. On the surface, the tradeoff involved in paying option premiums—and thereby reducing one's long-term total return—in exchange for limiting downside losses does not seem desirable for institutions that purport to have perpetual investment horizons.

But a more rational approach to the issue requires breaking down the proposition as one would when considering any form of insurance. Tail risk protection is not a generic one-size-fits-all solution, but it is a strategy that can significantly improve the alignment between an institution's core objectives and its investment program. And for those of us investment professionals entrusted with the oversight of these institutional assets, that should be our ultimate goal.

FIG. 2

Daily VIX Close



- ◆ Risk governance
- ◆ Risk identification and measurement
- ◆ Risk infrastructure
- ◆ Defined policies and procedures
- ◆ Risk monitoring, mitigation and management
- ◆ Communications (more than just reports)
- ◆ Strategic analysis and integration

To start building this, initially the critical elements are governance, strategy, and resources. Knowing how risk management will fit into the governance structure is a key starting point. Is there strong sponsorship for risk management at the committee or CIO level? What questions is the committee trying to answer, and what are their key risk concerns? Is there a desire to truly integrate risk into the investment and decision process, or is it more of a lip service exercise, or ‘checking the box’? Is the intended outcome just a few reports, or a ‘risk culture’? Risk management is deeply embedded in the governance here—our committee was driving this top-down, and hired a CIO of like mind (Mark Schmid had previously built comprehensive risk programs at Boeing and Chrysler).

But while our commitment to risk management is full immersion, that won’t necessarily be the right answer at other endowments. You need a strong sense, going in, of what you want out of your risk program. You should be open and honest about this, even if the answer is not politically correct.

Related to governance is the element of strategy. What are the investment strategy and philosophy, and how will risk management inform and integrate with them? At the outset you need to develop some idea of this, even if the mechanics aren’t worked out. At The University of Chicago, even before the first risk hire, it was decided that there would be an enterprise view of endowment risk, that we would take a ‘risk view’ of asset allocation, focus our attention on key risk drivers, and integrate risk management fully into investment management. After the fact this all seems fairly obvious to us, but in the initial months much of this seemed both controversial and unreasonably ambitious.

The other foundation element is resources, and that can’t be well addressed until the elements of governance and strategy are worked out. Consistent with the goals and vision of risk management that you develop, you will need to commit the people, dollars, systems, and time to implement that vision. Risk management is hard work, requiring both deep and broad expertise. It is not easily done on a shoestring by having ‘everyone’ do a little bit of it, or by expecting the boss to do it in his or her spare time. The resources can be internal, outsourced, or a mix of both (an internal risk manager using a vendor system is quite common)—but a keen focus and clear responsibilities are needed. Consistent with our deep dive as determined in the governance and strategic version of risk, we have invested heavily with an experienced risk team representing about 10% of our manpower, and have pursued a fully internal approach, built mostly from scratch since the new risk team’s 2010 arrival.

Risk Governance

Governance (the top-level system of structures, rights, duties, etc.) is a very broad topic, and that is true as it relates to risk as well. At an informal level, as discussed above, the key issues surround what the governing body hopes to get out of risk management, and their key questions and expectations. This is dynamic and subtle, and best developed by frequent and open discussion with the board or committee. At a formal level, risk governance is about the expectations and concerns of the board, as formalized in authorities, limits, and other constraints on risk. Best practice would result in a clear statement of risk appetite or tolerance from the board, along with high-level controls consistent with that risk appetite.

What does this mean in concrete terms? You must tease out, by a variety of methods, what are the key risk drivers of your investment performance, and what are the key concerns of your governance body, especially as relates to risks facing the overall enterprise. Then you have to figure out what to do about those concerns and drivers. At The University of Chicago, this meant deep analysis and frequent discussions with the investment committee—on top of our four ‘informal’ strategic guidelines mentioned earlier (enterprise approach, risk view, focus on drivers, and integrated approach) which were developed early on. The first step, identifying our primary risk driver, also led us to how to allocate with a risk view, formalize a risk appetite, develop primary risk controls to effect that, and integrated the risk discussion with the enterprise strategy (TEAM approach).

A variety of statistical analysis showed us that the clearly dominant risk factor in our returns was global equity market returns—this isn’t surprising, and is probably the case for most endowments. The investment committee and staff agreed quite early to use the amount of overall global equity risk exposure as the basis of our risk view of the endowment—the ‘language’ we would use to allocate assets. This board committee then took a detailed look at the endowment’s contribution to the university’s risk (and wealth) profile, and developed a clear risk appetite couched in terms of global equity exposure, in an enterprise risk context. This complex governance process was described in detail in the TEAM article referenced above, and resulted in a stated risk tolerance with a global equity factor beta range between 0.70 and 0.80. This range then became our *primary* governance control, with a central target of a 0.75 beta to the global equity factor. So, we know what our main risk is, and we have determined how it affects the university as a whole, how much of it our governing body is willing to take, how to translate this into numbers, and how to use it to both control and communicate our investment allocation and risk, and how to integrate this into our investment decisions.

While this all was a huge leap forward, the risk governance, risk appetite, and key driver risk control work did not stop there. We continued to analyze and discuss a variety of risk drivers with our investment committee, and discovered a few other dimensions in which to narrow the stated risk appetite, and develop secondary governance controls on our investment authority. The following table outlines the four most important risk drivers from an

enterprise perspective, and the risk controls that became part of our formal risk governance process. (Figure 1)

Although each of these risk drivers could merit its own article, we'll just briefly mention each one here. Our governing body and investment team agree that by far, the most important investment risk to the university's future success is what happens globally in equity markets. How we measure, monitor and manage this will be addressed later; but we calculate this exposure weekly and communicate it to our board committee and university leadership on a weekly basis, and discuss it with them at each meeting, frequently revisiting the risk appetite decision (the target has always been between 0.75-0.77, and the range has been expanded slightly as shown in the table).

The three secondary risk drivers shown rose to the level of a formal governance control not because of a stand-alone endowment risk concern, but more from their interplay with non-investment risks within an enterprise context. Liquidity is not a major concern for the endowment in isolation, but the endowment's need to maintain or even increase substantial cash flows to support university operations in a future crisis, means that liquidity must merit close analysis and monitoring. The investment committee examined this in detail with the staff, and decided to set a long-run target of 35% in private fund structures. In terms of convexity, endowments tend to have strongly accelerating betas in market declines (nonlinear beta exposure), for a variety of reasons that we are not immune from. Whether or not negative convexity makes sense as a risk profile for the endowment alone would be an interesting argument, but that is moot. The university feels tangible pain from a market drawdown in a quite nonlinear way, especially in view of enhanced operating and financial leverage coming out of the last crisis, when a very successful strategic program of 'enhanced eminence' was implemented here. While we cannot linearize the university's inherent utility function, we can at least take steps to linearize the endowment's return profile, and have been mandated by our governing body to do so. Finally, from a university-wide perspective, we are fairly levered relative to the size of the overall balance sheet, so to mitigate enterprise risk, we prohibit leverage at the endowment level, and additionally hold cash to 'fund' implicit derivative leverage, plus a minimum level of Treasuries as a partial offset, as well. The fact that these three additional risk drivers only merited formal controls due to an enterprise-wide risk assessment is a testament to the sincerity of our governance body's commitment to a true enterprise risk framework. Helping the board develop a clear statement

of its risk appetite across the most important dimensions is extremely challenging—but this is among the most important things we will do as investment managers.

