

NMS EXCHANGE

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By Mark A. Schmid
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A Total Enterprise Approach to Endowment Management

Introduction

The crisis of 2008 and the ensuing losses in risky portfolios, including endowment portfolios, continue to affect the financials of universities, despite the rebound in asset prices over the past two years. Although the smoothing inherent in most payout formulas dampened the immediate impact of investment losses, it also spread out the pain over a longer time period. Endowments have always been and continue to be institutions with a long term outlook for investments, but universities do have immediate financial obligations in their day to day operations. Hence, the singular focus on long term investing had the unintentional impact of shifting much of the burden of bearing short term volatility onto the operational side of the university. In order to balance these risks more equally between operations and investments, the University of Chicago set out to examine our long term investment strategy from a total enterprise perspective.

The first step of a total enterprise approach was a deeper integration and communication between the Investment Office of the University and Finance and Administration.

This included Investment Office involvement in budget planning and review, liquidity and capital resource planning, and coordination with the administration on operating plans. As the University was embarking on an ambitious long term growth plan, including the development of new programs, involving increasing faculty and capital expenditure, the coordination efforts underscored the need for the different parts of the University to have realistic, long term plans in place. In support of these efforts, the Investment Office launched a project to develop a well structured framework for our investment strategy, which takes into account the particulars of our University, such as growth, debt, and wealth.

While many have likened the Total Enterprise approach to the asset-liability framework often used by pension plans, we found that the problem was far more complex. Pension plans have a well defined liability imposed by regulatory and accounting practices. Universities are largely free from such regulation, and as such our liabilities are much less defined. A university's risk is both much different as well as more [Continued on Page 8]



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

ABOUT NMS

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

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



By Arnold S. Wood
President
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Management

Governance and Governing: Ain't Misbehavin' Anymore

Much has been written on the dos and don'ts of running an effective investment committee. But there's a difference between the textbook "idea" of an investment committee and the reality of the personalities, power struggles, biases, strengths, and weaknesses of the human beings that drive the process. When it comes to governance and governing, it's important to recognize that human behavior plays an important role in the decision making process for any investment committee.

I am, as others, rightly impressed by the work and words of Charley Ellis, a lighthouse beacon in our business, protecting us from the errors of our ways. *The Losers' Game* is the classic resource for any practicing member of an investment committee. His recent piece, *Best Practice Investment Committees*, provides a normative blueprint for investment committees. That is, he outlines what we should do as a committee when acting as fiduciaries dealing with governance. It is a forceful backdrop—and marksman's advice—written from experience as well as practice.

That being said, Investment Committees behave in mysterious ways at any given time, on any given subject. They range from being mercurial to focused. They can be knee-jerk reactive based on intuition and easily persuaded by unimportant distractions. Some rely on staff inputs and others have the proverbial "deaf ear." Some are bullied by opinionated members or influenced by rogue operators. Chairs are "all over the board," so to say. They can be domineering backroom operators or great listeners, synthesizers, and effective communicators.

Lately, the complexity of investment decisions has become overwhelming for most investment committees. Also, in these times of finger pointing and assigning blame, it is natural that the decision to deal with these complexities and shirk personal risk has created the compelling need for outsourcing investment decisions. No longer do most committees have the competencies and willingness to accept the compliances inherent in their responsibilities. To define the ideal committee would be a mission impossible because like individuals, every committee has its foibles, mostly offset by its redeeming qualities. Interestingly, evidence shows that committees tend to amplify the decision making foibles of individuals. If Winston Churchill had an opinion of and hope for investment committees, it might just be that they are "a riddle, wrapped in a mystery, inside an enigma; but perhaps there is a key." That's the key we are looking for here.

We are all individually **and** collectively responsible for the decisions we make. We are the fount of governance; as fiduciaries we are responsible for setting sound, implementable and defensible procedures—procedures by which we govern. As committee members, we have a fiduciary responsibility to be accountable for having a thorough understanding of the nature and activities of

the entities we govern. They are us. So, it stands that understanding our own beliefs, preferences and biases is the key to governing effectively as a committee.

A True Story

More years ago than I am willing to divulge, I was a security analyst for a trust department of what is now a famous financial institution. One assignment was to write a research report on the auto industry. Ford Motor Company was my specific target. After several months of sifting through endless reports and a trip to Detroit to meet management, I finished a "Thud Factor Report" a heavy 60 pages laden with facts. I presented the report concluding with my buy recommendation. The chair, who wore a vest to work, and I suspected around his home, congratulated me on the details and substance of the report. But before I could break a smile, he rejected my "Buy" recommendation. Despite a roiling stomach, I asked why the recommendation was rejected. His answer was that his wife owned a Ford and it did not work. I commented on the nearly 1 million cars Ford made yearly and that his wife's Ford was only one of the roughly 20 thousand cars (2% of production) for which Ford encountered problems. Other committee members, however, quickly engaged in what I now know as a deadly mix of confirmation bias and hindsight bias, i.e., reinforcing the chair's decision to reject the recommendation based on favoring information that confirms preconception regardless of its truth and salted with biased memories. A simple, timeless question might have been asked: "What do we not know that we should have asked to help make a sound judgment and avoid a reckless reaction?"

This poignant piece of drama has become an indelible reminder of the countless influences and questionable logic that take place within committees responsible for the decisions they make on a daily basis for trillions of investment dollars and countless beneficiaries. The influence of our beliefs and preferences at any point in time under differing conditions can impair otherwise responsible choices. We can have a tediously prepared set of governing blueprints, objectives, and procedures as to what we should do, but when the time comes, we can easily act in ways that seem incomprehensible.

Understanding our Decisions

Our behavior, somewhat simplistically, can be attributed to three sources, not necessarily mutually exclusive. First is **psychology** which focuses on understanding how we think or how and why we make choices. The second is **social psychology** but on a group basis, referred to as **social psychology**. This relates to how our behavior is influenced by the presence of others, both face-to-face and implied by how interested parties may view our choices. Last is **neuroscience** which investigates understanding how our brains physically operate [Continued on Page 16]

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By *George K. Mateyo*
Senior Director
of Investments
Cleveland Clinic
Health System

Think Comprehensively and Act Locally

To many, healthcare institutions are perceived as being largely immune from the vagaries of the economy and the ups and downs of the business cycle. “People always get sick,” is a common refrain.

In reality, however, healthcare providers face significantly higher economic risks relative to other institutions due to a limited ability to negotiate prices as a result of a concentrated customer mix (i.e. Medicare and Medicaid), comparably fewer levers to pull when managing expenses, and potentially large debt obligations due to sizeable capital spending requirements.

More tangibly, in the aftermath of the global financial crisis of 2008-09, healthcare providers experienced declining admissions and increasing numbers of patients unable to pay for necessary treatments and procedures. Both scenarios were the direct consequence of over 8 million Americans losing their job and unemployment surging from below 5% to nearly 10% where it has remained for over two long years.

At the same time, banks and lenders have become far more selective in providing financing particularly to those who possess the greatest need for capital, institutions with high capital spending requirements among them.

Prospectively, the outlook for healthcare institutions is similarly challenged. With the passage of the Affordable Care Act of 2010, Medicare spending is expected to fall significantly. Similarly, with state governments facing considerable financial pressures, cuts in Medicaid reimbursement rates seem inevitable as well.

These are just some examples of how the economy directly and acutely impacts healthcare institutions and are critical reasons why Cleveland Clinic can ill-afford

to view its investment portfolio as a standalone entity. Instead, I believe that institutional investors – healthcare institutions and others – must view their portfolios as a key component of their balance sheet and an integral part of the organization’s overall mission. In other words, investors should “think comprehensively” when investing.

At the same time, investors should avoid the temptation of following others and blindly embrace a particular philosophy such as the much heralded and certainly effective “endowment model”. Instead, I also believe that investors should “act locally” and construct portfolios that are best structured solely for their institution’s specific needs and objectives. The following paragraphs will briefly describe these two ideas in greater detail and discuss how Cleveland Clinic has sought to put these concepts into practice.

As described above, healthcare institutions face numerous complexities and undoubtedly other institutions do as well. Additionally, institutions face an increasing number of risks that must be evaluated by both quantitative and qualitative assessments.

Chief among these risks is the notion that investment returns fall short of budget objectives. Additionally, investing to meet these financial objectives usually involves assuming market risk relative to price fluctuations; possible weaknesses in the investment decision-making process may entail governance risk; trading with others who might not fulfill their obligations implies counterparty risk; losses arising from errors or fraud involves operational risks; the possibility of misaligned incentives either within the institution or between the institution and third [Continued on Page 19]

FIG. 1

The “Vicious” Cycle

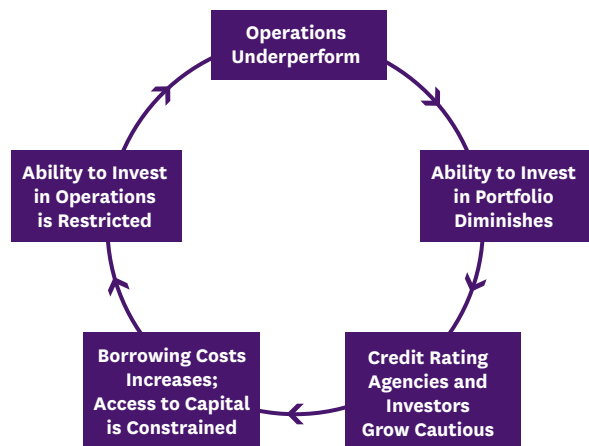
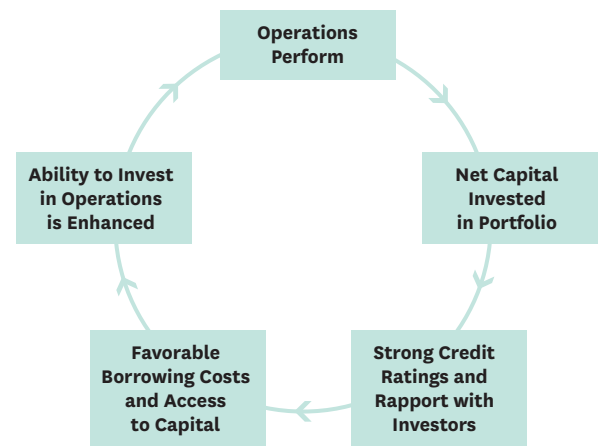


FIG. 2

The “Virtuous” Cycle





By James M. Golubieski
President
New Jersey Health
Foundation Inc.

Mission-Related Investing: The Road from Bonds and Fixed Income to Venture Capital

In 1830, when Harvard College and Massachusetts General Hospital sued the Armories, few could have imagined the evolution in investment policy that—over the next century and a half—would free the not-for-profit community to expand its asset base and program reach to where it is today. A quick look back illustrates how far we have come, and puts into perspective the breadth of opportunities we now have to increase not only the financial, but the social impact of each dollar we invest.

The Old Days

In *Harvard College v. Armory*, the Armories were the executors of the John McLean estate. They prevailed in defending their decision to invest the assets in stocks, over the objections of the plaintiffs, Harvard and Mass General, who would become equal-part beneficiaries upon the death of Mr. McLean's widow and feared losing their principal in what they believed to be overly risky investments.

After a long period of stagnation, two seminal studies in 1969, "The Law and Lore of Endowment Funds" by William L. Cary and Craig B. Bright and "Managing Educational Endowments" by Robert R. Barker, formed the impetus for significant change. While laws and regulations that eased counter-productive restrictions then began to take shape quickly, the deeply rooted practice of extreme prudence coupled with skepticism about the suitability of equity-based instruments for endowment investments took much longer to recede.

Before 1969, the vast majority of foundations recognized grants as their primary lever to forward their missions and accomplish their objectives. Relatively modest returns from very conservative investments covered administrative expenses and funded direct grants to people or organizations that championed our causes. The cycle was, in large part, limited to a basic "grow and give" model that depended heavily on new donations to avoid depletion of principal or eventual reductions in grant money available for awards.

The Advent of Mission-Related Investing

By the 1970's socially responsible investing (SRI)—the precursor to mission-related investing (MRI)—was born. SRI expanded the tools to attain foundation objectives beyond grant-giving to include how portfolio investments were made, opening the door to a more prominent role for all types of equities in the average foundation portfolio and leading the way to MRI.

When considering MRI for an organization, the wide array of financial vehicles to choose from and the thousands of organizations and projects seeking funding make determining exactly *where* to invest and how to

maintain a targeted rate of return a daunting endeavor for any organization.

We faced the same dilemma and developed a workable yet unique approach. How? We entered into MRI by looking *within* our own organization and the organization we support for investments we believed could further our mission without sacrificing overall returns. We limited our initial mission related investing to one asset class, alternative investments, determining where to start based on an opportunity that was most consistent with our mission and investment goals.

Working with researchers and the Technology Transfer Office at the academic research institution we support, we collectively identified an unmet need for pre-seed funding to further develop and ultimately commercialize promising discoveries. This unmet need and a desire to integrate MRI into our investment strategy led to Board approval to incorporate Foundation Venture Capital Group, LLC, in 2006. As a result, a portion of our portfolio is specifically designated for investment in start-up companies founded by researchers at the University of Medicine and Dentistry of New Jersey (UMDNJ).

The benefits of our approach have been significant:

- ◆ Quantitatively, we provide private equity funds to companies that otherwise may never be able to have this opportunity. Many of these companies are at a very early stage in development and would not qualify for traditional venture capital funding opportunities.
- ◆ Qualitatively, FVCG provides a source of motivation that helps to stimulate commercial ideas at the University and increases the chances of commercializing medical breakthroughs that will hopefully benefit people worldwide one day.

