

# **Risk Management Priorities for Asset Owners: What Senior Management and Trustees Need to Know**

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April 2019

# Key Points to Take Away Today

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- Since the Global Financial Crisis, risk management has become a mantra among large asset owners.
  - Unfortunately, much of this attention is misguided and ineffective because it confuses the *appearance* of risk management (e.g. frequent committee meetings) and the reality of responsible risk management.
  - In their haste to get “risk management” in place, many asset owners mistakenly took on practices from the banking industry, sometimes with unhelpful encouragement from regulators whose only experience is dealing with financial intermediaries
- In this presentation we will put forward a set of affirmative recommendations suitable for asset owner risk management

# Examples of Risk Management Run Amok

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- Many asset owners have put an emphasis on the *appearance rather than reality* of risk management
  - A US public pension fund invited Northfield to submit a proposal for risk services, with the understanding we were precluded from any evaluation of the reasonableness of the fund's return assumptions even though we were to be fiduciaries of the plan.
  - Another pension plan, as is often the case, evaluated our services as compared to competitors. After the assessment, we were told that the fund would use a competing service, although they felt ours were analytically superior in key areas. The rationale was that since we were privately held we didn't have enough board and committee meetings to give the *appearance* of "a culture of risk management".

# More Risk Horror Stories About Appearances

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- Northfield was an expert witness in two cases:
  - The risk officer at a California public fund brought a mathematically impossible discrepancy in risk measures to the attention of the CIO and several board members. After being ignored, he brought his suspicions about risk values published in public documents to a newspaper. Although correct, the officer was dismissed for speaking to the press.
  - A family office in New York was sued for fraud by a group of their investors (relatives). The basis was that they had made 65% return in the last 18 months on certain assets, so the family office must have investing in very risky things, while professing that the investments were conservative. A Federal judge dismissed the case for lack of damages and the *attorneys were fined for wasting the court's time.*

# The Regulatory Spectrum

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- In many countries risk control is the key driver of the regulation of retirement plans and mutual funds.
  - Much of the regulation was adapted from banking rules and focuses on operational risk
  - In Australia APRA the retirement plan regulator has lots of broad principles in terms of how “supers” should operate. For example, APRA has suggested that funds advise investors “how many years they might see a negative return out of the next twenty”. Without any reference to magnitude of loss this metric might actually mislead investors
  - The Mexican retirement regulator, CONSAR, has strict limitations on asset allocations, permissible securities and **historic one day VaR limits** for each age group of retirees.
  - Under UCITs requirements in Europe many funds must focus on 10 day VaR

# Ambiguity of Roles and Constituency

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- The biggest problem for asset owner senior management and trustees is understanding the principal and agent responsibilities of whom they represent and in whose benefit they should function
  - Pension funds have existing retirees, future retirees (current workers), the plan sponsor, shareholders, taxpayers. Who is the management and board there to look out for?
  - Mutual funds have boards of directors. Is the directors job to help the shareholders get more return on their investment or help the asset manager get more AUM and thereby revenue? Consider the issue of closing a fund to new investors
  - The unfortunate truth is that the priority of senior management at many asset owners is simply to avoid doing anything that might prove embarrassing to themselves as a matter of job security

# Have Reasonable Long Term Expectations

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- Today's low interest rates and volatile economic growth have fueled wide criticism that many endowment funds and pension plans are very optimistic in their expected returns (and often used as liability discount rates)
  - See Kamakura Consulting article
  - Public pension plans across the United States and in many other countries (e.g. UK) are currently under tremendous pressure. Many plans are already significantly underfunded
  - The Government Accounting Standards Board recently tightened disclosure requirements around funding data and underlying assumptions for public plans
  - We once dealt with a sovereign wealth fund that wanted to promise its government a low risk return of 10% annually for perpetuity. We said that was a bad idea (impolitely).

## Expenses are not Paid with Benchmark Relative Money

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- Many fund investment policy statements focus their risk management concerns on tracking error against a policy benchmark, with little regard for the absolute risk inherent in the policy benchmark itself.
  - Most policies are written this way because it is easy to place blame on an external asset manager who performs poorly, while it is rather more difficult to hold anyone in particular as responsible for a market crash in an asset class to which we have allocated funds.
  - Unfortunately, this custom is counterproductive in that the almost all of absolute risk of loss in a typical pension fund arises from the market risks of the asset classes, not from the potential of specific hired managers to underperform benchmarks
- Long term risk should focus on the accumulation of total wealth to fund the designated future expenditure.