One of the many side benefits of all this risk governance effort and controls is the extent to which it reinforces taking a risk view in our investment thinking and allocation decisions—which has been one of the key governance precepts from the outset. When we are considering an investment, say, a hedge fund, we no longer primarily think of it as a hedge fund. Instead, we think of it in terms of its characteristics across those key risk dimensions defined above (and to a lesser extent, other risk dimensions not assigned their own governance controls). Fund A has a 0.32 beta, but exhibits strong negative convexity, has tough lock-up terms and a potential 20% side pocket, and exhibits significant inherent leverage. Certainly we might have considered all these characteristics to some extent before developing a risk framework, but now these are front-and-center in how we think about, describe, and decide on adding this bundle of risks to our existing risk portfolio. The governance process has essentially forced us to think the way our investment committee wants us to think. This makes them much more comfortable not only with the resulting risk profile, but also with giving us the full authority we need to do our jobs as investment managers, as they have resolved a good bit of the inherent 'agency problem.' This further ties into the discussion of risk culture, below.

The following graphic shows, broadly, the extent to which the investment process is integrated with the risk process—one of the key precepts decided on early in the development of our risk process. At the top and middle is a representation of the governance approach we have just finished discussing. Other sections relate to other facets of the risk management framework, to give you a sense of the size and scope of our fairly new but extensive risk management program, as we have designed it. We'll turn now to some of these other aspects of implementing risk management within an endowment. (Figure 2)

Risk Infrastructure

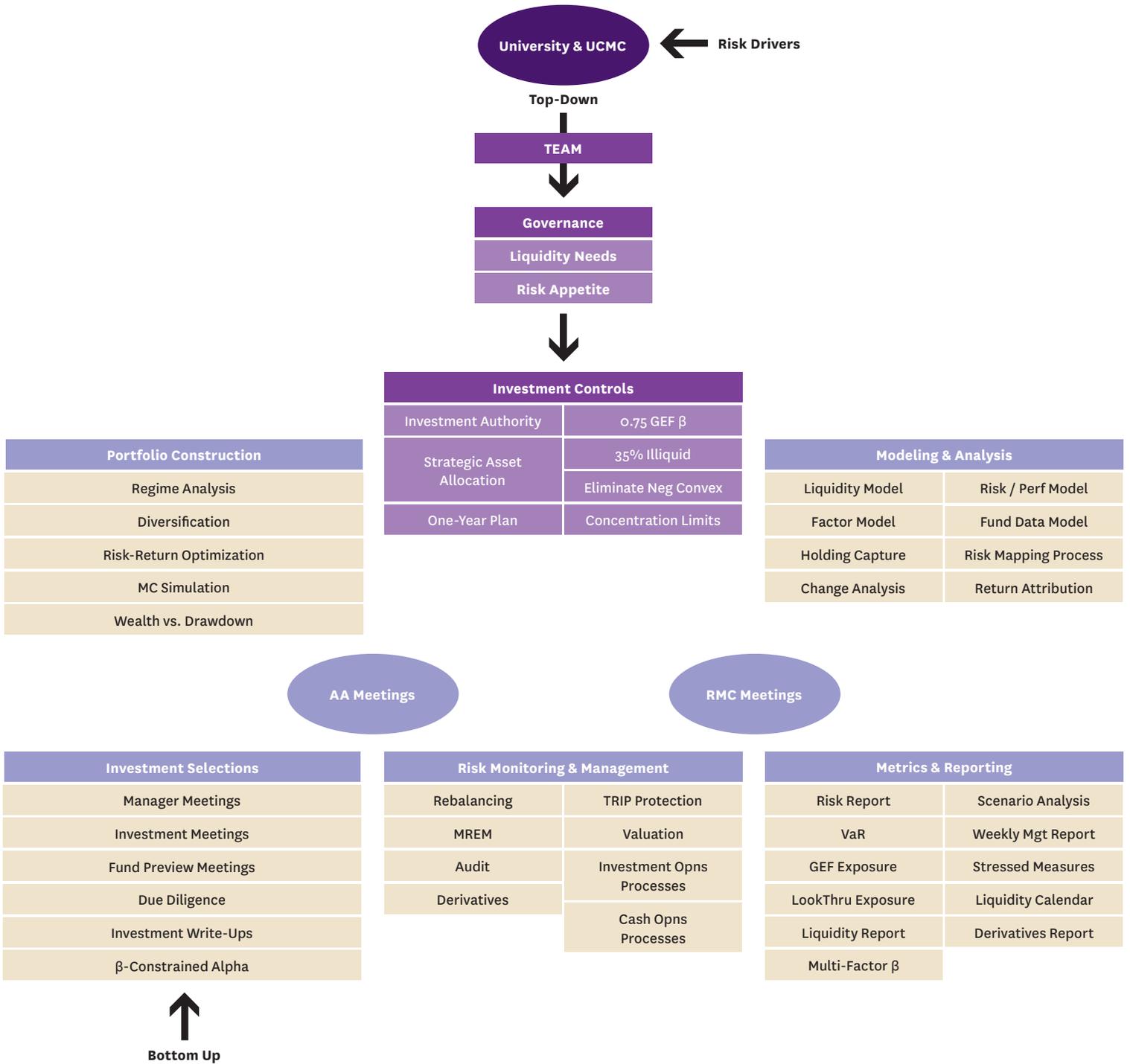
People and systems are needed to implement the risk framework, track risk exposure, perform analysis, and execute the other steps to assess risk and better inform investment management. We put an experienced risk team in place in 2010—two senior risk management executives from Morgan Stanley, Mike Edleson and David Warn; and an experienced derivatives trader, Michael Suh at first, and more recently, Ari Paul. We went

FIG. 1

Risk Governance

Risk Drivers of TRIP Investment Returns	Governance Control
(Primary) Global Equity Risk	β target 0.77 (0.70–0.85 range)
Liquidity Risk (Illiquidity Premium)	Glide path to 35% 'Private Asset' target
Short Optionality Premium/Convexity Risk	Offset with TRIP Protection Allocation
Portfolio Leverage	No Explicit Leverage

How the Investment Office Manages Risk



to work immediately on a database and data model, risk capture, risk mapping procedures, performance and risk model, scenario engine, enhanced reporting capabilities, and all other aspects of the risk framework. The goal was to nearly match the functionality and sophistication of the risk framework of the top hedge funds, but with a much smaller resource commitment.

The risk infrastructure should be robust and expandable, and able to address current and future governance concerns, and answer questions of importance to the investment decision process. Perhaps some of the lessons we have learned are obvious; these would include: knowing what you need and want before you build or buy something; don't underallocate time or resources to data—your data challenges will be bigger than your analytical challenges; all investment risk and portfolio management inputs and processes should be as single-sourced and straight-through as possible; and, while a spreadsheet might be a nice tool to get the ball rolling, never build your risk system on a spreadsheet, as it is too brittle to expand the scale or scope of your solution.