The asset-allocation policy, performance benchmarking and manager selection processes that are key to our investing strategy have not changed to accommodate our entry into mission related investing. Rather, we have considered this new opportunity within the asset allocation framework in our already diversified portfolio. The result has been better than average performance, including 2010 returns in the top quartile of the NACUBO universe for the 1, 3, 5 and 10 year categories, proving that financial returns and social impact do not have to be mutually exclusive. Our close relationship and guidance from our investment advisor, Colonial Consulting, have also proven to be a key to our overall success.

Traditionally, the decision to integrate MRI into an investment portfolio often meant sacrificing investment returns. However, an overall investment return does not necessarily have to experience [Continued on Page 20]

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By Ellen J. Ellison,
Executive Director
of Investments
University of Miami



By Susan M. Racher,
Vice-President & Chief
Financial Officer
Wallace H. Coulter
Foundation

Comparison and Contrast: Issues Facing Endowments & Foundations Today

Endowments and Foundations (E&F) have always been closely aligned within the world of not-for-profit institutional investors and at times have even appeared to be interchangeable. Although these two types of charitable entities share many important attributes, this informal exchange seeks to delineate some of the differences that can affect the way CIOs and CEOs approach the management of endowments and private foundations.

Recently, the NMS Exchange had the opportunity to catch up with Ellen Ellison, Executive Director of Investments, University of Miami and Susan Racher, Vice President and Chief Financial Officer, Wallace H. Coulter Foundation regarding the most critical issues facing their respective institutions today and what, in particular, keeps them up at night.

Ellen Susan and I are investment colleagues in a community with few large endowments and our organizations work together in key program areas as well. When we get together to compare notes, it's interesting to observe that while we both manage endowments, meaningful differences do exist.

Susan You and I have had such parallel academic training and professional experience and yet the unique mission and culture at our respective organizations has often resulted in our making different investment decisions and exploiting different strategies.

Mission and Spending Strategy

Ellen The University of Miami was founded in 1925 with a mission to educate students, create knowledge through innovative research, and to serve the community and beyond through the pursuit of excellence in health care. The majority of the endowment – 77% – is restricted. Our annual spending policy is fairly classical: we distribute five percent of the three-year moving average of the fair market value of the endowment. This has produced an *effective spending rate* that has remained stable despite the financial crisis of 2008. We are comfortable with the effective spending rate produced over the past decade – 4.17% - 6.04% – as compared to a median of 5.91% for other private universities in the American Academic Union, or AAU. (2010 data)

With an operating budget of \$2.3 billion and an endowment distribution of \$31 million (or 1.3% of budget), the University of Miami has little operational dependence on its endowment. This situation results from the fact that we are a younger and faster growing institution that has only recently (within the past 10-20 years) begun to amass significant permanent financial resources. Growth over the past decade was funded primarily through debt. We want to join the ranks of the AAU and become a prominent medical research university and center of innovation.

We witnessed during the recent financial crisis a num-

ber of institutions that were negatively affected by having too great an operational dependence on their endowments. Therefore, we ask ourselves frequently the critical question: what is the appropriate degree of dependence specific to the University of Miami? Our spending policy should weather all types of market, economic and operating environments. One reasonable estimate would be between 20-30% of future budgets. As the endowment grows over the next decade, we will have the opportunity to fine tune this process and establish the right balance between endowment and other sources of revenue that best suits the University of Miami's specific "DNA".

Susan By way of background, private foundations are established by wealthy individuals or families during their lifetimes or in their estate plans. The donor intent underlying the formation resonates throughout — **both** in grant-making and in investment strategy. In our case, the Foundation was funded from the sale of Wallace Coulter's company, Coulter Corporation, to Beckman Instruments in 1997. From the outset, our foundation was shaped by Coulter Corp's mission, "Science Serving Humanity," and by Wallace's sense of urgency to improve patient outcomes in devastating unaddressed diseases. In grant-making, we focus on translational *biomedical research* aimed at reducing the time it takes for medical advances to reach the patient. Most of our grants focus on biomedical engineering. However, we are also working with University of Miami's medical school to set up a process of project selection, funding and mentoring similar to our other programs, to help you move your research to commercialization. We appreciate, Ellen, that this is one of President Shalala's major goals for your institution over the next decade.

Coulter's grant-making cannot be successful if our projects are not commercially feasible for professional follow-on funding by venture capitalists and industry. In order to develop a network of relationships in the venture capital community, we strategically allocated a portion of our endowment investments to early stage health care venture capital. This was neither a grant nor a program-related investment; we anticipated that the venture managers would deliver excellent performance results. The general partners in these 18 venture firms have become true partners of the Foundation in the broadest sense as: volunteers on our university selection committees; faculty at our grantee training conferences; and, have enriched our grant selection and mentoring efforts. Our translational grant program exceeded our goals for efficacy: so far we have made grants for 200 research projects at 10 universities at a cost of \$40 million. Over 50 projects have "graduated" from the lab and are on their way to the patient. Twenty-eight companies were started attracting \$153 million in venture capital, and 24 technologies have been licensed to industry.

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By *Carla D. Hunter*
Chief Operating Officer
Weizmann Global
Endowment
Management Trust

Science-based Endowment Management

Our cutting-edge institutions can teach us a lot about science, art, or education. Certainly working for the Weizmann Institute of Science has opened fascinating doors into mathematics, physics and biochemistry for me. The Institute offers other valuable lessons as well: the fundamental principles which guide its successful research have been very useful for the management of its endowment.

The Weizmann Institute of Science is essentially a scientific think tank. Its students pursue master degrees, doctorates, and post-doctoral research, working in laboratories with professors and senior scientists. Without classrooms and desks and without undergraduates filling prerequisites, the Institute does not have to hire professors who match pre-defined slots. Rather, it is free to hire the best scientist regardless of his or her field. A scientist's primary qualification to work at the Institute is the quality of his or her research.

Curiosity drives research at the Institute. Curiosity asks "why does that happen" and fosters skepticism — "how do you know that's true?" Curiosity may lead scientists at the Institute into other fields for cross-disciplinary research. For example, a physicist may investigate complex systems in biology: What explains the collective intelligence of an ant colony given that the ants themselves are not very bright? In this case, the discipline of physics is bringing new tools to answer questions about a living system. Cross-disciplinary research has unlocked new doors of understanding for a wide variety of questions.

Even the best research leads to frustrating blind alleys and dead ends. For the Institute's Professor Ada Yonath, a scientific quest took 25,000 experiments and lasted for decades. The ultimate success of her work — with its huge potential benefit for humanity¹ — testifies to the value of learning from innumerable blind alleys and dead ends along the way. Even when research finally leads to great discoveries, their significance may not be apparent immediately: Ernest Rutherford, a great pioneer in nuclear physics, famously said, "The energy produced by the breaking down of the atom is a very poor kind of thing. Anyone who expects a source of power from the transformation of these atoms is talking moonshine." The physicist Enrico Fermi said that his most important discovery came from an experiment whose results made no sense². Curiosity-driven research investigates the anomalous outcome "that's weird" rather than seeking just the "eureka" which confirms a pet theory.

These principles inform the management of the Institute's endowment in important ways. After all, due diligence is also a kind of research. To start, we try to hire the best person available, regardless of whether he or she is an expert in private equity or hedge funds. We like the curious ones who ask the right question, seek disconfirming evidence, and learn from anomalies. Among prospective new-hires, bristling with sterling credentials and great experience, curiosity differentiates the sheep from the goats.

The work of our endowment staff members is cross-disciplinary in the sense that each has responsibilities across all asset classes, including quantitative and qualitative research. Several benefits result, starting with a broad view of risk. Seeing the portfolio as a whole provides an excellent perspective on risk as "hot" areas of investing emerge and attract capital from managers of different asset types. As risk evolves with changes in managers' portfolios, the generalist can integrate risk management with investment monitoring. The generalist's perspective focuses on the objectives of the total portfolio rather than narrow outcomes. It adds the flexibility to view investments by function rather than in traditional classes and for complementary talents to work together as needed on special projects. Finally, exposure to different asset classes adds refreshing variety to the long-term process of endowment investing.

In due diligence as in scientific research, healthy skepticism, which actively looks for disconfirming evidence, is key. A fresh point of view helps avoid the intellectual ruts that can develop alongside expertise and experience. For us, two scientists who serve on the Investment Committee provide this extremely important reality check. They are quite good at spotting flaws in logic and other intellectual leaps of faith. They ask the right questions. They especially like facts.

Our Investment Committee scientists introduced us to the "pre-mortem". Instead of good outcomes, the pre-mortem assumes the opposite — the big decision was a disaster. Fast forward yourself a year into the future. You're looking back on a decision which turned out badly — maybe that tactical move into energy that you've been thinking about or a currency overlay. What went wrong? Ask your fellow team members to list possible answers — perhaps a bit of competition will inspire their creativity. Pre-mortem thinking may find some more stones to turn before it's too late.

From science we learn that research entails wading through vast amounts of complex data, any of which could be important and most of which is not. We cannot know everything. The ability to identify and concentrate on the important facts is critical.

An Investment Committee scientist also suggested a system to measure the impact of asset allocation. Asset allocation is probably the most important of all investment decisions, but investors do not generally measure its impact except with methods which unrealistically assume a normal distribution of results. The suggested system produces results which are not distributed normally. An added attraction is that the proposed system uses only passively investable indices, which eliminates the complications of benchmarking alternatives. Using this system over several years has emphasized the importance of sticking to long-term objectives over the ups and downs of market cycles.

[Continued on Page 23]

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By Deepak Gurnani,
CIO and Head
of Hedge Funds
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By Reza Ali,
Founder and CIO
Prosiris Capital
Management

Investment Opportunity in Structured Credit

In the current environment of low growth and high macroeconomic uncertainty, structured credit is an attractive investment alternative to many other hedge fund strategies. We believe that notwithstanding the weak economy, there is a compelling multi-year investment opportunity for hedge funds that specialize in structured credit.

Structured credit represents a significant fraction of U.S. credit markets, but despite its size and depth, this asset class is not well understood by many institutional investors. This paper attempts to shed light on investment opportunities in structured credit by highlighting the following areas:

- ◆ **Supply** Structured credit is a \$9.8 trillion of asset class that includes securitized residential and commercial mortgages, corporate and consumer loans, and other income-producing assets.
- ◆ **Reduced Demand** Traditional long-only, ratings driven buyers, such as insurance companies, pension funds, and other long-only investors, have reduced their demand for structured credit. Some of this demand has shifted to hedge funds. However, we estimate that hedge fund assets are less than \$20 billion in this space, so the opportunities outweigh the available capital.
- ◆ **Buying opportunities** Banks have been selling structured credit assets to reduce balance sheet leverage. This is likely to continue due to stricter capital requirements globally as well as funding pressures on European banks, which implies significant buying opportunities over time.
- ◆ **Benefits of Securitization** The pooling of assets permits an allocation of cash flow and realized losses among tranches of a securitization, which provides benefits to both senior and junior investors in the securitization.
- ◆ **Hedge Fund Strategies** Hedge funds take long positions that generate attractive cash flows and use short positions both to generate alpha and to hedge macroeconomic and tail risk. The strategy does not require significant levels of leverage to generate attractive returns.
- ◆ **Skill-Set and Barriers to Entry** The strategy requires a fundamental understanding of securitization structures and the underlying credits as well as experience hedging macroeconomic risks. We believe that there are high barriers to entry in the strategy because it requires a more specialized skillset, which traditionally was concentrated in the investment banks that originated these assets.

Structured Credit Markets

Market Breadth and Depth

Structured credit is a \$9.8 trillion asset class that includes securitized residential and commercial mortgages, cor-

porate loans, student loans, auto loans, credit card receivables, aircraft and industrial equipment, and other income-producing assets.

Figure 1 provides the par amount outstanding for the various sectors in the credit universe as well as structured credit specifically. Structured credit consists of \$7.0 trillion U.S. Agency backed residential mortgages and \$2.8 trillion of other mortgages, corporate and consumer loans. Residential mortgage backed securities (RMBS) and commercial mortgage backed securities (CMBS) are the two largest segments.

Residential mortgage backed securities consist of agency backed securities (\$7.0 trillion), which have the implicit backing of the U.S. government, non-agency RMBS (\$781 billion), which generally are backed by prime and sub-prime first lien loans, and home equity loan securitizations (\$532 billion), which include both revolving home equity lines of credit and closed end second lien loans.

Commercial mortgage securitizations (CMBS) account for \$718 billion of the structured credit universe. Collateralized loan obligations (CLO), backed by corporate loans, amount to \$235 billion. Student loans and consumer credit (auto loans and credit card receivables) account for \$519 billion collectively. Finally, equipment securitizations (primarily deals backed by aircraft mortgages and leases) account for \$28 billion.

A substantial segment of structured credit markets, such as Agency RMBS and the most senior tranches of CMBS, student loan, auto loan and credit card receivable backed deals, are low coupon instruments that are more exposed to interest rate risk than the credit risk of the underlying assets. This report focuses primarily on non-Agency backed markets where hedge funds tend to be more actively involved. (Figure 1)

Supply

Supply of structured credit assets is driven both by new issuance and secondary market sales of existing assets. New issuance in many asset classes collapsed in 2008 and only recently has CMBS and CLO new issuance re-emerged, albeit in smaller size, and with more credit support for senior tranches. However, legacy structured finance assets continue to trade. As many deals have expected maturities of 10 years or more, ample supply remains in the market.