# Asset Owners are Not Banks

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- Banks have the objective of maximizing operating profits while maintaining solvency on a day to day basis
  - *Bank liabilities are at call.* Depositors can walk in and ask for their money at a time of their choosing.
  - *Wealth based risk measures like VaR are natural,* as regulators primary objective is ensure solvency at each moment in time
- Asset owners have the objective of maximizing wealth accumulation over the long run
  - If they have liabilities at all, those liabilities are not current liabilities, but rather are *the present value of future expected consumption expenditures*
  - Long term wealth accumulation is all about the compounding of returns over many periods, *so the natural unit of risk measure is return variance,* which linearly impacts compounding

# Understand Actuarial Semantics

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- Many people assume that if a plan is in “fully funded” status it will not require unexpected additional contributions from the sponsor
  - For most plans where the liability discount rate is the expected rate of return on assets, there is a 50% chance that the realized investment returns will be less than assumed, so there is a 50% probability that additional funding of some size will be needed
  - For FASB 87 compliant plans, the probability of needing additional sponsor funding is less but can still be substantial depending on the volatility of the asset portfolio, the volatility of bond yields and the duration of the liability payment streams
- For underfunded plans, the dependence on additional contributions from the sponsor is obvious
  - Under FASB 87 the sponsoring firm shows pension scheme underfunding as a liability on the corporate balance sheet
  - FASB 106 does the same for health care costs
  - Aforementioned recent GASB changes for public plans

# A Radical View of Pension Funding

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- Every defined benefit pension scheme has sufficient asset value at all times such that the probability of not meeting a required payment is nil
- A significant part of the asset portfolio is a implicit asset which is a portfolio of call options on bonds (i.e. a fixed stream of cash flows) from the sponsoring entity
  - The value of this implicit asset is not only large enough to bring the plan to full funding, but is large enough to bring the plan to a sufficient surplus as to virtually guarantee all obligations
  - Even for a fully funded plan, the notional exposure is real
  - In many plans, the economic value of the implicit asset is 40% or more of the total.  
*How many people would consider it prudent to invest 40% of a fund into a call option on a bond from a single issuer.*
- **The biggest single risk for most pension plans is that the plan sponsor goes bankrupt.**

# Understand the Long Term “Big Picture”

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- We studied the relationship between global financial market returns and global geopolitical conflict
  - Over the 110 years from 1900 to 2010, we measured eleven sets of 10 year returns using data from Dimson, Marsh, and Staunton
  - We constructed a measure of geopolitical conflict as the number of death each year from war, civil war, genocide and famine.
  - We aggregated the data into 11 decade long observations
- Our hypotheses were that conflict was bad for financial market returns, and particularly so for bond markets
  - The correlations of global equity returns and conflict was negative 35%, negative 45% for 60/40 portfolio and as high as **negative 86% (R-squared .74)** for global bond returns

# Risk is About the Future, Not the Past

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- In many plans the only quantitative measure of risk was the “historic tracking error of the fund against the policy benchmark over a sample period of N months.”
- From a conceptual perspective, this kind of view of risk is deeply troubling. *Risk is about understanding the range of potential negative outcomes in an uncertain future. There is nothing uncertain about the past.* Trying to manage pension fund risk on this basis is like driving a car looking in the rear view mirror.
- **Could a homeowner reasonably assert that because their house was not on fire on average over the last sixty months, it is safe to sit in the living room although flames are visible in the kitchen?**
- Risk assessment must be an explicitly forward-looking exercise while many investment policy statements *are written based on the unspoken and heroic assumption that the future will be like the past.* In today’s complex and volatile financial markets the lack of validity of this assumption is self-evident.

# You Can't Ignore the Best of What We Know

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- Risk assessment for a fund is all about the future.
- The only portfolio that is relevant to risk assessment for the *foreseeable future* is the portfolio we hold today.
  - What the risk level was of the portfolio we held on average over the past few years is of little or no consequence.
  - Risk assessment should come from formal risk systems that combine forward-looking assessments of market conditions and the best available information on what specific assets will make up our portfolio going forward.
  - A detailed, granular understanding of our current portfolio is the best estimator of the composition of our portfolio for the foreseeable future.

# What is Your Time Horizon for Risk?

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- Asset owners are long lived entities so the focus should be on the potential range of surplus or deficit (relative to expected spending) many years into the future
- The custom of the financial services industry is to talk about statistical risk measures such as portfolio volatility in annual units.
  - We might say the “volatility of a fund is 8%.”
  - Are we saying that we are making a forecast of 8% *annual volatility* from today to one year from today, or are we making a forecast of the *annualized value of volatility* that is expected over a shorter horizon such as the next week, or the next month?
  - A short horizon might be a good thing for aggressive hedge funds or unusually volatile market conditions

# 100% of Our Portfolio Has Risk Even If We Can't See It

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- The investment policy statements for most funds simply ignore the risk of illiquid alternative investments such as private equity, venture capital and real estate as simply unknowable.
  - The recent Global Financial Crisis, which was centered in real estate-related securities, is illustrative of the folly of this idea.
  - If a pension fund owns a shopping mall or other illiquid asset as an investment, the true economic value of that asset is changing on a daily basis even if we cannot observe it.
  - To the extent that appraisals are used to estimate the value of non-marketable assets, many studies have shown that the volatility of the estimated returns are very downward biased.