Risk Models & Metrics

There are two key decisions involved in putting together a risk model to describe, monitor, and aggregate the risks of an investment portfolio. First, how will you describe the risks of a portfolio asset—by its historical return profile, or by assigning (mapping) an asset to a like asset, or proxy? Each has merit, but we chose a proxy or mapped representation, rather than using the assets' own returns. Second, how will you assemble these asset risks into portfolio risk measurements? Two popular approaches here are *historical* (replacing each asset by a time series of returns or proxy returns) or *parametric* (describing each asset by summary statistics identifying its relationship to other assets, such as covariances). We use a historical approach, not only due to its increased flexibility, but also to better capture fat tails in returns, and other complex relationships (e.g., shifting correlations) that aren't addressed in a parametric approach.

The mapping of proxy returns for risk representation is probably the hardest piece of the puzzle. Every investment we make needs to be represented by some public proxies that have a time series of daily returns. This might mean representing a public equity fund by a weighted group of country-sector-cap indexes, or even the stocks themselves, if we have that information; or a hedge fund by a weighted list of hedge fund strategy indexes, or more granular indexes to match a fund composition report. A private equity fund might be represented by indexes or comparable stocks that are traded publicly. The idea here is to pick up the current risks in our holdings as they relate to current market moves, and not rely on stale valuation data that might not be updated for a quarter or longer. We have formal portfolio capture and risk capture processes to support this, updating holdings' information on a regular basis. The risk team works closely with each asset class every quarter on the risk mappings for all its holdings, and summarizes and gets approval for those updates at both the director level and the full endowment level. This involves almost 4,000 holdings, mapped into the return

vectors of over 1,000 proxy assets. Then the risk representation of the entire portfolio is easily aggregated as the dollar-weighted sum of all of those mapped proxy daily returns. While this is an intensive process, much of it can be outsourced (for a price). But we find that the deep dive into the portfolio's risk composition on a regular basis pays substantial dividends in terms of understanding and monitoring our portfolio.

Thus, a single time series emerges for endowment, which represents the hypothetical returns of the portfolio, if it had been structured through time as it is today. We use 10 years of data for each proxy asset, so we end up with a 10-year hypothetical daily time series as the endowment portfolio's risk profile. Using that roughly 2550-days of history, it is easy to compute just about any risk statistic(s) you might imagine. Regressions vs. general market or other factor indexes will give you a panoply of beta measures; VaR is calculated simply by ordering the returns vector; scenarios can be evaluated by selecting the appropriate subset of returns; by block-bootstrapping the return vectors, Monte Carlo analysis can be applied to the portfolio, asset, holding, or any other level; shorter periods can be broken out to investigate the risk sensitivity to changing regimes. This—historical hypothetical returns, based on mapped representations—is an extremely flexible approach, because the math can hardly be made any simpler.

Another benefit of this approach is real-time performance tracking or prediction. With a performance model built atop the data model and proxy risk mapping described above, we use proxy returns to give us current daily predictions of where our portfolio returns are. When actual returns are reported (later), the performance model provides a basis to identify and investigate 'return surprises,' and a useful means of deeper return attribution.

The risk analytics that we model are focused on supporting two important goals: aligning the portfolio with our governance guidance and supporting the investment decision process by better understanding the risk-return characteristics of our investments. We see the global equity factor beta (GEF β) on a regular basis, to ensure our primary risk exposure is in line with our investment committee's stated risk appetite. But we can look at our risks in a variety of other helpful ways as well—some sample measures will be shown in the *Reporting* section below. We can look at metrics to track our liquidity position in a number of ways as well.

Liquidity modeling is another major initiative for the purpose of taking a 'risk view' of our investments. We built an extensive data model to describe, quantitatively, all of the liquidity characteristics of both the normal fund investments (like hedge funds) and the private investments (like venture funds). While the data model alone was a massive undertaking, we built and integrated two liquidity models (one focusing on private funds, one on public) on top of this, and also integrated these completely with our risk and performance models above. The ability to do liquidity planning and 'what-ifs' for next quarter and more than a decade out into the future provides considerable transparency and comfort at a governance level, and has led to better decision making in terms of capturing illiquidity premia.

Risk Monitoring & Management

While risk monitoring and management may be fairly obvious, it is also probably the most difficult facet of the risk framework. Actively monitoring and managing risk exposures requires us to pull together all the other aspects of the risk framework, effectively integrating everything mandated by our risk governance. Much of this involves ensuring that our risk exposures are in line with our governance controls, planning so that this will still be the case in the future, and taking action where needed to realign risks with appetite.

For our GEF β target, this means reviewing the risk model to see if we are still close to target, then estimating future changes to our β by integrating information from the performance and liquidity models, and deciding whether to use derivatives or rebalancing investments to move toward target. For liquidity, the short-term action is about mitigating risk with investment/redemption decisions, attempting to be proactive and not reactive. Longer-term liquidity risk management is tougher—trying to find the balance over the next quarter or year between capturing risky illiquidity premia, and staying on course towards our governance target. For convexity risk, we manage a strategic program with a small protection (positively-convex) allocation, and closely monitor whether this is helping to linearize our return profile to mitigate wrong-way risk, as mandated.

But keeping close tabs on our risks and ensuring they're always in line with our risk appetite and governance controls is not nearly enough; it's just the starting point. Qualitative risk management concerns are extremely important, and require focus and resources as well. Integrating the risk process and seamlessly weaving

it into the investment decision process is where much of the risk management and monitoring effort goes. Thus, a good bit of our risk framework is 'operational'—and is extremely important both in allocating and mitigating our risk.

While operational risk management can be easily overlooked in a risk overview, it holds an important role in our investment and monitoring processes. We've created tools to help our asset classes navigate our process and hired third parties to help supplement our internal process. For our office, operational risk management starts on an individual investment once an asset class makes the determination to potentially pursue an investment opportunity. At the onset, our operations group is included in the discussion and diligence process. During the investment due diligence process, third parties are engaged to assist us in confirming the integrity of a management team. Our operations group, lead by an experienced investment operations manager, Loryn Mischke, reporting to COO Pat O'Hara, stays engaged as part of the process and through updates to our tracking systems. We also have an outside consultant for deep-dive due diligence on many of our funds, and legal document review; both of these mitigate a variety of investment risks, and are a costly but value-added part of our process. The Operations team is responsible for the execution and data capture as an investment is completed and added to our portfolio.

For our investment holdings, our operational risk management includes cash flow management, monitoring, value and holdings' capture, and auditing. The cash flow management and monitoring occur on a daily basis, with the auditing of our investments effectively occurring quarterly with the production of our Investment

FIG. 3

Topic List from FY2011 Risk Management Committee Meetings

Endowment Risk status update—Risk Report review	Derivative Risk & performance reporting; update on Derivs' performance
Proposal for creating DB / Data Warehouse	Review of annual audit
Derivatives—Proposal, Use & Controls	Proposed changes to GEF β regression methodology (extend data time frame, move to longer periodicity, away from weekly blocks, and use of our new MegaRegressor)
Debrief of Operations Offsite	Detailed brief/discussion on case for TRIP Protection
FY2011 Manager Survey	Risk Framework for operational risk
Risk Drivers of Return, Principal Components, and GEF β intro	Review of total rebuild of Management Report automated process & tools
Development of Risk Framework	Business Continuity Planning (BCP)
Discussion of Manager Risk Evaluation & Monitoring, creation of investment action policy around MREM	Proposal to collar significant profitable single name position/concentration
Introduction to Tail Hedging	Review of new Operations Manual draft
GEF β analysis—Empirical vs. Mapped Betas	Proposal for Board for TRIP Protection (including volatility in strategic asset allocation), and approval for selection & implementation plan.
Risk-based Performance Attribution	Review of large manager's operational due diligence conference
Updated Factor Risk mappings for Real Assets	Manager Risk Evaluation & Monitoring, each asset class on a quarterly cycle
Changing risk mappings to incorporate fund-level leverage	
Moving to a Beta risk-based allocation governance control	
Time-matched risk & return, serial correlation and impact on volatility—comparing 'reported' performance risk to real economic risk	

Committee report book. Our final valuation and audit check occurs before completing the University financial statements. Annually our operations group keeps in contact with every manager by sending each of them a questionnaire. The questionnaire informs us of any changes (be they operational, legal, or otherwise) the manager might have made throughout the year. Changes that require attention are then followed up by our operations group and any changes are made to our processes and databases. The operations group also works closely with the risk group to ensure the integrity of the investment data, resolves issues caught by a host of error-capture routines in our performance and risk models, and maintains and improves a data warehouse to support a variety of investment and risk analyses.