Increased supply due to selling pressure on banks has been a predominant technical factor in some structured credit markets since 2008. Banks have liquidated assets in order to reduce balance sheet leverage and to comply with stricter capital requirement rules. European banks, in particular, faced with the additional headwind of reductions in the availability of wholesale funding, have had to dispose of, and will likely continue to dispose of, structured credit assets.

Notwithstanding this pressure, prices for higher quality, more liquid risk assets have [Continued on Page 23]

A Total Enterprise Approach to Endowment Management
[Continued from Page 1]

varied than that of a mature pension fund, where the liability risk is dominated by interest rates. Furthermore, the variety of investments in endowment portfolios creates challenges in assessing high level economic risk, as well as translating that high level risk budget into an implementable portfolio strategy. We now turn to a discussion of how we approached this project.

TEAM Discussion

In the beginning of 2010 we launched an initiative to evaluate the overarching investment strategy and risk taking of the endowment in the context of the overall University. This project, called Total Enterprise Asset Management (TEAM), sought to frame the investment strategy of the endowment in the context of the long term operating goals and risks of the University, rather than as a stand-alone, total return fund. In marrying the asset (the endowment) and the liability (the University’s operating goals) sides, we found that the problem was large and complex, and needed to be reduced to a set of well understood, common economic drivers that could be evaluated. For example, if we believe that GDP growth influences both investment returns and growth in Grants, how can we measure that? In this context, the TEAM approach had several sub-components to achieve project goals. These included developing a fundamental economic model of risk expected returns, economic analysis of the University’s operating exposures, and then marrying both in an internally consistent Monte Carlo simulation to determine the trade-off between risk taking and wealth accumulation for the University.

FIG. 1

Factor Risk Model

Factor	BETA ¹	Total BETA to Factor ²
Global Equity Factor		0.75
U.S. Equities	0.27	0.73
Emerging Markets	0.18	0.47
Credit	0.15	0.89
Real Estate	0.10	0.43
Commodities	0.11	0.47
Inflation	0.04	0.65
Interest Rates	0.09	-0.22

Footnotes

1. Multiple-regression beta. Answers the question: “If there is a 1% move in a factor and that move is uncorrelated with the moves in the other factors then what will the percent move be in TRIP?”

2. Single-regression beta. Answers the question: “If there is a 1% move in a factor and all the other factors move by their usual amount in conjunction with the event that caused the factor move by 1%, then what will be the percent move be in TRIP?”

Risk and Liquidity Modeling

The “endowment model” of investing emphasized capturing illiquidity premia with the belief that illiquid categories added diversification benefits to a portfolio. However, in tail events such as 2008, much of these diversification benefits evaporated at a time when liquidity was challenged. To monitor and develop a deeper understanding of risks in the endowment portfolio, we use a Factor Risk Model. We extensively map detailed portfolio holdings to 90 public market proxies, and the model then calculates factor exposures and a volatility estimate for each fund and the portfolio in aggregate. Currently, Staff monitors exposures to U.S. equities, emerging markets, credit, real estate, commodities, interest rates, and inflation factors, in addition to the global equity factor. The Global Equity Factor (GEF) has become our primary risk governance target, as equity factor risk accounts for over 90% of the volatility the portfolio experiences. The table on this page summarizes our factor exposures as of October 28, 2011. (Figure 1)

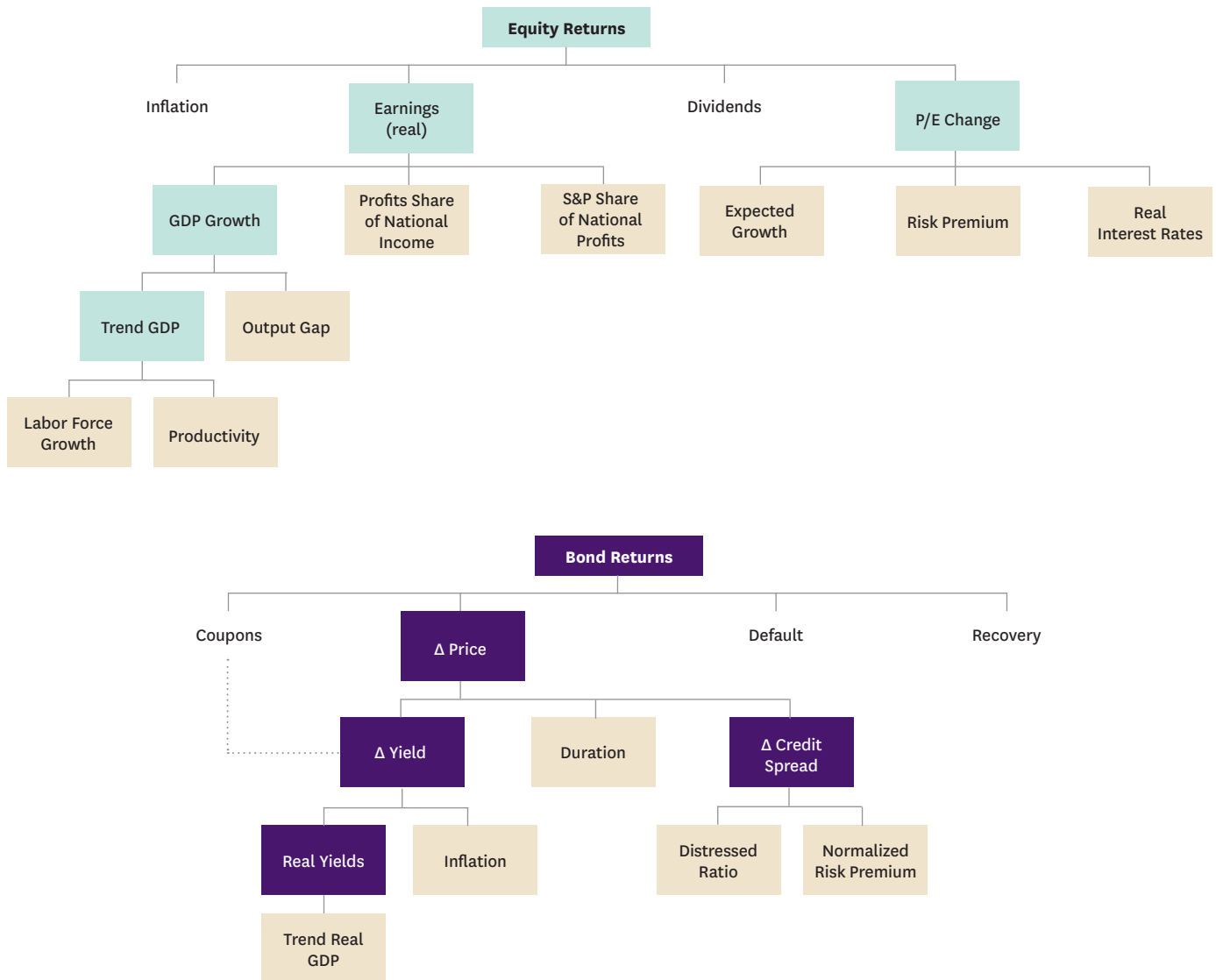
We update this information weekly and distribute to the Investment Committee and senior members of the University Administration. This weekly report provides valuable look-through information that more precisely describes our risk exposures based on true economic risk drivers, as compared to a more traditional assessment of risk based on asset class classifications. We continuously review this model and enhance it as the market and portfolio evolves. In the past year, we have built several improvements into the model, including: integration of the GEF beta; expansion of the mapped index population; improvements in the mapping process; incorporation of fund-level debt into levered betas; movement to more robust data & regression methodologies; introduction of a new data warehouse; development of a new robust risk architecture to support complete rewrite of the model/ risk engine as an automated modular solution with error-handling and a suite of risk diagnostic tools, to replace the initial brittle spreadsheet model; ability to produce new or ‘alternate-view’ risk measures in production; new suite of derivatives’ analytics and risk metrics; and created a full-revaluation ‘fat-tailed’ VaR engine.

In addition to market risk, we have also developed an integrated liquidity model for the total endowment pool. Using this model, we project ten years of monthly flows by incorporating the most up-to-date information available for cash flows, market valuations, and redemption terms. The asset-level liquidity model consists of an illiquid drawdown model for private investments and a redemption model for hedge fund and liquid investments. Return assumptions are examined via scenario analysis, providing to a deep understanding of the potential range of future asset allocations and liquidity, as well as expected returns.

Expected Returns Framework

In the same way that we sought to understand the economic drivers our risk position, we sought to understand the fundamental drivers of investment returns. Long term expected returns had always been based on looking at long histories of asset class returns and projecting them forward. While this approach is probably sound

Expected Returns Framework



for an economy and capital market experiencing little dislocation, it can lead to very misleading results if we are starting from a point of extreme dislocation in the economy and markets. For example, over the past 30 years, bonds have returned 11.5% per year. However, with yields on 10-year Treasury's now hovering near 2%, such an expectation would seem ridiculous. Comparatively, stocks have returned 10.8% over the past 30 years. However, 30 years ago, the trailing P/E multiple on the S&P 500 was 8x, compared to the 15x it currently represents, and contributed an annualized gain of more than 2% per year to returns. Unless we expect P/E multiples to close to double in the future, this 2% component of past returns is not repeatable.

Our proprietary expected returns model is designed to evaluate the underlying economic drivers of long term returns for a variety of asset types. Here, we show the important drivers for equities and bonds. (Figure 2)

As can be seen from the graphics above, fundamental drivers of returns include GDP growth, inflation, and risk premia. At this stage of the project, we chose to focus on two major asset categories, Equities and Bonds in order to simplify the problem of integration with the University financials. Our risk analysis of the endowment portfolio had found that the dominant risk factor in endowment was an equity factor, with a secondary factor being a "safe assets" or bonds exposure. This had become more pronounced in the financial crisis, as the correlations of a variety of risk assets moved closer to 1, and even post crisis, remained elevated. A realistic assessment of the benefit to equity risk taking is crucial in properly evaluating how much risk taking is warranted. For example, if equities are expected to outperform bonds by 4% per year, much more risk taking is warranted than if equities are only expected to outperform bonds by 2% per year. As our strategy of investing in private structures and hedge funds

had added significant alpha to returns over time, we also modeled in the returns and “alpha” that was aimed to capture the benefits of manager selection, liquidity premia, and other endowment-style advantages.

Economic Modeling of University Financials

The next step entailed modeling University financials with respect to economic drivers consistent with our expected returns. In using the University financials, we focused on examining figures from FY 1992 to 2009, as we believe the accounting practices since then as well as the operating of the University since that time is closer to current practices than pre-1992 periods. In some cases, such as evaluating compensation, we extended the dataset further back, to the 1970s to better capture the effects of inflation. In modeling the University financials, we simplified the problem by focusing on the broad categories of income and expenditure sources as follows: (Figures 3 & 4).

Examples of relationships we had found include a positive relationship between Gifts and Equity market returns, Grants and GDP Growth and Deficit Growth. We also found strong absolute growth trends in Net Tuition and Compensation, without much inflation impact.

Integration of Investments and University

Fundamental Drivers in Monte Carlo Framework

While the main economic drivers of Investments and University financials can be identified, they are by no means deterministic. For example, we know that there is a strong relationship between GDP growth and Grant growth, any given year can underperform or outperform the central relationship if the University has interesting project ideas or successes. Thus, in marrying the asset and liability side, a

significant amount of uncertainty must also be incorporated in the evaluation process in order to properly trade off risk taking and wealth accumulation at the University. In doing so, we turned to Monte Carlo methods.