# Hedge Funds, Derivatives and Risk Transience in Time

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- With the expansion of organized derivative markets in the 1970s investors faced a new challenge.
  - Instead of just trading off return and risk, we could now transfer risk in the time dimension
  - I take risk today for return tomorrow
  - I can get return today for risk taking tomorrow
  - Many hedge funds intentionally inflate their “risk adjusted performance by doing the latter
- *Risk assessments must use the notional rather than market values of derivative investments.*
  - A market value close to zero will make a derivatives position seem inconsequential when it may massively increase the risk of the portfolio.

# Summary of the Last Two Slides

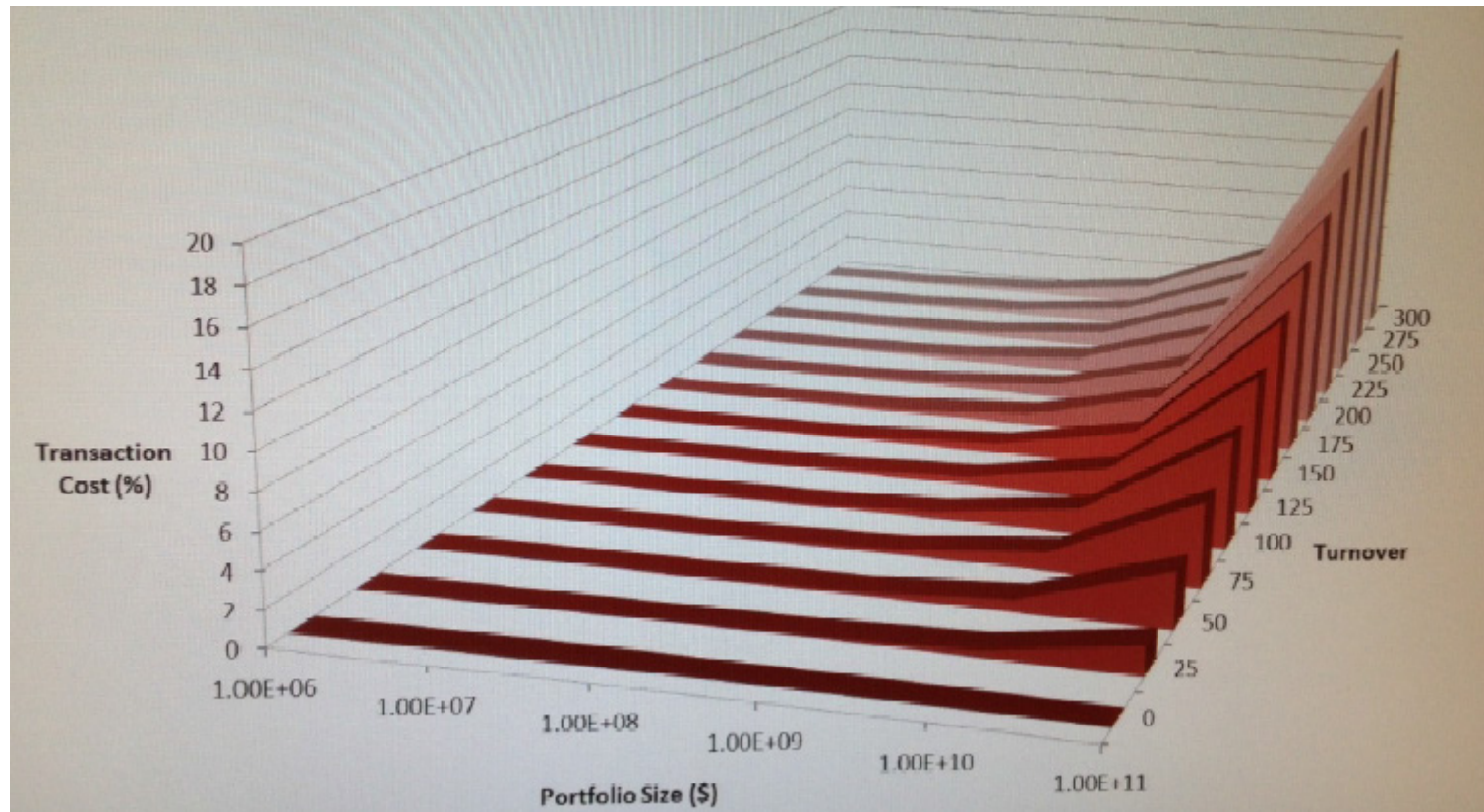
- If you own it, you should know what it is and you should know enough about it to effectively evaluate the risk contributed by that asset to your overall portfolio.