In “A Framework for Manager Selection,” by Matt Stone, Prakhar Bansal and Kate Carder in the November 2012 *NMS Exchange*, our public-side team described our investment process, which culminates in a final approval meeting and a formal investment recommendation of 40-50 pages, which includes an extensive section on risk management. As part of the monitoring of ongoing investments, we track and rate all of our managers as ‘red-yellow-green’ on over 20 investment risk dimensions, which emanate from our investment philosophy and risk governance. This ‘manager risk evaluation & monitoring’ cycles through each fund twice yearly at our monthly Risk Management Committee meeting, and we spend time to discuss any funds in depth that are rated red, or had a rating change. This helps to formalize active engagement with and monitoring of our fund managers, and has noticeably reduced surprises.

The RMC, or Risk Management Committee is the lynchpin of our risk framework, a key extension of our risk governance, and a forum for management discussion of important risk issues. The RMC includes our CIO and all Managing Directors, and is co-chaired by the Chief Risk Officer and Chief Operating Officer. Each 90-minute meeting begins with a review of current risk reports and manager risk evaluation & monitoring for 1-2 asset classes. Alternate months focus on liquidity risk and planning. The other topics covered are quite varied; while the list from the 53 RMC meetings is too long to present, here is a sample of the topics from the first year’s agenda. (*Figure 3*)

Risk Reporting & Communications

The communication of critical risk issues must happen across the investment organization, so that risks are reviewed and discussed as a standard part of every investment decision process. This starts with reporting, but it cannot end there. We have a modular, automated suite of reports that is completely integrated with our official operations data (single-sourced data is absolutely critical for analytic solutions, but very difficult to engineer). So, as long as data inputs are current, we can run any and all reports with almost no lag. An entire set of reports is ready every Tuesday (and each month-end), with the capability to generate answers to other ad hoc risk questions or custom reports same day. With so much analytical output, we find it important to use dashboards or 1-page

reports to focus attention on the most cogent investment risk metrics.

Our primary dashboard, the weekly Management Report, is organized by theme. The top is performance focused, using our proxy model to provide a market-based estimate of what our asset class and portfolio returns will eventually be reported to be. The middle is liquidity focused, categorizing all of our cash flows and using our liquidity model to track current and future unfunded status, projected cash flows several years out, and estimating future progression of various liquidity metrics and coverage ratios, with a particular focus on our governance target for illiquid investments. The bottom is risk focused, providing a variety of volatility and beta measures, especially highlighting our positioning relative to our primary risk governance target, our GEF β . We also look at our risk exposure to a variety of risk factors (besides equity, we examine credit, real estate, commodities, interest rates and inflation), regressing our portfolio on the factors singly and in combination, and also providing a less-statistical ‘look-through’ measure of where our exposures really are, as opposed to an asset-class bucketing. This report goes out to our governing body and to the university’s key leadership each Tuesday.

Other risk reports go much deeper, and are generally distributed monthly, even though they are available each week. We try to keep our reports theme-based, grouping related tables and graphics by the questions they are answering. These get reviewed at governance forums like the Investment Committee and Risk Management Committee meetings. Some of our most useful ‘reports’ are actually diagnostic tools, such as our ‘difference report’ which does a multi-dimensional analysis of how money was made and lost over the past week/month. Not only does this report allow us to catch nearly all data or model errors that might sneak through, but it also keeps all our asset class heads attuned to that week’s developments, highlighting unexpected results. It tightens up the process of keeping in touch with our investments and relating assets’ risk to return, on a regular basis. We get to frequently correlate our preconceived notions of what we *think* should be driving our investment returns, with what we actually observe to be driving them—and we discuss what we learn from the differences.

Risk Culture

When risk management is truly integrated at all levels of decision-making in the investment process, and ‘risk’ becomes as common in the daily parlance as ‘return,’ it could be said that you have achieved a *risk culture*. Our experience is that a risk culture makes investment managers’ lives a bit harder, but makes the investment process and results *much* better. Threading risk issues as a matter-of-course into discussion and decisions produces better awareness and results than checking a few risk boxes as a separate afterthought, and in turn should be much better than ignoring risk issues altogether. Strangely, though, a risk culture is not the natural state of humans and organizations; we’ll leave it for the behaviouralists to figure out why that is so.

And it’s not just about reducing mistakes and surprises. Armed with a risk tolerance, risk budget, and a risk frame-

work, the investment process can hardly help assessing trade-offs between risk and return. Once risk is part of the calculus of every investment decision, these decisions become much more rigorous, and naturally focused on squeezing as much return out of each ‘unit’ of risk as possible. Ironically, by focusing more on (limiting) beta, the end result becomes an intense focus on alpha. We actually think and talk in this manner about our investments now. Previously, many investments with slightly lower return targets but considerably lower risks were bypassed as a matter of course. But investing with a governance target/range around our risk has been strangely liberating—the board knows the portfolio will be in their comfort zone and trusts the staff more; and, it has as a practical matter opened up new, less-crowded investment opportunities to us. The discipline and trade-offs inherent in tacking to our risk tolerance have now pushed us into investments with higher ex ante return-per-unit-risk profiles. From our university’s standpoint, this is increased value from better decision making. This is a fairly obvious (in retrospect) but highly underrated benefit of operating with a risk culture.