Our approach to Monte Carlo for TEAM incorporated two important features. The first feature is that the Monte Carlo incorporates some mean reverting features not always considered in financial modeling, but is more reflective of economic reality. Secondly we sought to create internally consistent scenarios for the economy, the University and the investment markets, rather than model them separately. The graphic on the following page illustrates this integrated approach within our Monte Carlo: (Figure 5)

To this end, we started with central scenarios for the economy and incorporated the long term capital and growth plans for the University. Some of the key underlying variables include the following:

Key Economic Variables

- ◆ Inflation
- ◆ Real GDP Growth
- ◆ Profitability relative to GDP
- ◆ P/E Multiples
- ◆ Real Bond Yields

Key University Variables

- ◆ Net Tuition Growth
- ◆ Gifts
- ◆ Grants
- ◆ Auxiliary Income
- ◆ Compensation
- ◆ Supplies & Other

FIG. 3

Income Sources

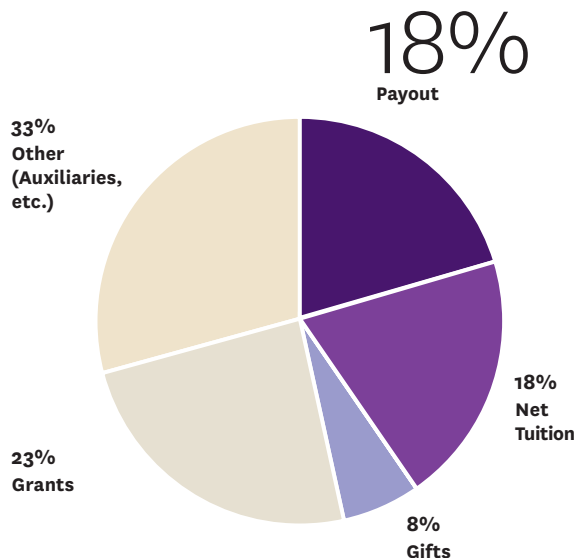
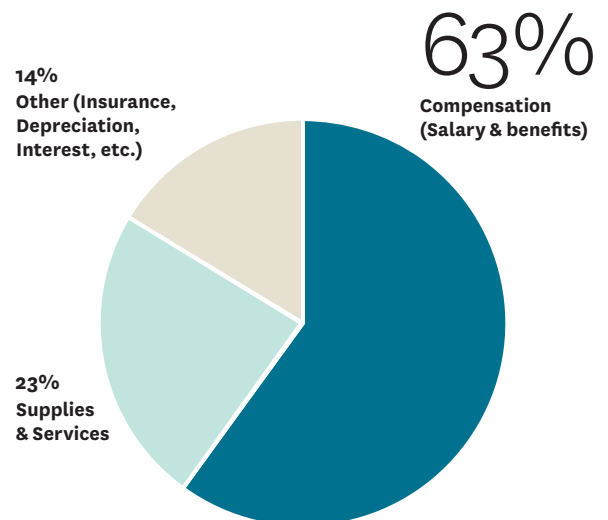


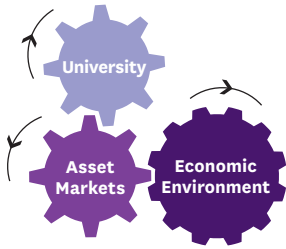
FIG. 4

Expenditures Sources



Source: University of Chicago financial statements FY ending June 30, 2010

Drivers in Monte Carlo Framework



In generating economic scenarios, we used a bootstrap of historical experience since the 1950s to create realistic scenarios of the evolution of the economy. We also added random noise to simulate the uncertainty of the relationship between the University, investment markets, and the economy. Our simulation involved 1000 scenarios over 20 years. Depending on the amount of equity risk in the endowment portfolio, the University wealth outcome at the end of 20 years varies widely. At the end of the 20 years, we evaluated several financial metrics and related them to the amount of equity risk taking in the endowment portfolio. Any number of financial metrics can be examined, either on the low or high end. We chose to examine the metrics characterizing the risk of an undesirable financial outcome to the University. The higher the probability of such outcomes, the more likely our operating goals would need significant adjustment (called “off-ramps”). These included the probability that:

- ◆ Endowment falls below Restricted Endowment adjusted by inflation
- ◆ Endowment falls below Restricted Endowment adjusted by GDP growth
- ◆ Ratio of Real Endowment (i.e. inflation adjusted) to Faculty falls more than an acceptable level
- ◆ Ratio of Expendable Endowment to Debt falls below an acceptable level

Additionally, we examined the expected accumulated wealth of the University vs. the one year drawdown of the endowment portfolio. A greater likelihood of a significant one-year drawdown represents a greater level of operational risk to the University.

The graphs on the following page illustrate this exercise. (*Figures 6 & 7*) The top graph clearly shows that, given the University’s growth liabilities, there is a benefit to owning growth oriented assets (i.e. equities). However, beyond a beta of 0.6-0.7, the downside risks no longer decrease as the volatility of equities begin to offset their growth benefit to the University. Read differently, this graph seems to say that the University does not “need” more equities than a 0.7 beta would imply.

The red line in the second graph shows that the University can benefit from owning more equities because of the long term wealth accumulation benefits. The blue line shows the risk of a significant wealth drawdown over the course of one year, and includes the impact of the payout in addition to the market returns. The blue line is higher for an all fixed income portfolio, because bonds currently yield so much less than a typical payout. Adding equities decreases this risk through growth benefit up to a point. At higher and higher levels of equities, drawdown risk increases more quickly, while incremental wealth accumulation shrinks. Beyond a 0.7 to 0.8 beta, the incremental wealth accumulation is small relative to the increase in short term drawdown risk for the endowment.

Qualitative Risk Assessment

To complement our quantitative framework, we also engaged in a qualitative assessment of University risk pro-

file. While the quantitative approach of the Enterprise Model provides the foundation for strategy, a qualitative approach supplements the model by allowing the incorporation of non-quantified considerations. During a strategy status update in the November 2010 Investment Committee meeting, it was suggested that the Investment Office consider the risk profile of another well-defined institutional investor to allow for a robust assessment of risk. It was concluded that a large pension fund could be a relevant comparison since endowments used to be managed at a 60/40 risk profile. Many mature large pension plans today target 55-60% global equity risk (GEF); whereas, large endowments have migrated to an 85-90% global equity level over the past 10-20 years.

An example of a reason universities can take more equity risk is that we have the ability reduce costs and capex, whereas defined benefit plans have little leeway in reducing promised benefits. An example of a reason universities should take less risk than a pension plan is that Universities can’t issue equity to fund shortfalls, similar to corporations.

Selection of Investment Risk Profile and Illiquidity Budget

After a thorough discussion of the quantitative analysis, the qualitative assessment, and a review of peers, the Investment Committee decided to have a long run, central tendency global equity beta of 0.75, with authority to vary between 0.7 and 0.8. Additionally, we chose a long-term illiquidity target of 35%, including private investments and sidepockets. We viewed this as being a sensible position which balances the desire of wealth accumulation with appropriate levels of institutional risk taking.

Strategic Asset Allocation

Having chosen our high level risk posture of global equity exposure and illiquidity budget, we then set out to form a sensible portfolio. For example, how much of our global equity exposure should come from private equity as opposed to real estate? In this task, we first expanded our expected return model to cover more asset classes, including Global Equity, Private Equity, Real Estate, Distressed Debt, Absolute Return, Natural Resources, Fixed Income, and Credit. We also added a new investment category, called Portfolio Protection, encompassing tail hedging strategies that seek to benefit disproportionately when markets are volatile to the downside, and budget for small, contained losses when markets are more stable and rising. While many institutions embed such strategies within a hedge fund portfolio, we chose to make the category an explicit capital allocation commitment for the sake of transparency and clarity from a governance standpoint.

Given a set of expected returns and a risk model, it is tempting to simply construct a mean-variance efficient frontier. However, efficient frontiers are most meaningful when the curvature is steep enough to distinguish between the risks and returns of portfolios on the frontier. As constraints are imposed, the available efficient frontier shortens and flattens. The graphic on page 13 illustrates this principle. (*Figure 8*)

FIG. 6

Probability of Significant Off-Ramps vs. Equity Exposure

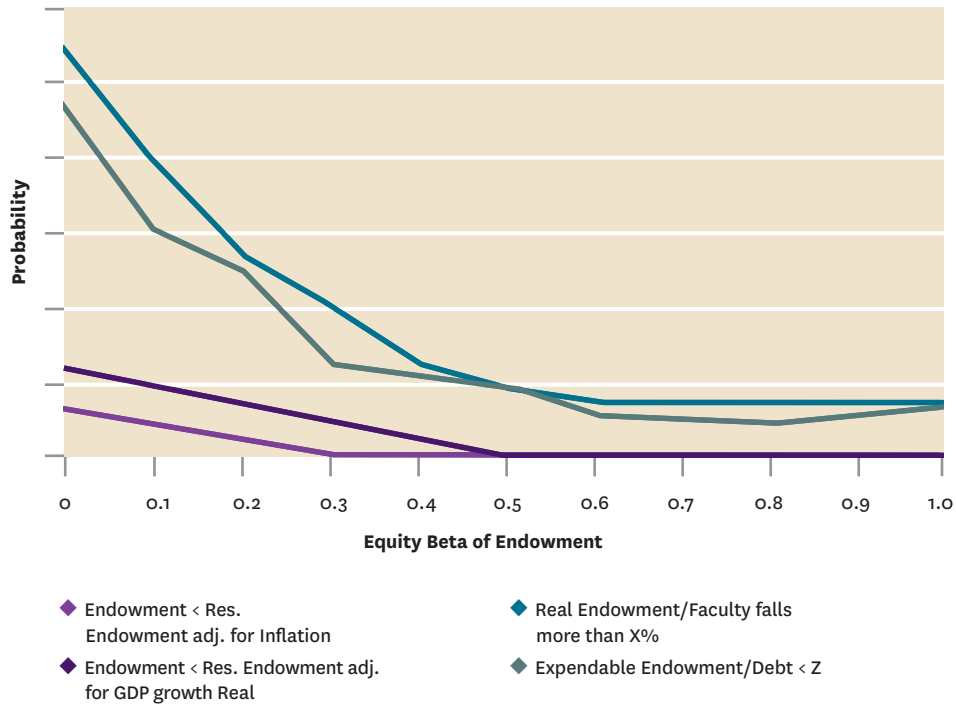
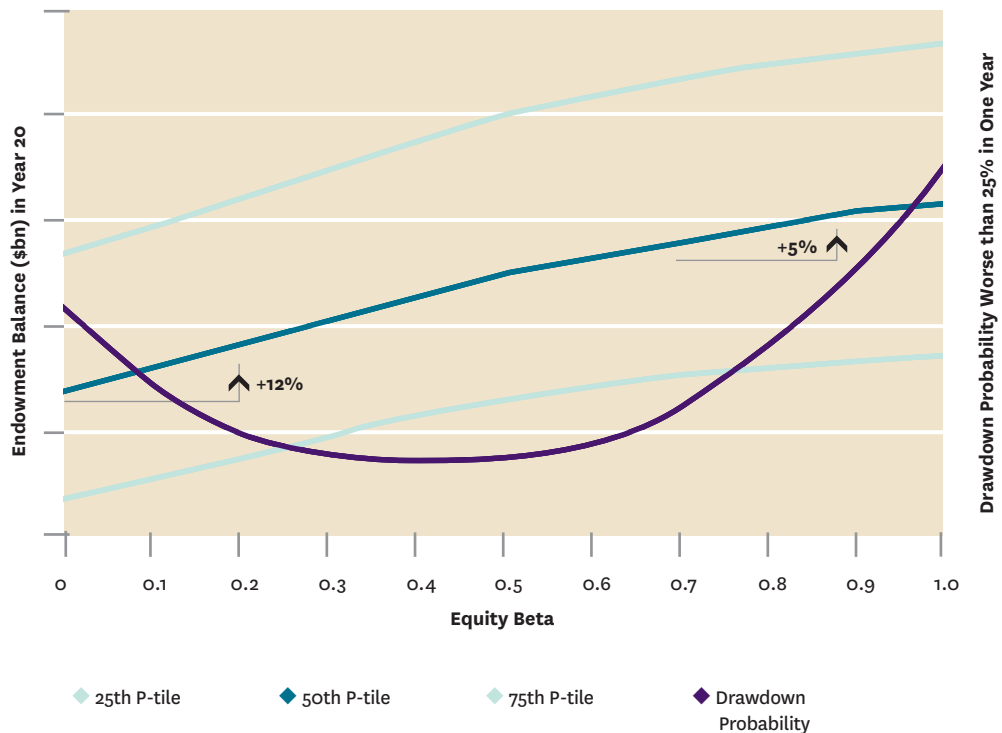
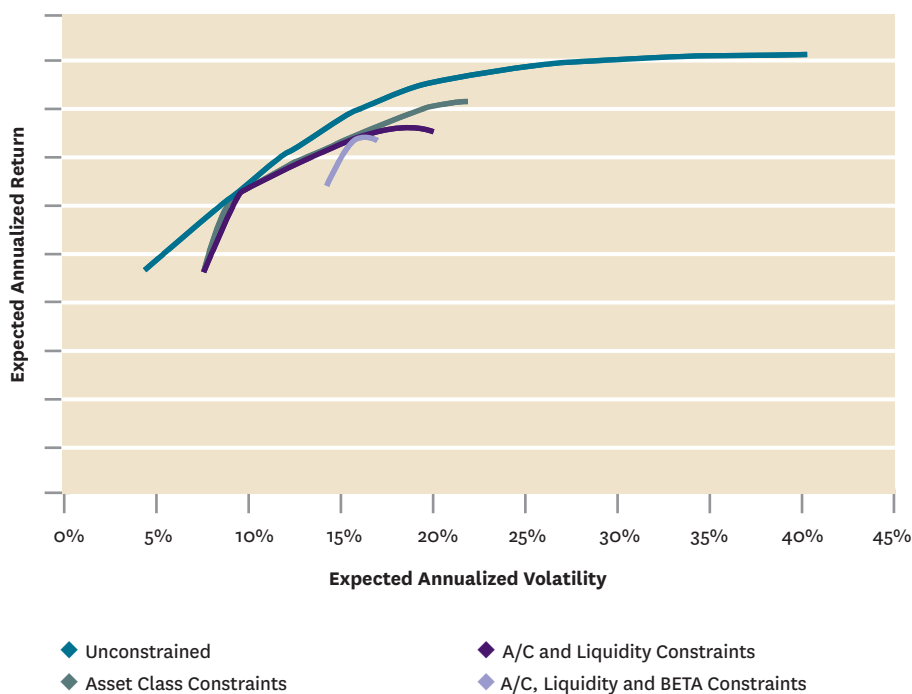


FIG. 7

Range of Endowment Balance and Probability of Drawdown: Year 20



Efficient Frontier: Normal Economic Scenario



After imposing all our constraints, the available efficient frontier in green has a minimum risk point of 13.5%, and maximum risk point of 15.5%, and the difference in expected returns is 0.7% per year. The differences in portfolio composition can be significant, but the expected outcomes are not meaningfully different. Hence, in choosing a portfolio, we should consider alternative economic scenarios which may occur over next decade.

