YANNI PARTNERS

DELIVERING THE PROMISE

MEASURING UP

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IN THIS ISSUE

A framework for aligning investment strategy with the pursuit of mission.

Robust Risk Management

"Advancing the Mission"

This edition of *Measuring Up* summarizes our current research paper *Risk Management Revisited: Building Stakeholder Value*.

Our 2002 risk paper offered several conclusions:

- Effective risk management facilitates intelligent use of resources.
- Robust risk management techniques can model "downside" risks with greater precision than conventional approaches.
- Risk management "best practices" will help an institutional investor to fulfill its fiduciary obligations.

Yanni Partners has gleaned insights about risk management since 2002. We have enhanced our asset allocation models to remedy limitations of conventional approaches:

- *Statistical techniques that account for markets' tendencies to sustain large losses with greater frequencies than conventional models predict.*
- *Statistical techniques that account for the tendencies of risky markets to decline simultaneously during periods of market stress.*
- *The ability to incorporate an institution's cash flows in the projections of portfolio values.* This feature will capture the complex dynamics between the timing of cash flows and markets' fluctuations.
- *Results that respond to the client's needs.* We developed models for pension plans, endowments, foundations and healthcare institutions.

Enterprise Risk Management

Our current paper advances an emerging concept in finance, Enterprise Risk Management (ERM). ERM links portfolio management to the holistic management of the enterprise. ERM ties investment management to the organization's core mission.

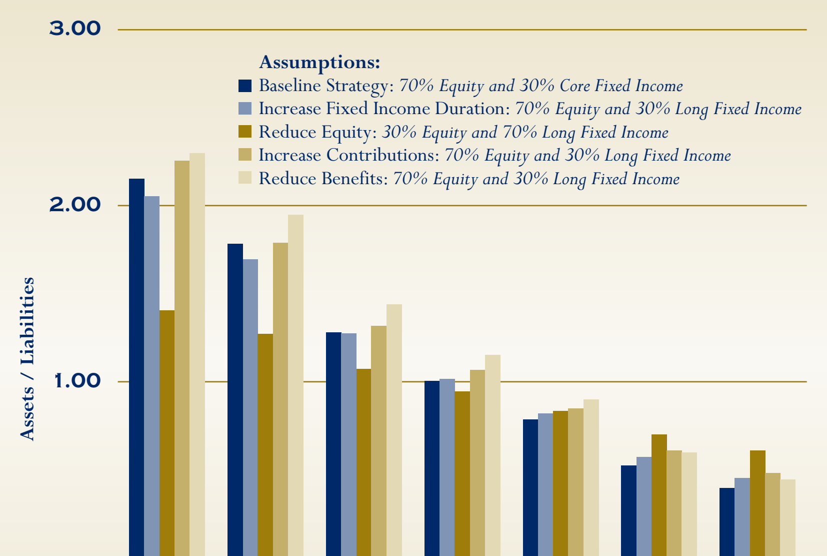
One industry source, the Committee of Sponsoring Organizations of the Treadway Commission (COSO), has defined ERM:[1]

- **Internal Environment –** Management articulates the organization's values, tone and "appetite" for risk.
- **Objectives Setting –** Management defines objectives that support the mission.
- **Event Identification –** When the entity identifies internal and external events, it must distinguish between threats and opportunities.
- **Risk Assessment –** The entity must assess the likelihood of each key risk and its probability of occurrence.
- **Risk Response –** Management needs to decide whether to avoid, accept, reduce or share each potential major risk.
- **Control Activities –** Management implements policies and procedures to manage the risks.

[1] Committee of Sponsoring Organizations of the Treadway Commission, "Enterprise Risk Management – Integrated Framework, Executive Summary." September 2004.

FIGURE ONE

Laurel Ridge Company
Pension Plan Funded Ratio as of December 2012



Percentile:	1st	5th	25th	median	75th	95th	99th
	2.15	1.78	1.28	1.01	0.78	0.52	0.40
	2.05	1.69	1.28	1.01	0.82	0.57	0.45
	1.41	1.27	1.07	0.95	0.84	0.70	0.61
	2.25	1.79	1.32	1.07	0.85	0.61	0.48
	2.30	1.95	1.44	1.15	0.90	0.60	0.44

- **Information and Communication –** Management disseminates pertinent information to execute risk management.
- **Monitoring –** The entity monitors the full dimensions of Enterprise Risk Management.