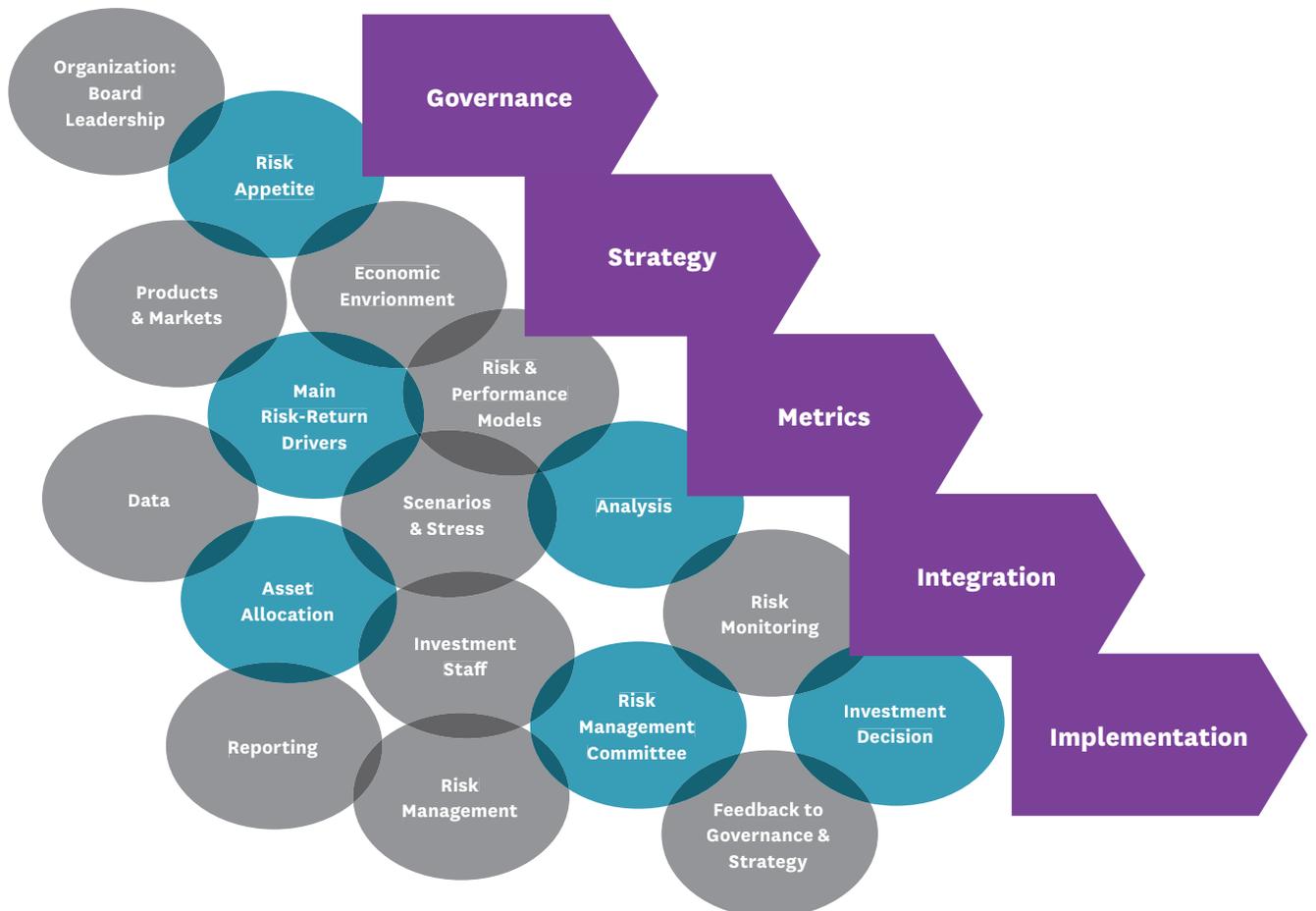
There is a subtle additional advantage, beyond the implicit selection of the highest risk-per-return investments. Suppose you selected a basket of investments that exceeded your risk tolerance. There are

two ways to trim that to budget—you can do less, cutting back your marginal investments, or you can hedge using market instruments. This choice, always available to you, has you evaluating your active investment directly against the passive market hedge, which is essentially the risk-return benchmark. Effectively, this is properly transfer-pricing the cost of risk, even though there are no complex calculations to do so. You can get to your risk budget actively, or passively—which is better? Said differently, you are in essence evaluating your marginal investment against the market to see if your active investment choices are adding value, or destroying it. This is what we are supposed to be doing as managers; but only with a risk framework guiding our hand is this rigor made innate to the decision process. This approach will have you capturing as much active ‘alpha’ as you can harness. In this sense, risk management is very much an *offensive* weapon in your investment arsenal.

A team with a good risk culture, where risk is integrated into every key strategy and decision, should produce a high alpha portfolio with less negative convexity, compared to a traditional team with little risk focus. As long as the parent organization is perceptive and honest about its risk tolerance, this should in turn produce higher value for the assets’ owner as well.

FIG. 4

Key Steps to Get to Enterprise Risk-Based Investing



Risk culture is not simply about “If you build it, they will come.” Participation and discussion is key to achieve these benefits, as is transparency about the process. While there are dedicated positions focused on risk, the risk culture results from integration, and not from an attitude of “You do your risk thing, and leave us to do our investment thing.” The risk team is involved as a key participant in all meetings with our fund managers, and in every step of the investment decision process. The investment and operation teams are not only part of the Risk Management Committee, but are also heavily involved in many practical facets of implementing the risk framework. Among our Managing Directors are investment professionals with differing philosophies, but the common language of risk focuses us in a unified fashion on the goal of adding as much value to the university as possible.

Building Risk Management

We know this isn’t for everyone. It is, admittedly, simpler to keep endowment goals separate from the university, and/or to focus on return without engaging too much on risk issues—and some will go that route. For those that would aspire to capture the benefits of a risk program, though, here are a few parting words on that prospective journey.

It seems daunting, almost scary to imagine building all this from scratch. It’s sort of like walking, though. You get an idea of where you’re going, and maybe why, and then it is just one-foot-in-front-of-the-other. It’s a journey, not a destination. OK, it’s a destination too, but you don’t have to get there in one day or even one year. And some of the benefits start right away—you don’t have to have a 100%-implemented risk framework to move toward an effective risk culture.

What we have found is that there are 5 major areas or steps that need significant attention in order to build a risk program. We’ve discussed most of them above, especially the most important and initial step, governance. For us,

each step took about 9-12 months to complete, and you can’t skip a step. But fortunately, you can work on several steps at once; in fact it’s even better to do it that way. From a standing start, it took us a bit less than 2 years to develop our first cut at a complete, fully-implemented risk framework. You can try to speed this up by outsourcing some aspects, but there are still challenges to integrate, say, your data into an external risk system. This will become a part of your investment DNA, so you wouldn’t want to outsource the whole thing even if you could. But system vendors, data providers, consultants, custodians, and others, are all happy to help out with your risk program. (*Figure 4*)

Unlike building a house, when you are done building a risk program, you really aren’t done at all. Each of the 5 steps never actually ends, as the investment process it supports never ends. It gets easier once it is all built out, but risk is an area that is ripe for continual improvement, as it is so central to your key mission of continually adding value.

Summary

What have we learned in last five years of embedding risk management deeply within our investment process? It’s not easy, but it’s worth it. It supplements the rigor and discipline in your process with a keener sense of trade-offs and focus on ‘true’ alpha. A risk framework is not a one-size-fits-all solution; your approach must fit with your institution’s risk drivers and support its needs. As a result you are not going to always run with the pack, so your leadership must be comfortable with that. A sincere commitment by your governance body is imperative for success—it is difficult and ineffective to go halfway down this road while looking over your shoulder. Done well, a risk culture develops over time, with improved awareness, deeper discussion, better decisions, and a more effective investment process.

