# A New Paradigm for the Hiring and Evaluation of Institutional Asset Managers

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# A Kind of Funny Phone Call

- About a year and a half ago, I got a phone call from the CIO of a large US pension plan
- The CIO posed an interesting question:
  - If you had to hire/fire and allocate capital to external active managers in a completely quantified mechanical process, how would you do it?
- I sent them a three page memo outlining my answer
  - A month later we had a face to face discussion
  - The meeting was over by 11 AM so I spent the afternoon skiing
- A month later a surprising call: the CIO said "let's do it"
  - I said "let's do what?"
  - He said "the mechanical manager process"
  - I turned a staff member and said "this going to be fun"
- We're about halfway to live implementation on over $30 Billion in assets

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# Motivation for the Move

- No value added
  - Despite a large internal staff and a set of consultants, the plan sponsor found their average manager performance was average
- The plan sponsor was not really compelled that the managers they hired were skillful rather than lucky
  - Potential skilled but unconventional managers were excluded
- The plan sponsor wanted to preempt any problems with managers trying to improperly influence the process
  - There have been numerous reported cases of bribes and political contributions in attempts to get pension assets to manage
  - A number of public and Taft-Hartley plans have senior decision makers with political rather than investment experience
- All the fees and travel expenses entailed in the traditional seemed frivolous in periods of fiscal austerity
- The lack of discipline in the process made allocating capital between active and passive, and among active managers extremely subjective

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# How It's Going to Work

- The plan sponsor will be setting up a website
  - Any firm that wants to manage money for the sponsor can go there at any time and make application for consideration
  - They will need to fill out a questionnaire, provide a spreadsheet of performance and AUM history, and a brief strategy description
  - New candidate managers and incumbents will be evaluated on a rolling basis
  - The process can deal with thousands of candidate managers
- Capital will be reallocated between active and passive, and among active managers on a periodic basis
- Traditional marketing will be very curtailed
  - "Don't call us, we'll call you"
- Customary verification and due diligence procedures will remain in place

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# A Sports Team Drafting New Players

- The first questions we want to answer:
  - Have our existing managers added value?
  - Would any of the candidate managers have added return to material degree to the fund's performance if they had been employed in the past?
  - Is alpha positive and statistically significant?
- Similar in spirit to a sports team drafting new players
  - If your team already has a great hockey goalie, you are unlikely to want a new one
  - If you have a weak baseball outfielder, you might want to draft a promising outfielder
- First cut process is returns based style analysis
  - Candidate manager return history is dependent variable
  - Incumbent manager histories are the independent variables
  - See diBartolomeo and Lobosco (1997) for confidence interval calculations

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# Quantifying the Qualitative

- The decision to employ an external manager typically involves lots of qualitative evaluation of non-performance aspects of the manager
  - Social responsibility considerations in investment
  - Analyst and PM staff experience
  - Customer relations capabilities
  - Proxy voting
  - Corporate affiliations
  - Equal opportunity/affirmative action employment practices
- With a lot of internal discussion and a consultant, all qualitative questions were summarized in twenty-two multiple choice questions
  - Excludes due diligence verifications

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# Quantifying the Qualitative Part 2

- The 22 multiple-choice questions were specially worded to be evaluated under the Analytic Hierarchy Process
  - AHP is an eigenvector approach to evaluating complex decisions represented by a set of multiple choice questions
  - Invented by Saaty (1980)
- There is a long literature in using AHP for asset allocation and fund selection decisions
  - Bolster, Janjigian and Trahan (1995)
  - Khasari and Grieves (1989)
  - Saraoglu and Detzler (2002)
  - Bolster and Warrick (2008)

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# Quantifying the Qualitative Part 3

- Basically it's a scoring system based on a large matrix of pair-wise comparisons of the acceptability of different answers to questions and the relative weight of questions
  - With respect to question 3, is the "Excellent" answer twice, three times or eight times as valuable as the "Average" answer
  - Is question 3, twice or five times as important as question 4? Is question 4, three times or six times as important as question 1?
  - The eigenvector representation smoothes out the potential conflicts
- Illustrative video at:
  - http://www.northinfo.com/modelssoftware.php#details

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# Assumptions for Performance Evaluation