For example, our risk model, liquidity model, and expected returns model were all based on assumptions that the economy return to a “normal” state of growth and inflation over the next decade. However, in studying history, the last 10 years was a period of below normal growth accompanied by high volatility, while the 1990s were a period of above normal growth accompanied by low volatility. We simplified potential economic scenarios into four categories:

- ◆ **Normal growth** a period of moderate inflation and real growth exceeding debt growth
- ◆ **Stagflation** a period of high inflation and real growth less than debt growth
- ◆ **Deep Recession/Debt Deflation** a period of zero to negative inflation with debt exceeding real growth
- ◆ **Innovation** a period of low to zero inflation with real growth far exceeding debt growth

In studying the history of financial markets, we can understand the impact each scenario will have on asset price fundamentals, and hence investment returns. For

example, in an Innovation environment, we would likely witness strong GDP and EPS growth along with elevated P/E multiples for equities. We also looked at the risks and challenges each environment might pose to the University: (*Figure 9*)

We developed return and risk expectations for each economic scenario. Within each economic scenario, we formed maximum return portfolios with 0.75 beta to GEF and 35% illiquidity constraint. We found the following to be true of the portfolio in the four scenarios:

- ◆ **Inflation** Real assets will be preferred
- ◆ **Growth** Private Equity will be preferred
- ◆ **Deflation/Recession** Long bonds and Portfolio Protection will be preferred
- ◆ **Balanced/Normal** Absolute Return will be preferred

Each portfolio will have similar outcomes in a normal environment, but they have more differentiated outcomes in other scenarios. No single portfolio will be the “best” for all environments. Thus, the appropriate portfolio should take into account both the likelihood of economic regimes as well as the vulnerability of the University in each regime.

In our analysis of the types and magnitudes of risk to the University in each scenario, we were interested to find that the University is much more vulnerable in a lingering deflation environment than in a stagflation environment. In a deflationary environment, higher economic and political uncertainty creates challenges in maintaining gifts and grants growth. The need for financial aid grows as tuition

Economic Scenarios



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growth becomes more constrained. Although the nominal cost of debt decreases, the real cost of debt rises when growth in all sources of income become more difficult. By contrast, in a stagflation environment, universities have been able to raise tuition above the rate of inflation while constraining compensation growth below the rate of inflation due to a poor labor market environment. At the same time, the real cost of debt declines particularly for universities with long dated fixed rate debt. A stagflation environment may not be enjoyable, but by no means will it do as much harm to a university as a deflationary bout. Thus, in assigning probabilities to each economic scenario, we overemphasized the deflationary risks, as we felt the pain in such an outcome would be more severe than in a stagflation outcome. Based on this analysis, we were able to form a portfolio that integrated total enterprise and factor risk budgeting within a traditional asset class framework.

Summary and Implications

The TEAM project was completed over the better part of 18 months and has changed the governance of our investment process. Here we discuss three important implications of our chosen path:

◆ Focus on factor based risk management

Endowments have traditionally de-emphasized risk management in the belief that risk matters less in the long term. The TEAM approach puts risk monitoring and budgeting at the center of our governance structure. While we continue to pursue strong returns, we must do so without taking on excessive risk to the University.

◆ Dynamic Adaptive Expected Returns

Our expected returns model is fundamentally

based, and thus evolves with market fundamentals. For example, if interest rates were to suddenly rise to 7%, this would lead to higher expected return for fixed income. Likewise if P/E multiples increase significantly, this would lead to lower expected returns for equities. This dynamic, adaptive framework works to center long term financial planning on a more sustainable growth path. As the past 2 years have seen very strong returns to risk assets in our portfolio, our expected returns model has led us to decrease expected returns going forward. In this way, the University does not make plans based on unsustainable market dislocations.

◆ De-emphasis of Peer Comparisons

Our decision to have a lower equity and illiquidity risk posture than many large endowments creates an incomparability between our returns and those of our peers. A more appropriate comparison would require a risk adjustment of returns to similar risk levels. In adopting the TEAM approach the Board of Trustees and the University have accepted that peer comparisons are less important to the long run health of the University than tailored risk management.

The TEAM project has been a time consuming exercise for the Investment Office, and has involved the University Administration and the Investment Committee of the Board of Trustees. However, now that the framework has been built, we have the ability to revisit the analysis as conditions at the University change. While our goal remains to generate strong investment returns, we now explicitly recognize that this has to be done in a risk posture appropriate to the goals and needs of the University.

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Governance and Governing: Ain't Misbehavin' Anymore
[Continued from Page 2]

when processing inputs in a decision situation – both consciously and subconsciously. The combination of these three contributes to judgments we make, providing a fertile field in the search for creating better cognitive skills and better group choices.

Let's take a look at four primary issues committees deal with in executing their responsibilities:

1. **Diversifying for sound choices**
2. **Focusing on what counts**
3. **Avoiding common traps**
4. **Lessons for leadership**

Diversifying for sound choices

Committees should take a lesson from crowd decision making. Committees tend to be like minded; they too often lack diversity. Their ability to process data into information and then into action often fails a sensible mix of both social and cognitive diversity. Cognitive refers to mental processes, like solving problems. In a study of committees at foundations, pensions, and endowments, white males over 50 years old accounted for roughly 85% of the members. Granted their education, experience, and cultural backgrounds were impressive but they were very like-minded. Absent was the social diversity that brings balance to decision processing. This would include age, gender, ethnicity, etc. For instance, the absence of women (15%) and people under 30 (0%) was apparent. So diversity counts, but there is a point where social integration inhibits the process getting hung up on conflict, especially in the absence of an experienced chair. *(Figure 1)*

As an interesting side light, males on average tend to exude overconfidence relative to women. People, as a generality, feel over 50% confident when calling heads or tails on the toss a fair coin or even picking lotto numbers. If you incent a person to be right, their confidence increases without a change in the odds. Researchers have also found that predictive accuracy is unrelated to intelligence. And further, overconfidence encourages intuition or a tendency to act on hunches. Famous is the intuitive response that when told that a bat and a ball costs \$1.10 and the bat costs a dollar more than the ball, and then asked the price of the ball ...well, you be the judge. North of 70% of the well educated respondents get this wrong. So the moral of all of this is: always take the time to ask whether intuition or gut feel should be the basis for your choices.

A critical contribution of diversity is its ability to reduce the "Common Knowledge Effect." So often, like-minded people (Homogeneity Bias) create a gravitational force towards the least objectionable solution. Lurking behind this problem is the unwillingness of committee members to share unique information despite the chance that such information may unglue the social cohesiveness of the committee. Fear that it may prolong the meeting, upstage the chair, or simply introduce testy complications can cause unique information to be withheld. A rush to judgment can be a rush to disaster. I suggest you watch *Twelve Angry Men* (1957), a telling tribute to this point starring Henry Fonda as a juror.

Little research has been done on the composition of specific types of committees and the inherent biases they may harbor. What are the common influences that may sway decisions? What are the agency issues – motivation and incentives among members – embedded in the composition? What non-essential characteristics may influence decisions? The table below illustrates how different types of committees can be influenced by their inherent biases. *(Figure 2)*

So diversity gives a less homogeneous, centric mind. It also gives committee members independence to express their knowledge and opinions in a more permissive atmosphere. Like being part of a crowd, you express

FIG. 1

Investment Committee Composition Homogeneity

Size of Committees	Median 6 (range 3–12)
Composition:	
Over 50 years	85% (overconfidence)
Under 30 years	0% (money managers)
Women	15% (different than men!)
Minorities	5% (cultural plusses)

2001 Survey: Investment Committee Dynamics. Arnold S. Wood and John W. Payne, Professor of Psychology, Duke University, The Fuqua School of Business.

FIG. 2

Composition and Self-interest Conflicts

Type of Plan	Committee Composition	Inherent Biases	Decisions Influenced
Corporate Plan	Mostly Insiders Primarily employees Mostly long terms	Employment relationships Potential job conflicts Silence is Agreement	Political issues Med consultant input
Foundations & Endowments	Mostly outsiders Major donors Mostly long terms	Principals as agents "Alpha Hounds" Potential risk takers	Open to new, Un-proven ideas Low consultant input
Public Plans	Mostly outsiders Appointed or elected Mostly short terms	Conflicts of interest Generally risk averse Headline adverse	Selection of outside Advisors/managers High Consultant input.

yourself freely without silent incriminations. And last, diversity provides external inputs to your process that can be valuable. The under 30 member(s) can “say the damndest things.”

Focusing on what counts

Setting the agenda for meetings is a critical mandate. Two survey questions in “Investment Committee Dynamics” addressed, “How do you rate the importance of the following?” and then “What percent of your meeting time do you spend on these tasks?” Answers were very revealing. Here are the results: (Figure 3)

There is some evidence that committee members are more task oriented than planning oriented. Most tasks offer fulfillment or a sense of closure. A decision creates essentially a closed issue. Hiring and firing money managers gives closure. Planning, on the other hand, lingers unrequited as a virtue of its longer term importance. It also takes effort and often belabored discussion to develop Investment Policy, especially due to generally strong opinions in need of resolution against a backdrop of future unknowns and unknowables. Investing is about the future and given the timing of any meeting can lead to some feisty discussions. Memories of the near past news can often dictate choices.

The sense of a risky situation in the financial markets can often disrupt sensibilities and can result in the questioning of long-term intent and policy dictates. Behavior can be dramatic and contagious when circumstances appear bleak or unnaturally rosy. While the dictionary defines risk as the possibility of something bad happening, I would point to *The Ambachtsbeer Letter #277*, February 2009, which starts with, “The annoying thing about “risk” is that every once in a while, possibility becomes reality.” The second poignant quote is from, guess who, Charley Ellis, “Risk is the tolerance of the Investment Committee at the moment of the most severe market adversity.” Where and when this was cited, I do not know.

Schematically, various agenda items can be thought of as a combination of knowns and unknowns: (Figure 4)

After determining what is important and unimportant to your committee, your priorities will gain substance and help determine how much time and effort need to be allotted to discussions. Detailed committee notes over long periods can offer clues to higher frequency judgmental errors for certain types of task decisions. Documentation of discussions surrounding the whys and why nots for hiring or firing managers may confirm firings at performance low points and hirings at high points. Evidence abounds in this area. Asset allocation, too, can be a devilish issue. What is new and bubbly seems so compelling. Self-control is very difficult. Under conditions of an apparent no-brainer, choices are often misguided. In reality it's the collective brain that's the no-brainer. It is smart to keep track of tasks. How many of us keep track of forecasters we rely on over time? Sounding good and making accurate estimates are two different things. Seldom do we keep track of what might disparage our decisions. The quip, “learning from our mistakes” is rarely practiced. Institutional memory can play a valuable role.

Avoiding common traps

It's human nature to attempt to make sense out of random information. So it's especially important when making fiduciary decisions to recognize some of the common mistakes investment committees make when analyzing information.

Trap 1: “Small numbers” and overreaction

As in the Ford case, there is a tendency to jump to a conclusion based on limited information. Owning a Ford that does not work is hardly a reason to think negatively about all the cars they produced that year – hundreds of thousands. One example does not often characterize a whole population and such single observations can have a powerful psychological punch. Often in the presence of others, especially if the “others” are considered powerful, it is difficult to beat back a well articulated negative even when based on an incomplete sample. Two researchers –

FIG. 3

Agenda Priorities Planning process vs. task orientation

Task	Importance Rating	% Time
Investment policy	High	5–15%
Asset allocation	Medium to high	10–35%
Managing the managers	Medium to high	40–60%
Market dynamics discussion	Medium to high	30–50%
Specific Investment decisions	Medium to high	10–50%

2001 Survey: Investment Committee Dynamics.
Wood and Payne, Journal of Behavioral Finance

FIG. 4

Focusing on What Counts Knowns and unknowns

	Unimportant	Important
Unknowable	No time	Most time
Knowable	Little time	Some time

Adapted from “How to build a team to make good decisions”
–Michael Mauboussin

Kahneman (Nobel Prize 2002) and Amos Tversky (died 1995) – were fascinated by case vs. base rate analysis and how much leverage one small observation could have despite the base rate, or full population.

What is the chance we or anyone can pick one person to manage our foundation or endowment and expect they can ascend to the heights of a Harvard or a Yale? Skill and luck are often mistaken by just how memorable so few, if any, stand up to this misconception of foresight. When based on faulty analysis, hindsight can be comforting, fun, delusional, and dangerous.

What is the hit ratio of hedge funds, all costs accounted for? We are quick to point out the past winners. How much influence should the underlying results of all hedge funds, survivors and passed, have on our ability as a committee or consultant to identify future winners?

**Trap 2:
Patterns neurologically overpower
event frequency**

Flip a fair coin repeatedly. We all know that on any single flip the odds are 50/50. Yet people often have trouble believing the underlying odds if they flip a coin and heads come up for six consecutive tosses. This pattern or appearance of one, in fact, instinctually suggests that the next throw has to be tails. But the underlying fact is that even when flipping a coin 20 times will show six consecutive flips being the same as a 20 % chance. Four in a row is a 50% chance. This fundamental bias is often referred to as gambler’s ruin.

Humans rely heavily on patterns to make decisions, and the more frequently they examine outcomes the more likely they undermine themselves. Skill and luck are strange bedfellows when it comes to analyzing performance results. Statistically, we know that it takes 25 years to judge performance for someone making 3-5 independent decisions a year. One hundred decisions require 5 years to make a near sure bet that a manager is skillful. In the investment business being lucky can often be better than being skillful especially where impatience combined with mounds of data can lead to questionable decisions.

Such classroom examples are representative in the world of practicality. Often the first subject that comes up in a meeting will be anchored on and path dependence takes it cue from whatever that subject was. If the big news of the day at the beginning of a meeting is that the stock market fell dramatically, decisions relative to that essentially perhaps aberrant fact can infect later discussion. Clarity of decisions must rely on the ability to know your policy and to be observant to its wisdom.