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“Governance should include the following: Evaluating the supervisory capabilities of the fund’s internal management; ... Clarifying long-term objectives and short-term risk tolerance; ... Determining the consistency with which actions fulfill agreed policies; Asking searching questions about the process followed by the fund’s operating management and its investment committee.” (Ellis 2012)

“Governance is about PROCESS: Clear roles & responsibilities, Efficient decision making, Effective policies & procedures.” (Turner 2011)

- 2. Use clear verbs to define roles.** Don Ezra of Russell Investments articulates a widely held concern; that where staff “recommends” and an IC “approves” managers, it’s unclear where accountability and ownership ultimately lie. He advises instead to use the verbs “decide” and “oversee,” which have clearer meanings and therefore clarify which party (staff or IC), as decider, has accountability for results. (Ezra 2010)
- 3. Decide on a brief description of the IC’s role and/or name.** For example, “[T]he duty of the IC is to protect the staff, allowing them to exercise their creative freedom.” (Griswold 2014) Several institutions have renamed their ICs the “Investment Policy Committee,” to more clearly describe the intended role.
- 4. Ask the IC.** “For an IC to decide how it can best help the institution, members might complete a survey with questions such as:
 - ◆ What decisions do you think the IC can make effectively?
 - ◆ What are the really good decisions that one can make in ~20 hrs/year?
 - ◆ Would you invest with a manager whose decision-making process flows through a group of part-time volunteers?” — Interviewee
 - ◆ “What distinguishes effective ICs from... ineffective ICs?” (Cambridge Associates 2008)

Agenda: What are the key items that an IC should (and should not) address?

Consensus: “When setting agenda, weight items by importance to future returns” advises Arnold Wood (Wood 2010). “Deciding the wrong issues is the biggest weakness of most ICs,” says Myra Drucker (Griswold 2014). The large majority view is that ICs should not approve specific investment managers, as practiced by roughly two-thirds of large endowments and foundations (Cambridge Associates 2014). Don Ezra of Russell Investments describes ICs not hiring managers as the “commonly accepted” model across institutions generally (Ezra 2010).

Suggestions to execute: Most sources advise focusing mostly or entirely on items 1-3 below. Item 4, the *process* of manager selection (but not the selection decisions them-

selves), is advised by some sources but with caution. The remaining items are ideas that struck me as interesting, but are not consensus positions.

- 1. Define a set of investment beliefs.** Howard Marks provides his suggested starting point when asked to advise on governance (abridged for brevity): “[F]ormulate an explicit investing creed. What do you believe in? What principles will underpin your process? The investing team and the people who review their performance have to be in agreement on questions like these:
 - ◆ Is the efficient market hypothesis relevant? Do efficient markets exist? Is it possible to ‘beat the market’?
 - ◆ Will you emphasize risk control or return maximization as the primary route to success?
 - ◆ Will you put your faith in macro forecasts?
 - ◆ How do you think about risk? Is it volatility or the probability of permanent loss? Can it be predicted and quantified a *priori*? What’s the best way to manage it?
 - ◆ How reliably do you believe a disciplined process will produce the desired results?
 - ◆ How will you define success, and what risks will you take to achieve it? In short, in trying to be right, are you willing to bear the inescapable risk of being wrong?” (Marks 2014)

2. Approve an Investment Policy Statement and oversee its execution. The IC is the body responsible for defining an institution’s target return and desired risk parameters. Several strong papers have been written on IPS best practices, so I won’t summarize them here.

3. Hire, oversee and support the CIO. “Keep the CIO or fire him, but don’t do his job for him. In other words, trustees wield a powerful but blunt instrument.” — Interviewee

“A great board does not... see its power as consisting mainly of checks and balances on the CEO’s agenda. Great boards support smart entrepreneurial risk taking with prudent oversight, wise counsel, and encouragement.” (Sonnenfeld, Kusin and Walton 2013)

“As trustees we are there, it seems to me, to support, encourage, challenge, stimulate, and help that professional whom we pick to lead our endeavor. If every board could see its role as that, I am convinced we would have far more dynamic institutions, far stronger professional executives, far more attractive independent sector careers, far better relationships between board and management...” (Dayton 2001)

“Competent boards... are prepared to hire a competent Chief Investment Officer and delegate management and operational authority.” (Ambachtsheer and Ezra, Pension Fund Excellence 1998)

“Contrary to conventional wisdom, the foremost reason that CIOs depart foundations and endowments is not monetary, but a lack of authority necessary to successfully fulfill their responsibilities. In other words, the CIO’s work is thwarted by the failure of the IC to delegate sufficient authority. Failure to provide sufficient human and other resources to the investment office is another impetus for CIO departure.” (Yoder 2011)

4. Most sources agree that overseeing, at a broad level, the process of investment manager selection falls squarely into the IC’s purview.

However, this view is not universal; some sources caution against the IC brushing up too close to the manager selection process. David Salem shares a cautionary note that “Manager selection and monitoring tends to be a preoccupying task for most ICs. As such, it tends to crowd out truly informed discussion of evolving opportunities and perils arising from broad market (i.e., asset class) movements.” (Salem 2001)

5. Plan ahead for challenging market conditions.

“An IC could run a ‘war game’ to prepare itself for a downturn,” suggested one interviewee. If an institution does not know whether it would have the ability and willingness to stay the course through a market crisis, this might be a fruitful topic for attention. Implementing a “pre-commitment” policy (Slifka 2013) may help an IC to make better decisions under stress.

6. Discuss what it means in practice to have a long-term orientation.

“Many asset owners will tell you they have a long-term perspective. Yet rarely does this philosophy permeate all the way down to individual investment decisions. To change that, the asset owner’s board and CEO should start by defining exactly what they mean by long-term investing and what practical consequences they intend. The definition needs to include a multiyear time horizon for value creation. For example, Berkshire Hathaway uses the rolling five-year performance of the S&P 500. ... Just as important as the time horizon is the appetite for risk. How much downside potential can the asset owner tolerate over the entire time horizon? And how much variation from the benchmark is acceptable over shorter periods?” (Barton and Wiseman 2014)

7. Analyze how agendas are set and how deliberations unfold.

“By design, board meetings are typically more efficient than effective; typically, they are not *designed* to elicit critical thinking on the part of board members. [...] It seems easier, and is far more customary, to present data and information to board members at board meetings in the form of reports and PowerPoint presentations than it is to engage them in a meaningful dialogue about what the data

means or to attempt to clarify and reconcile issues of mission and values.” (Trower 2012)

Based on a survey of more than 770 directors from public and private companies across industries around the world and from nonprofit organizations, “boards with a moderate impact incorporate trends and respond to changing conditions. More involved boards analyze what drives value, debate alternative strategies, and evaluate the allocation of resources. At the highest level, boards look inward and aspire to more ‘meta’ practices—deliberating about their own processes, for example—to remove biases from decisions.” (Bhagat and Kehoe 2014)

Counterpoint: Why *should* ICs approve managers?

The minority opinion was encapsulated by an interviewee who said, “There are two schools of thought; my thinking is less popular. More popular is that ICs shouldn’t approve individual managers so they can focus on policy. But I liked the IC approving manager recommendations because then they can buy into the portfolio. ... Especially when doing things that are contrarian, you know the IC backed you up on it, that they won’t turn around and question you later. That helped us take more risk.” There was a consensus view, from this interviewee and other sources, that where ICs do approve managers they should rarely if ever overrule the CIO (see e.g., Kochard and Rittereiser [2008]).

Who: Selecting the best IC members

Consensus View: This is an area where there’s not a clear consensus. Most sources believe investment professionals make the best IC members, but several argue that an investment background is not necessary. Both views are reflected below.