- To hire external active managers we must believe at least one of three things:
  - The average professional investment manager outperforms passive index funds because individual investors have below index performance
  - **Manager active returns persist. We can predict with reasonable reliability which managers are going to outperform in the future, even if the average manager is just average**
  - We are doing a societal good because if all investors were passive, there would be no functional mechanism to ration capital in the economy. Our economy would break down over time

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# Problems in the Typical Performance Evaluation of Managers

- Much manager evaluation occurs relative to benchmarks that are often not suitable for the manager's investment approach
- Evaluation of past performance is based on standardized periods (i.e. 5 years) rather than periods that are relevant to the manager in question
- Many evaluation measures such as Sharpe ratio or information ratio correspond to meaningful investor utility for only a small fraction of investors
- The statistical significance of ex-post performance is measured in a simple time series fashion.
  - It does not include the context of whether the manager exists among a tightly bunched set of peers or a widely dispersed set
  - This is critical in examining the "luck versus skill" issue

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# A Simple Prescription for Success

- Classification
  - Make sure each fund is being measured against the right benchmark and the right peers
  - We use an augmented method of returns-based style analysis
- Process Control
  - Evaluate each manager over the evaluation period that is the best for that particular manager
  - We use a "Sequential Probability Ratio Test" called CUSUM to find the optimal evaluation period
- Evaluate Past Performance
  - Use a return measure such as alpha, not the Sharpe Ratio or Information Ratio as your measure
  - Use a Bayesian framework adjustment to ex-post alpha to reflect contemporaneous dispersion across managers
  - Does the CUSUM analysis show improving or declining efficiency?
- Process from Bolster, diBartolomeo and Warrick (2006)

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# The Persistence Literature

- If markets are very efficient, there should be no persistence patterns in active management returns. While there are there are innumerable studies showing markets are relatively efficient, many fund studies show that some persistence does exist

- Hendricks, Patel and Zeckahuaser (1993)
  - Find positive persistence only over time horizons less than a year
  - Stronger persistence among worst managers who stay worst
- Elton, Gruber, and Blake (1996)
  - Persistence of "risk adjusted" returns over one to three year time horizons
  - Appears to be correlated with investor capital flows
- Goetzmann and Ibbotson (1994)
  - Persistence over one to two year horizon
  - Effect is stronger for more volatile funds

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# The Persistence Literature is Persistent

- Carhart (1997)
  - Some persistence over a one year horizon but not longer
  - Investment style and expense ratios explain most peristence effects. No evidence of "stockpicking" skill
- Stewart (1998)
  - Funds that have consistently outperformed the &P 500 over a screening period also outperform during subsequent periods
  - Consistent performers hold more diversified portfolios
- Brown & Goetzmann (1995)
  - Find performance persistence in mutual funds using several
  - Superior performance is correlated across managers (style herding)
- Detzel and Weigand (1998)
  - Some persistence in mutual fund returns, but after adjusting for manager investment style, all persistence in returns is explained.

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# Manager Classification Issues

- The sponsor wanted to break out simplistic classifications
  - No more "large-small", "growth-value", "international"
  - Strong desire to allow unconventional strategies that might add value
- Allowing unconventional strategies creates the risk of "gamed" peer comparisons
  - "The best way to win a contest for the largest tomato is to paint a cantaloupe red and hope the judges don't notice"
- Forming manager peer groups:
  - For conventional managers, using iterated returns based style analysis from diBartolomeo and Witkowski (FAJ, 1997)
  - For unconventional managers, we synthesize a peer group using a form of Monte Carlo simulation from Surz (JOI, 1994)

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# Time Horizons for Evaluating Investment Track Records

- Practitioner tradition in the investment industry is to evaluate active manager track records over a long period
  - **At least** 3 to 5 years
  - Some will argue a full "market cycle" is needed
- As we've seen, all the academic studies refute this
  - No evidence that long-term past performance is predictive of future performance
  - If there is any meaning to past performance at all, its short-lived, perhaps the last year

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# The Key Question

- What time portion of a track record do we really need to evaluate as part of our monitoring of manager "quality control"
- What we need is a procedure to draw the line between getting enough meaningful data within a manager's record and older, stale data that should be ignored
- Enter CUSUM