Application of ERM to Investment Management

ERM provides a robust application for investment management. An organization integrates investment management functions into the ERM paradigm through the following actions:

- **Governance Procedures –** Investment success hinges on good governance. An oversight body (often a board committee), comprised of committed and knowledgeable people, facilitates effective governance. Education will strengthen governance.
- **Objectives –** Management specifies the portfolio's objectives and benchmarks.
- **Investment Strategy –** Management formulates an investment strategy to achieve the objectives. This step determines the asset allocation. One study showed that asset allocation has accounted for roughly 90% of a fund's risk and return.[2]

An effective process requires four features:

- *Reasonable estimates of the markets' future returns and risks.* Reasonable estimates stem from forward-looking assessments.
- *Accurate measurement and modeling of the markets' risks.* This feature must reflect markets' tendencies to sustain large losses more frequently than traditional approaches assume.
- *The ability to translate the portfolio's performance into measures specified in the organization's objectives.* For a pension plan, for example, the model would compute how market results will affect the funded ratio.
- *The ability to integrate cash flows into projections of future portfolio values.* For example, a pension fund receives contributions from the sponsor, and it disburses benefits to retirees.

- **Portfolio Construction –** After management determines the fund's policy weights, management must establish a mechanism to buy and sell individual securities. A professional investment advisor (manager) typically serves this role.
- **Monitoring –** Management must install procedures to monitor the portfolio. When results deviate from objectives, management must determine remedial actions.

The following sections explain applications of ERM for pension plans, healthcare organizations and endowments.

Pension Plans

The plan sponsor manages assets to fund the liability. The sponsor focuses on the plan's funded ratio (assets/liabilities) as the key objective. Variability in this ratio constitutes the sponsor's key risk. Inadequate funding might jeopardize the sponsor's viability and imperil the benefit security of plan participants.

[2] Brinson, Gary P., Brian D. Singer, and Gilbert L. Beebower. 1991. "Determinants of Portfolio Performance II: An Update." *Financial Analysts Journal* (May–June): 40–48.

A plan sponsor can test how changes in contributions, investment strategy and benefit levels might affect the funded ratio. A rigorous risk management technique will test the effects of these "policy levers" in stochastic (probabilistic) terms. *Figure One* displays such results.

Figure One reflects the benefit schedule and assumed contributions of a typical plan, and projections of the capital markets' risks and returns. *Figure One* conveys the risks of different scenarios by showing seven points from the distribution of potential outcomes: the 1st, 5th, 25th, 50th (median), 75th, 95th and 99th percentiles. For example, the 95th percentile measures downside risks; 95% of the results are likely to be more favorable.

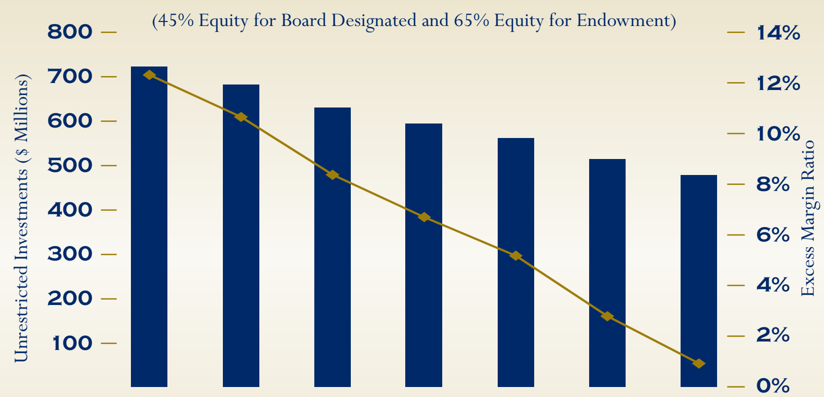
A pension plan constitutes a separate entity from the sponsor. Nonetheless, the plan affects the economic characteristics and risks of the sponsor. The plan's liability exerts a claim on corporate assets in the form of future cash contributions. A comprehensive approach to risk management will help the sponsor to link pension plan management with financial management of the overall enterprise.

Some analysts advocate a high allocation of plan assets to fixed income to match the interest rate sensitivity of the liability. An increase in fixed income is likely to reduce the fund's expected return, thereby requiring higher contributions. Yet this strategy might reduce the variability of corporate earnings, lower the firm's cost of capital and enhance shareholder value. Such a strategy might help the firm to exploit its competencies in its core operating businesses.[3]

ERISA requires the plan sponsor to manage the plan for the exclusive benefit of plan participants. This fiduciary responsibility supports a holistic approach to Enterprise Risk Management. A close linking of pension plan and corporate management will help to strengthen the sponsor, thereby improving its ability to raise benefits and increase contributions.