Lessons for leadership

The role of the chair of an investment committee is hard to overestimate. While managing the members of a committee is a priority, getting the best from the individuals so the collective wisdom and judgment is enhanced is the primary role. The Ringelmann Effect, first written about in 1927, tells us that in a tug of war game the higher the number of people pulling, the less effort the individual members exert. Committees share this

similar display of diminishing effort. How to get people to not “socially loaf” requires assigning tasks, calling on people to express an opinion, listing the “what can go wrongs” on a possible choice, and getting members to feel compelled to pull as hard as they can. A sense of unity around common purpose is achievable when individuals coalesce.

A chair, on the one hand, must allow committee members to express the diversity of opinions, to be succinct, and especially to speak up if they do not understand the nature of the discussion. The chair must minimize “railroaders” who try to force decisions in their interest. The chair must always be mindful of what can go wrong and the nature of the decision palate, i.e., are the facts correct and are there imbedded biases in the presentation, like using a single example to represent a large population. The road to sound judgment relies on the chair as a guardian of dissent on one hand and synthesizer and communicator on the other. A chair must be mindful to restrain partiality and let the committee play through the complexities before summing up.

The checklist below is compiled from investment committee chairs and academic studies: (*Figure 5*)

FIG. 5

**Chair’s Checklist
Governing and Governance**

- Read key decisions from the prior meeting’s notes
- Reduce loafing, assign responsibility to specific members
- Encourage constructive dissent and independent views:
 - ◆ Develop “What might go wrong?” culture
 - ◆ “Guesstimate” probabilities with confidence intervals
 - ◆ Use external written brainstorming
 - ◆ Keep discussions focused on process, not people
 - ◆ Maintain impartiality
- When setting agenda, **weight** items by importance to policy execution
- Assign specific responsibility to specific member
- Enforce the one minute to make your point rule, reduce bloviating
- Integrate into decisions, especially technical issues
- Minimize “railroading” or “pretention” with empowered teams
- Employ secret ballot system on controversial votes
- Keep written record / path of decisions—learning and memory
- Require self-administered, individual “report cards,” then educate

Last Volley

The territory between the textbook description of an investment committee and its behavioral shortcomings or personality often influences the fiduciary choices made for beneficiaries. Good governance demands knowing the biases lurking behind individual beliefs and preferences. To make sound policy decisions, implement them effectively, and measure their results demands knowledge of our judgmental idiosyncrasies. Members must have an “ownership interest” or a sense of unity in the outcome. Reliance on one another to recognize faulty reasoning,

freely share information, and not hesitate to ask what can go wrong all play a critical role in taking advantage of the simple fact that none of us is as smart as all of us. Members bring different values, experiences, and insights that offer the benefits of diversity. The important overseer of this process is the chair, generally a listener who keeps focus, recognizes unwarranted overconfidence, lets partiality develop not dictate, recognizes judgmental biases and is always mindful of the policy benchmark. Little else is more satisfying than teamwork with a steadfast eye on achieving a sound long term policy.

Think Comprehensively and Act Locally

[Continued from Page 3]

parties could create agency risks; and the prospect that some investments generate adverse publicity for the institution could create reputational risks. Hence, risks facing investors are numerous.

When managing these risks, our institution is keenly focused on the potential impact they could have on our credit rating and ability to access the credit markets in a cost effective manner. To illustrate how our investment portfolio is linked to our credit rating which is in turn linked to our operations, we created the diagram on page 3. (Figures 1 & 2)

When reviewing this illustration, one may observe that the strength of our finances is dependent on the strength of our operations, and the strength of our operations is dependent on the strength of our finances. In other words, our operations must be carefully managed so that we can achieve financial strength which allows us access to affordable capital so that we can maintain operational strength.

It is this linkage between our investment portfolio and our operations that causes us to view our investments in a comprehensive manner and carefully understand how fluctuations in our portfolio may impact our institution.

Once we have gained this understanding, we also make a deliberate effort to outline guidelines or rules that we would follow under certain financial and economic scenarios. For instance, when shaping our investment policy, we enumerate certain operational decisions we might enact in the event that our portfolio suffered a significant drawdown to ensure our access to capital at a reasonable cost is not diminished and the long-term strength of our operations is not impaired.

By taking these types of actions, we strive to “think comprehensively” when structuring our investment portfolios. In addition, we also believe that the role the investment portfolio plays within an institution also differs greatly amongst institutions, and for this reason, we also try and “think locally.”

In their book, *Outperform: Inside the Investment Strategy of Billion Dollar Endowments* (2010), John Baschab and Jon Piot profile many highly successful institutional investors who were interviewed to provide their insights on endowment investing. What struck me, aside from several astute words of wisdom made by many of my peer-CIOs, was one of the conclusions made by the authors:

“Among institutions, there are obvious differences such as size and whether the institution is public or private. Other differences include things such as the percentage of the operating budget that the institution asks the investment portfolio to provide. Additionally, the culture of the institution, the composition of the investment committee, the amount of new funds coming in from donors, even the geography may influence the role the endowment plays.... In all, we found that endowments are quite different from each other and this means that there is no consolidated ‘endowment model’ for investing.”

It is with this notion in mind that when designing portfolios, along with thinking comprehensively, I believe that it is also critically important that investors “act locally” and be in touch with the unique proclivities and idiosyncrasies that define their institution.

At Cleveland Clinic, we have sought to emulate this principle too, recognizing that our needs and objectives are unique to our institution and therefore, our portfolios are constructed and managed accordingly, not merely endorsing what others have done because they have done well.

In summary, investors of all types face significant challenges on many fronts. As a result, it is paramount that investors assiduously assess how such challenges may impact their portfolios and the institutions that their portfolio exists to serve. Thinking comprehensively and acting locally are two concepts which should benefit investors, helping them meet these challenges head on and serve their institution well in the long run.

Mission-Related Investing

[Continued from Page 4]

lower returns as a result of MRI if non-traditional concepts and ideas for MRI opportunities are considered.

We found that MRI could provide significant new tools for pursuing our mission. When New Jersey Health Foundation looked beyond traditional areas in which to enter mission related investing, we were able to focus on startup companies founded by promising researchers at the institution our Foundation supports.

Venture capital is only one example of a mission related investment opportunity, an unmet opportunity with which we were familiar. Similarly tailored opportunities abound for organizations across the spectrum of missions that have been undertaken. What do you have within your organization or close circle of relationships that is unique? That deserves recognition? That can help move your mission forward? That will give you an opportunity

Comparison and Contrast: Issues Facing Endowments & Foundations Today

[Continued from Page 5]

This mission-inspired investment strategy was definitely a win-win. For health care grantors, I believe that the synergy achieved by partnering as we did with health care venture capitalists can help change the current paradigm of low return (ROI) and patient outcomes generated by government and foundation research expenditures.

Governance

Ellen The University of Miami is typical of endowments in that investments are guided by a process that integrates fiduciaries (trustees), administration (investment, treasury and finance personnel) and external specialists. A group of eight trustees sit on our Investments Committee that meets at least three times a year. In 2004, this group delegated day to day decisions and manager selection to internal staff with the clear proviso that the level and quality of communication and consultation would remain very high. We work closely with the Chair of the committee on all matters.

The Investments Committee is responsible for setting the overall strategic agenda and, based on recommendations from administration, is also charged with establishing, reviewing and modifying asset allocation. Every spring, the Investment Office produces a study that attributes performance between asset allocation and manager selection/execution so that the board can gain a clear picture of where value is being added. To the extent that the Investment Office can demonstrate, on a regular and ongoing basis, that this operational independence is adding value, the trustees remain supportive of this delegation. Over the past one, three and five years, the manager selection/execution decisions have added 1.9%, 1.7% and 1.6% to annualized total return when benchmarked against our endowment peers in the AAU and ACC.

Susan The donor or donor family usually selects the initial board and management team during their lives or provides such direction in the estate plan. Private foundations are endowed, which means that their boards are relieved from any fund raising responsibility and therefore can focus exclusively on governance and mission. Foundation boards are quite heterogeneous in their expertise,

to pursue your MRI objectives in a more targeted and powerful fashion?

Asking and answering these questions may cause you to look at fulfilling your mission a bit differently...just differently enough to form the basis of an exciting new area with which to become involved.

Source:

Foundation and Endowment Investing: Philosophies and Strategies of Top Investors and Institutions
Chapter 1: *The Evolution of Foundation and Endowment Investment Management, From Poorhouses to Powerhouses*, Lawrence E. Kochard and Cathleen M. Rittereiser January 2008
Published by Wiley, John & Sons, Incorporated

responsibilities, structure and involvement in investment management.

Depending on the life expectancy of the Foundation, amount of donor stock, spending rate and risk tolerance of the board, Foundation investment management styles can vary markedly. Allocations can be idiosyncratic, and performance metrics are generally internally-evaluated and private. This is in sharp contrast to Universities that must attract talented students, faculty and future gifts often based on various published rankings including endowment investment performance. This heightened visibility may engender a greater degree of competition among universities. Foundations' lower public profile vis-a-vis published "league tables" has several implications: we have less pressure to reach for and achieve top ranked results; we are willing to help each other gain access to our top managers; and, we are often early adopters of new strategies.

In our foundation, the Controller, an Accountant and I comprise the investment team and we set strategy, asset allocation, manager selection and performance reporting. We have an investment committee that reviews and signs off on every recommendation or amendment. We also meet quarterly to review performance, asset allocation and attribution. We rely heavily on four of our 18 investment managers to run various portfolio and risk analytics that help me and the team to plan and execute our investment work. We do not use a consultant.

Asset Allocation

Ellen The big picture determinant of performance for us has been the shifting mix between public and private asset classes. The endowment has a strong value bias, little to no leverage on either the fund or manager level and is very liquid (90% within three months). Our **policy portfolio** has: 45% in global equities; 30% in hedge funds; 5% in private equity; 4% in private real estate; 6% in real assets; and 10% in traditional fixed income. This bias away from illiquid assets has hurt relative performance during periods of strength in non-marketable alternatives. Since 2008, however, our performance has benefited from the flip-flop in this dynamic and our higher than average mix in public assets.

Since 2008, many endowments reduced portfolio risk and exposure to longer-lived, illiquid assets and forecast a lower expected return environment along with a concomitant reduction in target spending. The key difference is that other institutions were reducing from far higher levels of risk, leverage and illiquidity than the University of Miami. We did not face the same set of challenges that resulted from the financial crisis within the endowment world nor did we meaningfully change our long-standing approach to risk and expected return – the endowment has been and will probably continue to be a pool of assets with higher than average liquidity and lower exposure to alternatives.

This may be surprising since if operational dependence were the sole driver of asset allocation, the University of Miami should have Harvard's asset allocation and Harvard should have ours! This is not the case hence other factors do play an influential role in long-run asset allocation decisions in complex organizations such as the University of Miami. Our conservative risk and liquidity profile can be attributed to a number of historical (younger institution), cultural and financial factors – in short our “institutional DNA” – that have collectively placed a high value on the maintenance of a strong liquidity profile in the endowment even in the face of lower expected returns and little operational dependence.

The financial crisis and its aftermath have served to reinforce this historical bias: in 2009, the major rating agencies introduced a new set of liquidity ratios and began to focus more attention on the investment or asset side of the university balance sheet. We have all been reminded that endowment portfolio liquidity and large, unfunded future commitments (capital calls) can cause havoc on the overall financial position of a University. Furthermore, CIOs and CFOs at institutions that also issue debt are obliged to think more strategically not only about the asset side of the institutional balance sheet but also about the liability side (short and long term debt). It was painfully clear during the financial crisis that not all investments were as liquid as previously believed.

Going forward, managing a truly *closed system* endowment may be passé if debt is a critical component of the institutional capital structure – as is the case at the University of Miami. The rating agencies incorporate the endowment's liquidity profile into their assessment of our overall financial strength because in the unlikely event of an operational bailout, the endowment is an asset on the balance sheet and could be used in an emergency. Today, managing both sides of the balance sheet is driven by a newly-rediscovered set of financial and operational inter-dependencies that go far beyond the annual spending distribution. Today's CIO has to be prepared.

Susan A key reality that informs everything we do is that we have a finite pool of assets. Whereas a university's capital campaign or annual giving can help to “repair” its endowment from a higher effective spending rate or a dismal market cycle, foundations do not have the luxury of such development activity. This also implies that any new investment we make has to be funded from an existing one. In effect, we are precluded from “averaging in” incremental new money once we identify a new man-

ager or strategy but we can only alter our allocations or redeploy our investment returns. This is a hidden cost of our making new investment decisions and it sets the bar extremely high on any new manager hire as a result. Liquidity, investment terms, disciplined rebalancing and tail risk are all very important to us as a result.

For universities as well as foundations, asset allocation has to be synchronous with spending plans: for most foundations, it is about 5% of corpus and may be averaged over a 3-5 year period to cushion market variability. The Coulter Foundation is unique in that it believes there is such urgency for better models of medical research, that it is willing to spend much more – in fact we spent almost 25% of corpus in 2011, primarily on our Translational Partners Program (TP).