Desirable Professional Backgrounds of IC Members:

A majority of sources cite the importance of including investment professionals on an IC; the arguments for this are numerous and obvious. However, several sources advanced a variety of more nuanced and even differing opinions.

View 1 (Majority): IC Members Should be Investment Professionals

“Skills and habits accumulated in the successful pursuit of excellence in one craft can be not merely useless but positively harmful in other pursuits, including the discharge of duties borne by most investment committees” (Salem 2012)

“Private equity professionals serve on lots of boards, which often makes them good board members.”
— Interviewee

Several sources suggested that current or former CIOs or Deputy CIOs of comparable institutions often make strong IC members. Such individuals have experience working with ICs and also understand the daily challeng-

es faced by an investment operation. One sees precedent for this suggestion in the business world, where board members are often CEOs of other companies.

View 2: IC Members Need Not be Investment Professionals

“In investing, experience is not only the best teacher; it’s the only good teacher. ICs need... members ready and able to make judgments based on the kind of wisdom that can only come from experience in investing, so a majority of the members of each IC should have substantial experience as investors. A minority of IC members may be chosen for other reasons...” (Ellis 2013)

“IC members should be selected primarily for good judgment. While no particular background qualifies an individual to serve on the committee, broad understanding of financial markets proves useful in overseeing the investment process. Aggregating a collection of investment specialists occasionally poses dangers, particularly when committee members attempt to manage the portfolio, not the process. Successful executives bring a valuable perspective to the table provided they suspend their natural inclination to reward success and punish failure. The sometimes deep rooted corporate instinct to pursue winners and avoid losers pushes portfolios towards fundamentally risky momentum-driven strategies and away from potentially profitable contrarian opportunities. The most effective IC members understand the responsibility to oversee the investment process and to provide support for the investment staff, while avoiding actual management of the portfolio.” (Swensen 2009)

“[I]t is not necessary to populate the committee solely with investment professionals; indeed, doing so may lead to deleterious group-think.” (Cambridge Associates 2008)

Desirable Personal Characteristics of IC Members:

“The secret message in selecting IC members is twofold—plays well with others and really understands what investing is all about. They should’ve read and understood David Swensen’s book.” — Charley Ellis (Griswold 2014)

“Regardless of their backgrounds, however, the best investment committee members are... good at identifying the right questions to ask, and accustomed to making decisions. [...] The investment world is different from most other worlds: in other professions, doing more of what has worked is usually the route to success—in other words, past performance is generally predictive of future success because the information necessary to make successful decisions is readily available to those trained in that profession. In certain key respects, however, this is simply not the case in the invest-

ment world—certainly not over a time horizon of a few years...” (Cambridge Associates 2008)

“Two character traits that should be sought after in all prospective IC members are a sense of humility and patience.” (Yoder 2011)

Note on Committee Structure: Cambridge Associates (2014) found that roughly half of ICs included at least one non-voting or advisory member. This practice was anecdotally judged even more common, and very helpful, by several interviewees. Numerous sources stated that advisory members can be a way of adding otherwise inaccessible talent to an IC. Also, advisory members can provide a “farm team” for future additions to the IC or board.

Investment Committee Chair: What should he/she do?

Consensus View: Sources identify the IC chair (and the chair/CIO relationship) as critical to success, but concretely defining the ideal role for the chair and how to build the CIO relationship is less broadly discussed. Many sources lay out important but obvious roles for the chair such as collaborating to shape meeting agendas and keeping discussions on track; I include below some non-obvious (and hence arguable), but interesting and concrete formulations of the chairperson’s role. (Recall that I draw from general governance literature, which refers to a CEO; I find these sentiments equally applicable to CIOs.)

Suggestions to execute: The most compelling one-sentence description of a chair’s role was provided by an interviewee who stated, “The chair should be a consensus builder on behalf of a shared vision between himself and the CEO/CIO.” This view is echoed by a corporate chairperson interviewed by Walton (2011), who said, “I don’t see how you could have a Chair and CEO who had two different and separate ideas for the company. That company would be strategically rudderless. This alignment is very important—if the Chair and the CEO don’t agree on some big strategic issues and choices, you’ll waste a lot of time.” (Walton 2011)

Several CIOs and other sources indicated that IC and other internal relationships can absorb half of a CIO’s time. An IC chair can help the CIO spend more time on investing, by being a conduit for information, questions and concerns between the CIO and IC members. This may include, for example, pre-discussing agenda items and gathering feedback. While several CIOs noted the importance of direct relationships with IC members, they were also keenly aware of the need to balance this with the time required to maintain those relationships.

Some other thoughts on the role of the chair, and the ideal CIO/chair relationship, included:

“The chair must have an exceeding need to be silent and to facilitate the success of others. A servant leader is the perfect IC chair. A good chair will spend quality one-on-one time with each member.” — Charley Ellis (Griswold 2014)

“A chair’s effectiveness can be defined by three characteristics: focus, diplomacy, and communication. An effective chair focuses on probabilistic consequences (i.e., what is deemed more or less important).” (Wood 2006)

“I believe the IC chair should be a silent but strong presence... herding all the stray cats into a good consensus decision.” — Myra Drucker (Griswold 2014)

“The Board Chair is the ‘voice’ of the Board of Directors to the Chief Executive Officer. ... [He or she] helps the CEO effectively respond to Board concerns by informally canvassing Board members prior to formal meetings [and] is the chief advocate for continuous quality improvement at the Board of Director level.” (Board Options n.d.)

“I submit that the most crucial relationship in the entire enterprise is that between the CEO and the chair. In my view it will be a far better relationship if both clearly recognize that the CEO, not the chair, is indeed the CEO. Then the chair becomes the CEO’s partner in making a great board, in enhancing its ability to carry out all of its responsibilities, and in encouraging it to support the CEO in every reasonable way.” (Dayton 2001)

In a survey performed on behalf of the Yale School of Management’s Millstein Center for Corporate Governance and Performance, Elise Walton found that CEOs most valued two qualities in a chair: being a good listener and credibility. “Listening skill... included the ability to get at the speaker’s underlying thoughts, concerns, and meaning. Thus, the tag ‘good listener’ often reflected broader qualities like good thinker, good question-asker, and good investigator. ... Chairs that can listen to, synthesize, and prioritize issues on the mind of the directors can facilitate board decision making, flag issues and generally make the CEO’s job easier.” Credibility referred to prior CEO experience and/or “a track record of having dealt with challenging situations well.” Walton also notes that most chairs and CEOs communicate approximately weekly, and that “the communication should be ‘open.’ The term open was used to express qualities of communication like direct, unrestrained, informal—the sense that either party can and will say what is on their mind.” (Walton 2011)

Size: How big is the ideal IC?

Consensus View: With great consistency, sources place the ideal investment committee size at five to eight members; none suggest more than eight as ideal. Common practice is slightly larger, between eight and ten, according to a Cambridge Associates (2014).

How to Execute: It’s difficult to offer guidance as this will be unique to any given institution. For example, the size might be inflated due to the presence of constituencies such as union representatives or large donors. One approach would be to ask if there is any group of five people in whom

the institution would place its trust. As David Salem says, “Governing boards unwilling to cede responsibility for investment policy formulation to ICs comprising five or fewer persons should redouble their efforts to recruit the individuals in whom they would indeed be willing to repose such trust.” — David Salem (Salem 2001)

Service Terms: How long is too long?