FIGURE TWO

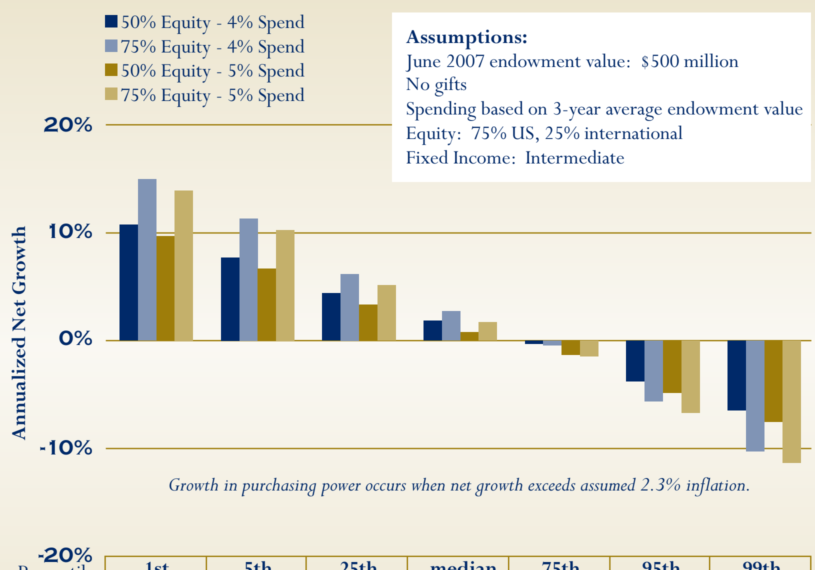
Keystone Hospital: One-Year Effects of Current Investment Strategy on Excess Margin Ratio



Percentile:	1st	5th	25th	median	75th	95th	99th
Unrestricted Investments	722.0	682.3	630.0	594.1	561.7	514.2	477.4
Excess Margin	12.3%	10.7%	8.4%	6.7%	5.2%	2.8%	0.9%

FIGURE THREE

Central College: Five Year Annualized Net Growth (Reflects Investment Returns and Spending)



Growth in purchasing power occurs when net growth exceeds assumed 2.3% inflation.

Percentile:	1st	5th	25th	median	75th	95th	99th
50% Equity - 4% Spend	10.7%	7.7%	4.4%	1.8%	-0.3%	-3.8%	-6.5%
75% Equity - 4% Spend	15.0%	11.3%	6.2%	2.7%	-0.4%	-5.6%	-10.2%
50% Equity - 5% Spend	9.7%	6.7%	3.4%	0.8%	-1.3%	-4.8%	-7.5%
75% Equity - 5% Spend	13.9%	10.3%	5.1%	1.7%	-1.5%	-6.7%	-11.3%

Healthcare Entities

An Enterprise Risk Management approach can help a healthcare organization to integrate management of investments with its overall financial position.

[3] Bader, Lawrence N. 2004. "Pension Deficits: An Unnecessary Evil." *Financial Analysts Journal* (May/June): 15 – 21.

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Yanni Partners
310 Grant Street, Suite 3000
Pittsburgh, PA 15219-2302

An integrated healthcare financial planning model will show how the capital markets affect an institution's financial position, including profitability, liquidity and leverage. The capital markets impact several components of an institution's financial structure: short-term reserves, funded depreciation pools, restricted assets, outstanding debt and the defined benefit pension plan.

The model can help the institution to determine financial policy:

- Investment strategy for on-balance sheet assets.
- Debt structure.
- Compliance with debt covenants.
- Capital expenditures.

This approach can compute financial ratios for liquidity, profitability and capital structure.

Figure Two illustrates how an investment strategy might affect profitability in probabilistic terms.

Endowments

An endowed institution, such as a college, spends a portion of the endowment each year for operations. The institution bears a fiduciary obligation to preserve the purchasing power of each donor's gift. The institution must therefore balance investment and spending strategies.

The institution can employ an analytical framework that tests how different investment and spending strategies are likely to affect future endowment values, spending, and the endowment's prospects for growth in purchasing power. Such a framework can help the institution to select investment and spending strategies that reconcile budget demands and the needs for growth. *Figure Three* illustrates how different policy variables might affect net endowment growth in probabilistic terms. This analysis will quantify the probabilities of achieving growth in purchasing power.

Conclusion

An organization's ability to enhance financial resources will advance its mission. The pursuit of capital growth requires intelligent design and the execution of risk management. Modern risk management practices have promoted a comprehensive integration of assets and liabilities. This holistic approach to managing risks will add value for an organization's stakeholders.
Yanni Partners will continue to pursue robust and effective risk management solutions for its clients.

YANNI PARTNERS

Yanni Partners provides a full range of consulting services vital to the management of various portfolios. Our ultimate goal is to offer a basis for improved investment monitoring and performance.

Yanni Partners is registered as an investment advisor with the Securities Exchange Commission.

Previous issues of Measuring Up are available under Research at www.yannipartners.com