The TP five-year program began in 2005 and was designed to culminate in a potential “reward” of \$10 million matched endowments made to any or all of the nine universities that met our exacting quantitative and qualitative outcome metrics for their performance. Our plan was to spend five years working with the universities to refine a process of rapid lab to bedside project management. Next, we planned to endow those schools deemed successful, so that they could continue to run the programs themselves. This freed up our program staff to begin work with six new universities. Therefore, in anticipation of this “cliff-like” distribution in 2011, our asset allocation needed to be very conservative focused on liquidity, and risk management. Our **policy allocation** is 45% global equity, 12% hedge funds (with emphasis on liquid strategies), 11% private equity (mostly health care venture), and 30-35% global fixed income. The harvesting of our venture capital investments was set up to coincide with the cash “cliff” and we refrained from any additional private equity or long term capital commitments. There is much precedent for foundations willing to accelerate spending to accelerate their impact: the Markey, Whitaker, and Diamond Foundations spent all their endowments and concluded their work. Obviously, universities cannot risk such a dramatic decrease in endowment size or that they would spend themselves out of business.

Manager Selection

Ellen First of all, with a small internal Investment Office, I have to think pragmatically because of our limited resources. I have a clear idea of the maximum number of managers that I – with the assistance of an external consultant for data and performance measurement/analysis – can realistically oversee. For this reason, I have a very concentrated portfolio of 32 best in breed managers (mostly active) who may often produce a lot of tracking error – I don't view this as a negative since I am seeking benchmark-agnostic, alpha-driven managers. Fortunately, I have not been required to reduce or terminate a manager at the wrong moment of the cycle since we do operate under the strong belief that all performance is cyclical. I want to avoid terminating a manager due to short-term underperformance.

We are opportunistic (but not tactical) by allocating money to assets and managers that are out of favor but place greater emphasis on the quality and type of manager

than on the exact timing of our entry or exit. I mentioned our limited allocation to non-marketable alternatives – 9%. We would certainly need more internal resources should this part of the portfolio increase in the future.

Susan I imagine our manager selection methodology is similar to yours, Ellen, in terms of trying to assess true and recurrent manager skill. However, the previously-mentioned finite pool of capital and hidden opportunity costs of making changes mean that we are very sensitive to manager risk. Most high alpha managers have high tracking error and, therefore, have peaks and valleys in performance. For any foundation, the timing of adding a new manager is critical. This was especially relevant for Coulter in the five years prior to the 25% distribution, I couldn't afford to start a new manager whose style might shift out of favor prior to my cash "cliff" since it would be impossible to recoup any mark to market losses or underperformance in a portfolio that was 25% smaller. This caused me to be much more thoughtful about the amount of manager turnover.

What keeps us up at night?

Ellen There are three issues that keep me up: to be a long-term investor in a hyper-correlated world is number one. The longstanding inverse relationship between equities and bonds has – at least for now – decoupled. The 2000s was a tough decade to meet minimum expected returns unless one had significant exposure to alternatives. Currently, global markets are stuck in a period of high correlation. If you combine this with a low nominal interest rate environment that may continue for awhile – the great de-leveraging – it is especially tough to meet an 8.5% minimum target return. On the other hand, I remind myself that after a decade of underperformance by equities relative to bonds, there is reason to be more hopeful about expected returns from equities or equity-like assets going forward. Although there are many technical reasons why money is still flowing into lower returning assets such as bonds, this cannot continue forever. Since the financial crisis, there's been far less competition for access to top managers and we're delighted that the University of Miami is deemed a desirable client/partner by those managers of interest to us.

The Agent-Principal problem inherent in the stewardship of an endowment is always a challenge because trustees are subject to asymmetrical risks in their fiduciary role. The pain of poor performance or of being wrong in the near term tends to dwarf any potential positive feedback from being right over the long-term. It is difficult to ask fiduciaries to exit their comfort zones especially in turbulent times. Higher volatility, in my opinion, isn't synonymous with risk and shouldn't be viewed in a unilateral way: it can create enormous opportunities for long-term investors who are able to navigate short term volatility and mark-to-market losses. My job is to present the best possible strategy within the parameters set by the trustees.

Finally, in July, 2011, Florida was the 49th state to finally adopt its version of the Uniform Management of Institutional Funds Act (UMIFA). Although this statute may have limited impact on asset allocation and investment management, we will need to assess how it might affect the classification of underwater endowments and our net asset restrictions. Could Florida UMIFA negatively affect our liquidity ratios and have an impact on our bond rating? This may be a big issue for us next year.

Susan I have several too: We have had a 15 year spell of substandard developed world equity returns, and more proximate corrections. Logic would suggest that the strength of corporations, increasing globalization, and mean reversion would turn this around. However, I often become fearful that volatility and single digit equity returns are the new normal. Second, with interest rates so low, it is tempting to increase bond risk to reach for yield and insulate against interest rate increases. But, the minute a "risk off" mentality hits my equities, the bond spread sectors also tank- so where do I get some uncorrelated protection? Third, hedge fund returns have been disappointing and I worry that this is not a cyclical, but a secular trend in which huge fund inflows have diluted alpha potential. Finally, I am passionate about the importance of health care startups to innovation, and I believe that our universities can be powerhouses of medical start ups. However institutional appetite for venture capital investing in general and health care in particular has diminished, and as a result there are far fewer early stage venture funds being raised. Will the venture market have the capacity and foresight to fund the next Gilead or Medtronic?

Susan So Ellen, I would say that the following concepts distinguish private foundations from other types of endowments. First, the recent proliferation of foundations over the past 50 years has permitted many of us to have had personal contact with the donor and his or her influence permeates all of our activities including investments. Second, the *fixed from the start* nature of the asset pool without the benefit of ongoing gifts is central. For perpetual foundations, the endowment must be invested to maintain corpus purchasing power. For limited life foundations, their investment decisions must carefully consider time horizon; impact of market cycles as they get close to the end; and manager risk against the backdrop of a shrinking endowment. Finally, mission drives us and we have the flexibility to accelerate spending, average spending or set a fixed spending amount.

Ellen *Vive la difference*. I wanted to add that even though you are correct that I work in a competitive environment where performance is more visible than at foundations, in my five years at the University, I have found the endowment profession to be a small, dedicated group of individuals who are open to sharing ideas, experiences and strategies. My colleagues are passionate about investing to benefit their institutions and strive to find the best way – or invent a better one – to accomplish this goal.

**Science-based
Endowment
Management**

[Continued from Page 6]

From time to time, due diligence turns up results that do not make sense. At such times, remember that the significance of important findings may not be obvious immediately and that apparent anomalies can signal critical clues. In some cases, corroborating evidence can help: Does the manager's story about recent fund redemptions jive with its audited financial statements? Explaining the anomaly is critical, even if the results kibosh hours of hard work on a potential investment idea. Otherwise, the due diligence is incomplete and can lead to invalid conclusions.

Besides the excitement of new knowledge, science offers valuable lessons for an endowment office. These include curiosity, skepticism, the value of cross-disciplinary

work and concentration on the relevant data only, and the importance of anomalies and blind alleys. Over the years, these principles have become a foundation for our endowment staff and investment process. To end with a bit of contrast, the endowment office does differ from the Institute in one very important way: we do *not* experiment with the money.

Footnotes

- 1 Professor Yonath received the 2009 Nobel Prize in Chemistry for her work.
- 2 <http://www.atomicheritage.org/index.php/component/content/article/42-resources-tab-/169-qthe-uranium-confusionq.html>

**Investment
Opportunity in
Structured Credit**

[Continued from Page 7]

remained resilient while assets with greater exposure to macro factors have declined more. These trends are likely to continue in the near future and should lead to more buying opportunities for investors.

Demand

Traditionally, a large part of the demand for structured credit assets came from long-only investors such as insurance companies, pension funds and structured investment vehicles seeking incremental yield. However, deteriorating prices and ratings dramatically reduced demand, particularly for more complex or distressed assets, from these traditional investors.

Hedge funds have stepped up as opportunistic buyers

to take advantage of attractive yields and relative mispricing between different securities. We estimate that despite the size of these markets, there is less than \$20 billion invested in hedge funds that specialize in structured credit.

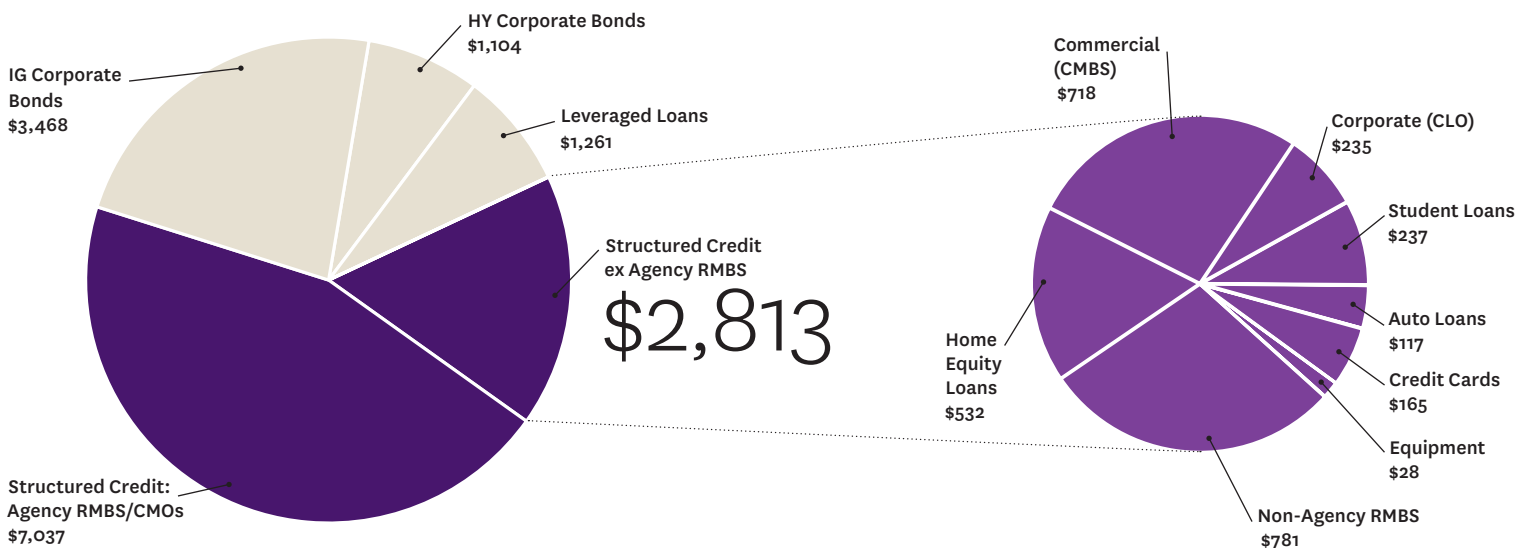
How Securitization Works

At the heart of structured finance is the pooling of financial assets in a bankruptcy remote special purpose vehicle and the carving of that pooled risk into tranches that range from senior tranches rated AAA to sub-investment grade junior tranches and equity.

Securities are issued for each tranche, representing both (1) a prioritized claim on the interest and principal payments of the underlying assets (known as the deal

FIG. 1

U.S. Structured Credit Markets (Billions of Dollars)



Sources: Merrill Lynch, SIFMA, J.P. Morgan, Wells Fargo, Credit Suisse. As of 2011-Q3.

“waterfall”), with more senior tranches having a higher priority claim on interest and principal payments than junior tranches, and (2) an allocation of losses (if any), with more junior tranches absorbing losses before more senior tranches. Securitization structures vary by priority of cash flows, coupon rates, rules for how principal and interest are allocated, re-investment periods, and credit support mechanisms, which stipulate how cash flows are paid to investors based on the value of the underlying collateral and other performance metrics.

Benefits of Tranching and Subordination

Figure 2 illustrates a typical collateralized loan obligation (CLO) and helps explain the benefits of tranching and subordination. The CLO is composed of 125 corporate loans that are diversified across multiple companies and sectors. AAA investors benefit from subordination since there can be as much as 28% in collateral losses (or more, depending on cash flow features, which are described below) before the AAA tranche realizes any loss. Similarly, the AA tranche benefits from 23% subordination, the A tranche benefits from 18% subordination, and so on. The tradeoff for such relative safety is lower coupon payments.

The benefits of this structure to investors in junior tranches are higher coupon payments and significant embedded non-recourse leverage. For example, the equity tranche in Figure 2, being the bottom 8% of the capital structure, has 12 times leverage. However, an investor only risks its initial investment and is not required to post margin based on price movements of the underlying loans. (Figure 2)

Cash Flow Waterfall

Cash flow waterfalls generally provide that the most senior tranche of a deal receives interest and principal from available cash flow first, followed by the next most senior tranche, etc. In addition, waterfalls often include cash flow diversion features that benefit relatively more senior tranches if specific collateral metrics are not met. In Figure 3, a simplified CLO waterfall, interest payments from the underlying collateral may be redirected to repay principal on senior tranches if collateral performance is weak. This increases the yield of the senior tranches, even as fundamentals decline, and reduces the risk duration. Similarly, in some residential mortgage backed deals, recoveries from defaulted mortgages (the value realized when a mortgage is foreclosed and the house sold) are used to repay principal on the most senior tranche of the deal, thus accelerating the prepayment of that tranche despite the poor collateral performance. In each case, this cash flow diversion can cause more junior tranches to suffer considerable losses. (Figure 3)

Another example of how the waterfall determines value can be seen in the CLO market. Some equity tranches of 2006 and 2007 vintage CLOs are attractive because the liabilities issued to finance the assets purchased by the CLO (i.e., the debt tranches senior to the equity) locked in credit spreads at cyclical lows while the CLOs are now able to reinvest in new loans paying post credit-crisis rates of interest. In addition, the LIBOR rate on many loans owned by CLOs is floored (meaning it cannot go below a certain rate for a given loan) whereas the LIBOR rate for

CLO liabilities is not and thus in many cases is fixed at a lower rate than the LIBOR paid on the loans. Thus, after paying the coupons on the liabilities the excess spread available to pay the equity can be substantial.