Consensus View: Two or three terms of three or four years each (i.e. 6-12 years), with members who are not productive or helpful eased out at term-ends. Because the composition of the IC is crucial, terms are a valuable tool to make every seat count. “Tenure on best-practices committees should average six to eight years; for all sorts of working groups, this proves to be optimal.” — (Ellis 2013)

How to execute: As with IC size, this will be idiosyncratic by institution.

Conclusion

Discussing governance can be difficult, but as one interviewee says, “it’s necessary because there is no ‘governance fairy’ who will come and improve these issues.” Such discussions are important because ICs can be a source of great strength to an institution. As Charley Ellis writes, “The best committees help bring stabilizing, rational consistency to the emotionally draining work of managing long-term investments in volatile markets and staying with chosen policies through periods of turbulence” (Ellis 2012) This can help avoid “the chief hazard for truly long-term investors [which] is bailing out of inherently sound policies and practices at highly inopportune times,” in David Salem’s description (Salem 2012).

With so much at stake, why do so many institutions not yet execute on governance best practices? This question is not yet robustly answered. I ask that you please reach out to me to share your own thoughts and stories to help me develop these ideas further.

“Impacting governance is the biggest legacy that a board member or CIO can have,” said one interviewee. I hope that this overview enhances your ability to create that legacy.

I am very grateful to the many people who have discussed this topic with me, and also to the authors of the many excellent works on this topic, who have taken the time to share their wisdom with the community.

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greater liquidity needs than endowments. Therefore they must retain greater levels of cash and liquid fixed income securities in their portfolio, or hold fewer illiquid investments, which reduces expected returns over a market cycle.

Borrowing was a strategic tool utilized by many of the larger endowments during the financial crisis, which allowed them to fund the endowment draw without selling depreciated assets. Most foundations did not have this option.

Many private foundations do not receive new gifts

Colleges and universities receive gifts from their alumni and other donors. Private foundations do not have constituents, including alumni, to make new gifts.

Consequence: Foundations must fund the full endowment draw from the portfolio without the benefits of gifts. Many academic institutions receive gifts of 2% to 3% of annual spending, an amount that represents a significant portion of an endowment's annual spending requirement. For all the reasons listed above, foundations have greater liquidity needs than their endowment colleagues and therefore must have more liquid, and fewer illiquid, investments, including more cash and other fixed income investments. These provide liquidity and diversification benefits, but have a low expected return that reduces the probability of an institution meeting its financial objectives of a 5% real rate of return.

Liquidity is not the only headwind faced by foundations in their effort to generate strong investment returns. We've observed through the years that colleges and universities in general devote greater resources to the investment function than foundations of similar size. Fewer resources creates another headwind for foundations.

Hypothesis: Lack of competition among foundations, and a variable cost structure, may explain why foundations typically have fewer dedicated investment resources, dollar for dollar, relative to endowments.

The Investment Arms Race

Foundations do not have the historic rivalries and direct competitiveness that many colleges and universities do. The Harvard/Yale rivalry extends far beyond the football field. Their investment results are compared in excruciating detail each year, while the relative results of the Ford and Mellon Foundations do not receive the slightest bit of attention.

The desire among the large endowments to achieve investment returns that are superior to their competition motivates them to hire and retain talented investment professionals, typically in strong numbers. The direct emphasis on generating returns that out-perform peers among the foundation world just doesn't receive much attention; moreover foundations do not have students and alumni to carry on traditional rivalries. Therefore, foundations lack the motivation that endowments have to hire investment staff to beat the competition.

Variable Cost Structure of Foundations; Fixed Cost Structure of Academic Endowments

The 5% mandated spending rate introduces what is perceived to be an inflexible hurdle into a private foundation's portfolio. But this is a misleading concept because foundations must spend 5% of *what they have*, so a foundation's spending will fluctuate as their portfolio value rises and falls with the market. In reality, foundations have much more spending flexibility than academic institutions which require stability and sustainability of spending.

Foundations have a largely variable cost structure, typically with under 25% of the annual budget devoted to the fixed costs of administration and overhead, with 75% or more of the budget going to the variable costs of grants. Colleges and universities on the other hand have a fixed cost structure of almost 100% because of tenured faculty, financial aid needs, and the maintenance of a historic physical campus, among others. One now-retired college president commented that at colleges, "fixed costs are fixed, and variable costs are fixed."

While foundations do not want to cut spending, grants—a variable cost—can be reduced if necessary, especially over the medium term. In contrast, the fixed cost structure of colleges and universities make these institutions highly reliant on sustainable support for the operating budget from the endowment draw. It is logical that an academic institution with a fixed cost structure and ever-rising cost pressures will channel more resources into generating investment returns. In addition, the emphasis on consistency of support to the operating budget in academic institutions spurs their relatively greater interest in building meaningfully diversified portfolios that can perform tolerably well in most environments. Because of their variable cost structure, foundations do not share the same intense spending pressure as an endowment.

Fallacy of the Dependency Ratio

Foundations rely on investment returns to support 100% of operating revenues, while the wealthiest colleges and universities depend upon the endowment draw to fund approximately 50% of the annual operating budget. Conventional wisdom would conclude that foundations should therefore be more risk averse than their endowment peers because of complete reliance on spending. However the variable cost structure of foundations turns this argument on its head—foundations can tolerate fluctuations in spending much more easily² than a college endowment. The fixed cost structure combined with rising cost pressures makes a college much more dependent upon its endowment draw, despite the lower dependency ratio.

Sensitivity to Compensation of Investment Professionals at Colleges and Foundations

College campuses are beautiful places. Old buildings are set around a beautiful quad; students live in old and new dorms; the athletic fields are brimming with activity, and music, dance and art programs thrive. There are hundreds of personnel on a college campus from the President to

the faculty, librarians, dining hall personnel, museum directors, athletic coaches and administrative staff who populate numerous buildings that are scattered across the campus and the playing fields.

With a few exceptions, foundations employ far fewer people than colleges and do not have campuses spread over many acres. Instead, most foundation employees sit together in one or two floors of an office building in close proximity.

A team of six or ten or 20 well-paid investment professionals are not particularly noticeable on a campus of thousands of students and hundreds of faculty and staff who are dispersed over many acres.

In contrast, the small group of philanthropically-minded individuals working at a foundation all sit together. The investment team represents a higher percentage of the total staff at a foundation, and their relatively generous compensation can't help but be compared to that of a program officer in the office next door.

We wonder if the phenomenon we have just described helps to explain why, as a general rule, foundations have smaller investment teams than colleges or universities with a similar asset base.

Conclusion

We believe we have identified many headwinds experienced by foundations relative to endowments as they steward their endowed assets. Despite having a similar financial objective of maintaining purchasing power net of spending, foundations and endowments face very different circumstances as they execute their missions, and manage their assets somewhat differently as a consequence. We hope to stimulate discussion and debate on these important issues to bring best investment management practices, along with sufficient resources, to institutions as they steward perpetual assets that support the lifeblood of their mission.

Footnotes

1. *The IRS provides some flexibility to foundations to carry forward any over- or under-spending, but persistent under-spending in a rising market because of a smoothing formula could jeopardize a foundation's tax-exempt status.*
2. *While it a painful exercise to cut grants, it is demonstrably easier than firing tenured faculty or deferring the repair of a leaky roof.*

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