# Liquidity Matters

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- For both the routine payment of expenditures, and the potential desire to reduce the risk of the portfolio during unfavorable market conditions, appropriate plans to maintain liquidity are crucial
- Acerbi and Scandolo (2008)
  - We want to be ready and able to liquidate  $P\%$  of our portfolio in  $N$  trading days at a cost no greater than  $C$
  - Organize our portfolio allocations around this constraint
  - As it is costlier to trade big positions than small ones, diversification is always helpful in reducing this kind of risk
- *In the end “Size (portfolio) does matter”*
  - Build the cost of a hypothetical liquidation into portfolio volatility and VaR estimates

# Capacity Analysis

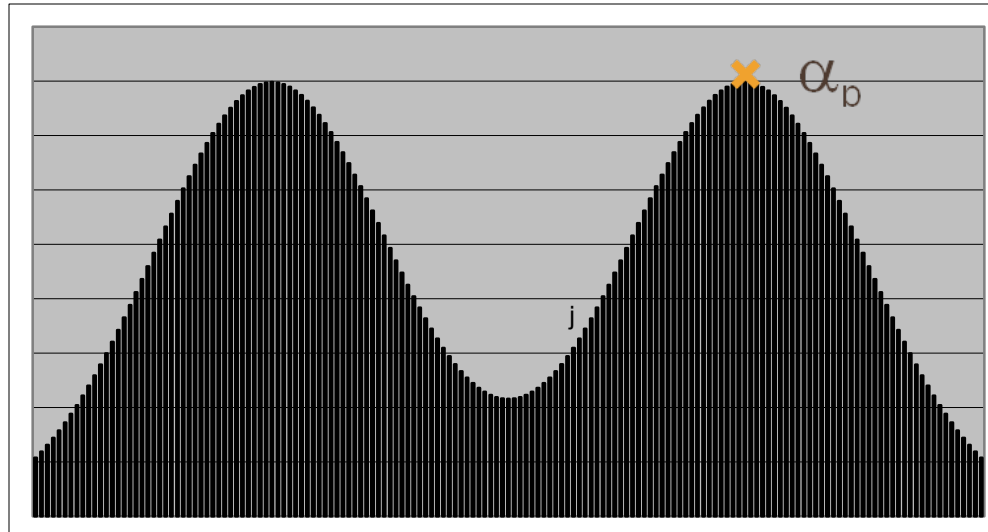


# The Central Paradox of Active Management

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- Many asset owners (encouraged by asset consultants) are preoccupied with hunting for alpha by switching managers, using more aggressive asset managers or higher allocations to hedge funds
- In active management both the manager and investor must believe their long run alpha will be positive, but it's **clearly impossible for everyone to be above average**. *Somebody has to be wrong.*
  - We've created a risk measure to accommodate the paradox
  - Combines tracking error and the risk of picking bad managers
  - For "high Sharpe ratio" managers (e.g. Madoff), **the apparent risk can triple**

# A Picture for Uncertainty of Mean



- The resulting distribution is bimodal with modes at  $\alpha_p$  and  $-\alpha_p$
- Distribution has negative skew and positive excess kurtosis relative to the manager's expectation of  $\alpha_p$

# You Can't Just Measure Risk, You Have to Manage It!

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- Assume you have a \$1 Billion dollar portfolio.
  - What is the probability that the portfolio will be worth \$800 million or less at the end of N years? What is the probability that the value of the portfolio will be \$800 million or less at any moment in the next N years?
  - Kritzman and Rich (2002)
  - The probability of the first event decreases with N but second increases
  - For a very “vanilla” portfolio, the differences in the probabilities are small, *the less vanilla your portfolio the greater the disparity*
- Manage to maximize the median rather than the expected value of surplus
  - Wilcox (2003) “The Discretionary Wealth Hypothesis”
  - Similar to Ed Kelly work on betting in card games
  - Separate capital market expectations and selection of the tangency slope when trying do optimal asset allocation
  - A smarter version of Constant Proportion Portfolio Insurance

# Conclusions

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- Risk management for senior management of asset owners should be driven by a clear understanding of fund objectives in terms of the principals of the fund, rather than the agents of the fund
- In many countries there is little regulation of asset owners, and in other countries the framework has been inappropriately adapted from banking
- Senior management should focus on the long term big picture *issues that may materially impact the fund's ability to fulfill its intended purpose.*



# For Further Reading

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- diBartolomeo, Dan and John Minahan. “Risk Management for Public Pension Funds: Still Trying to Not Waste the Crisis”, *Investments and Wealth Monitor*, Forthcoming October 2014.
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- Dimson, Elroy, Paul Marsh and Mike Staunton, Triumph of the Optimists, Princeton University Press, 2002.

# More Reading

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