Credit enhancements external to the underlying assets can also enhance prices. Many residential mortgage securitizations were insured by financial guaranty insurance companies such as MBIA, FSA and Assured Guaranty. In some instances, insured transactions with weaker underlying collateral may in fact result in fast principal repayment from the insurance company as a result of a high rate of default.

Key Performance Drivers and Risks

Performance is a function of fundamentals specific to each sector and deal as well as macroeconomic factors. The figure below summarizes some of the key drivers for each sector. For example, residential mortgage prices are affected by delinquency/default rates and loss severities (loss per given default). Loss severities are driven by home prices – the lower the value of the home the greater the loss to the lender. Similarly CMBS prices are driven in part by delinquency rates, vacancy rates, lease revenue, and capitalization rates. (Figure 4)

Residential mortgage markets have been the hardest hit since 2008 and remain weak due to lower housing prices and higher delinquencies. Structured product prices rallied significantly from the lows of 2009 following the Federal Reserve’s Quantitative Easing program of asset purchases in 2010-11. That rally reversed for some assets in the second half of 2011 after the Federal Reserve sought to liquidate holdings of structured products it acquired from AIG during the credit crisis.

Recently, returns have been driven predominantly by headline risk and uncertainty due to the European crisis. However, in many cases, market prices already reflect adverse outcomes, and in some markets fundamentals have improved.

Security selection can minimize but not completely eliminate credit risk. Thus, portfolio hedging is critical for reducing volatility and tail or systemic risk.

Hedge Fund Strategies

Skillset and Barriers to Entry

Investing in structured credit requires a unique skill set that combines fixed income valuation and trading, distressed valuation, and macro investing, as well as expertise in securitization structures. This creates high barriers to entry in the strategy. Traditionally, this expertise was concentrated in investment banks that originated or structured these assets and their proprietary trading desks. However, with recent regulatory changes to limit bank proprietary trading, some trading and expertise has migrated to hedge funds. Because of the higher barriers to entry, the pool of experienced structured credit investors is likely to remain relatively small for the near future.

Investment Strategies

Some hedge funds specialize in specific markets like residential debt, while others take a multi-strategy approach and rotate depending on the opportunity in each market.

FIG. 2

Example of Tranching and Subordination

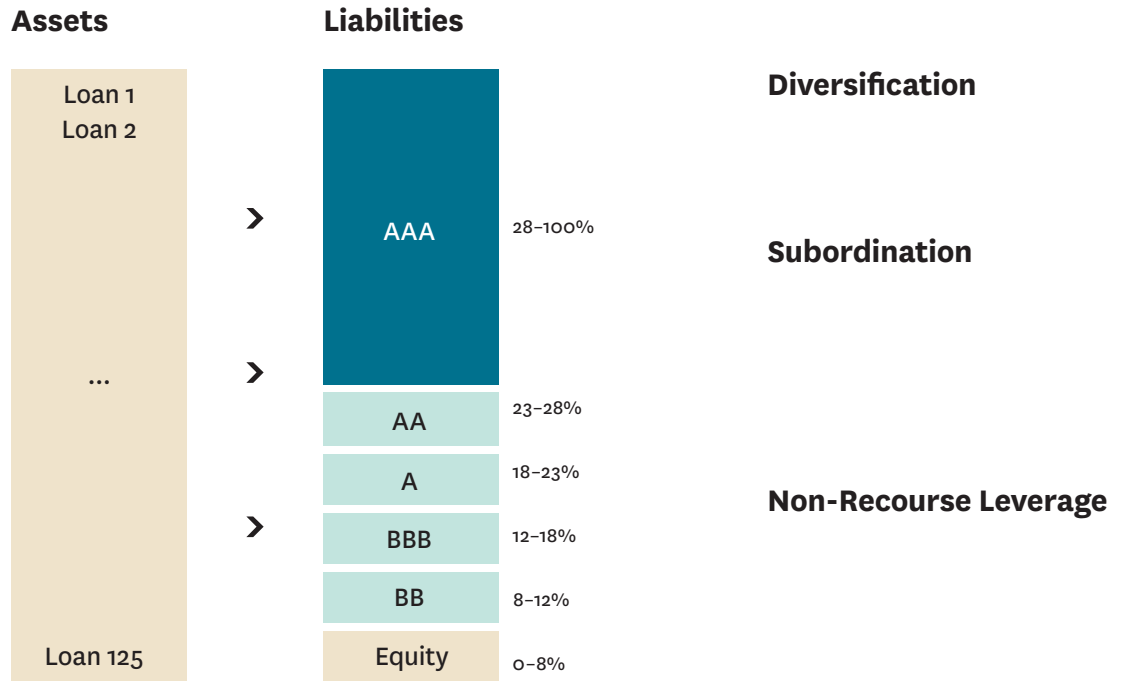


FIG. 3

Example of Cash Flow Waterfall

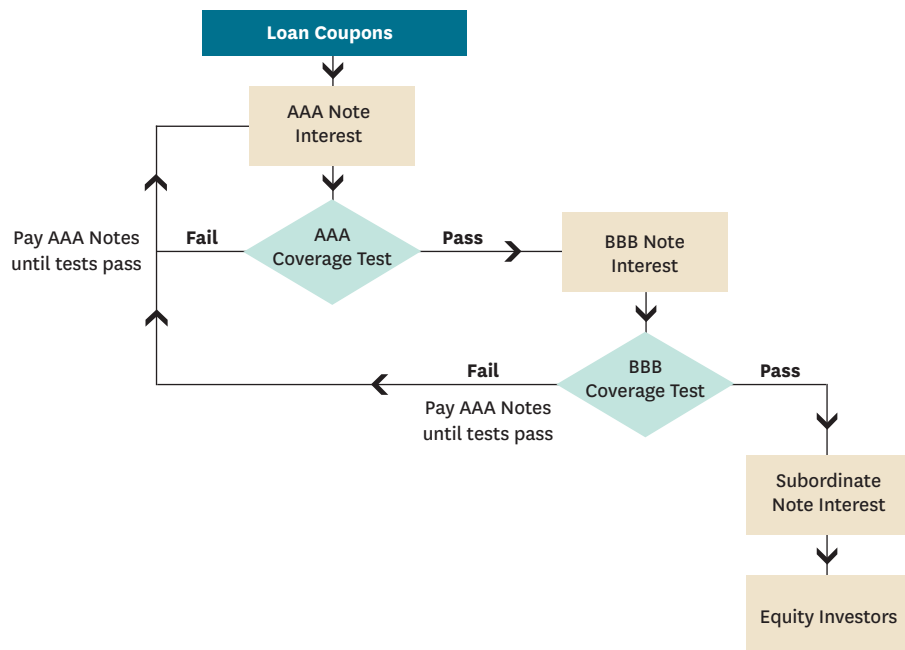


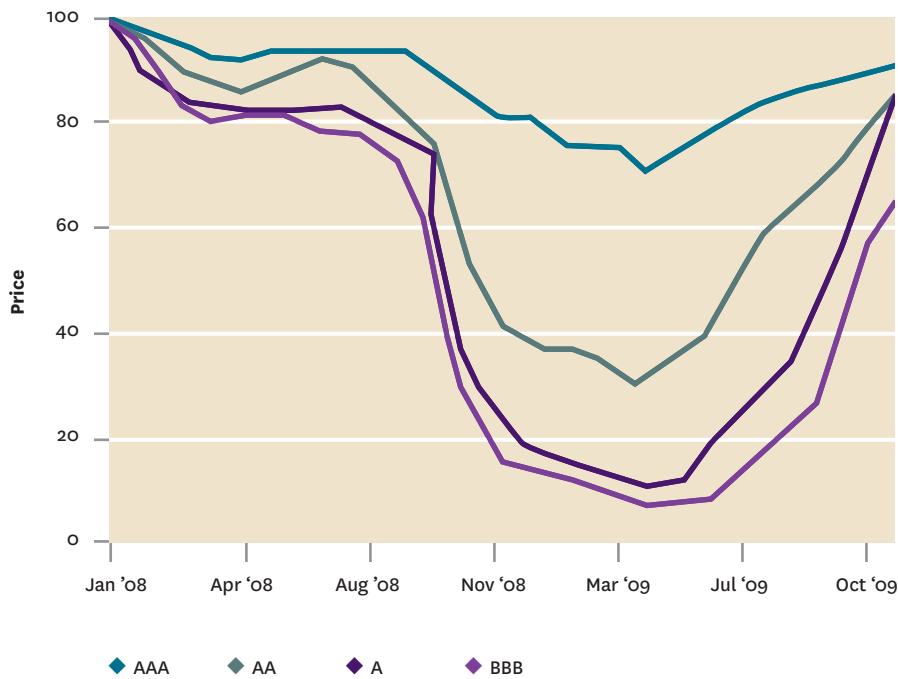
FIG. 4

Fundamental and Macroeconomic Drivers

Sector	Key Drivers
Residential Mortgages (RMBS)	Delinquency rates, loss severities, home prices, interest rates, loan modification programs, principal prepayment/refinancing.
Commercial Mortgages (CMBS)	Delinquency rates, vacancy rates, commercial property prices (cap rates), interest rates, revenue growth.
Collateralized Loans (CLO)	Default rates, recovery values, earnings growth, interest rates, maturity schedule.
Student Loans, autos & credit cards	Delinquencies, unemployment rate, personal income growth, interest rates.
Equipment financing	Collateral value, interest coverage, predictability of cash flows.

FIG. 5

Example of a Trade



Source: Citi, based on ARES and comparable prices.

- ◆ ARES 2007-12 is a \$700 million senior secured CLO with six tranches ranging from AAA to equity.
- ◆ In March 2009 the price differential between AAA and AA tranche was at the widest. The AA was estimated to offer superior risk/reward based on:
 - ◇ 23% subordination at a price of \$34 relative to the AAA subordination of 30% at a price of \$76.
 - ◇ Estimated that AA tranche could withstand 28% annual default rate with 40% recovery and still not lose principal.
- ◆ Trade: Buy AA tranche.

In either case, hedge funds generally take long and short positions in tranches of securitizations based on the credit quality of the underlying assets, macroeconomic conditions and expectations, and structural factors.

Hedge funds take long positions in assets that have attractive cash flow characteristics relative to credit quality and price. Often the complexity of a structure or specific adverse events may push prices below intrinsic values, but the risk-reward may remain attractive based on the price and credit quality or credit support mechanisms of the asset.

Figure 5 shows an example of such a trade. In early 2009, the price of the AA tranche of a CLO managed by ARES Management declined significantly below the price of the AAA tranche. The AA tranche traded at \$34 with 23% subordination while the AAA tranche traded at \$76 with 30% subordination. It was estimated that the AA tranche could withstand an adverse default scenario and still not realize principal losses (assumed that 28% of loans defaulted and each one recovered 40% of face value). In this case, the trade would be to buy the AA tranche.

Short positions may be used to generate alpha as well as to hedge credit exposure, tail risk and systemic risks. A typical short trade is to buy protection using credit default swaps (CDS) referencing credit indices, individual companies (often banks and other sponsors of securitizations), or sovereign risks. Short positions are constructed to increase in value in a spread widening environment. They typically have asymmetrical risk-reward profiles

because downside is limited to the premium paid for the protection while the upside potential is the full notional value of the contract.

Hedge funds also take paired long and short positions on related instruments, such as CDS and bonds of the same company. For example, hedge funds may sell CDS protection in one index tranche and buy CDS protection in another tranche of the same index. Relative value trades seek to take advantage of mispricing in related securities.

Contrary to common misconception, the strategy does not require significant levels of leverage. In fact, for distressed bonds and loans, leverage is often unavailable and even for higher quality structured credit assets leverage can be expensive.

Conclusion

Structured credit products can offer excellent risk adjusted returns through exposure to a variety of asset classes running the full range of risk, from government guaranteed residential mortgages to levered high yield credit. Contrary to common misconception about the strategy, it does not require significant levels of leverage to generate attractive returns. However, it does require the ability to value the underlying assets based on collateral performance and structural features as well as a top-down view of macroeconomic factors. Reduced demand by traditional long only structured credit investors and high barriers to entry for new investors should make the opportunity compelling going forward.

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GUEST SPEAKER

Martin Wolf

Associate Editor and Chief Economics Commentator

Financial Times

For more information please contact

Diana@nmsmanagement.com

Mark Your Calendar for Upcoming NMS Management Forums!

NMS MEMBERSHIP FORUMS ENDOWMENTS AND FOUNDATIONS

The Winter Investment Management Forum for Endowments & Foundations

January 29-31, 2012

The Fall Investment Management Forum for Endowments & Foundations

September 10-12, 2012

Holiday Forum

December 2012

NMS MEMBERSHIP FORUMS FAMILIES AND FAMILY OFFICES

The NMS Family Office Forum

March 4-7, 2012

Four Seasons Resort
Palm Beach, Florida

*NMS 2012 membership launch
for the wealth management community
will begin with the 2012 Family
Office Forum. Membership is required
to attend.*

ROUNDTABLE PROGRAMS (BY INVITATION ONLY)

Investing in Hedge Funds

April 22-24, 2012

Mandarin Oriental
Miami, Florida

CIO Roundtable Spring 2012

June 4-6, 2012

Mandarin Oriental
Washington, D.C.

The CIO Roundtable

November 11-13, 2012

The Ritz-Carlton, Battery Park
New York City, NY



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