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# The CUSUM Technique

- Backward looking sequential probability ratio test
- Created by E.S. Page in 1954
  - Reliably detects small process shifts
  - Insensitive to probability distribution
  - Provably optimal: detects process shifts faster than any other method.
  - Robust, good under almost any definition of optimality
  - Much better than exponentially weighted moving average.
- Mathematically very tractable: its literally adding up a series of numbers
- Easily analyzed algebraically or graphically

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# A Robust Method of Monitoring Manager Returns: CUSUM

- CUSUM analysis defines key turning points in the active return time series, and defines statistical significance of results subsequent to the turning point
- Use of CUSUM to monitor active managers started with the IBM pension fund
  - Philips, Stein and Yashchin (2003)
- The PSY CUSUM method classifies managers into three categories: Good, We Don't Know, and Bad
  - Managers are reviewed whenever a class boundary is crossed, but is not an automatic "hire/fire" signal
- Our use of CUSUM is different
  - Focus on whether performance is improving or declining since the last regime change
  - If the effectiveness is improving, the CUSUM will plot as an upward sloping line
  - If the effectiveness is declining, the CUSUM will plot as a downward sloping line

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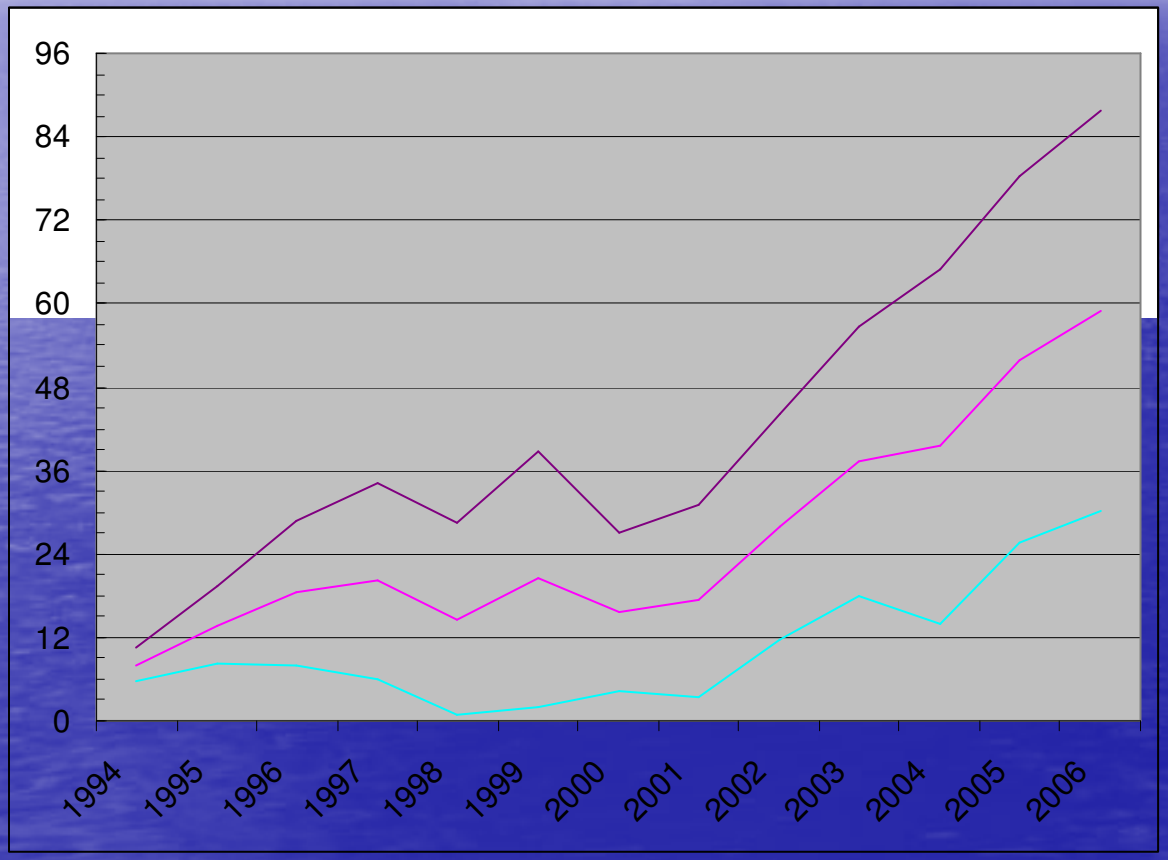
# Average Time Since Regime Change: International Funds

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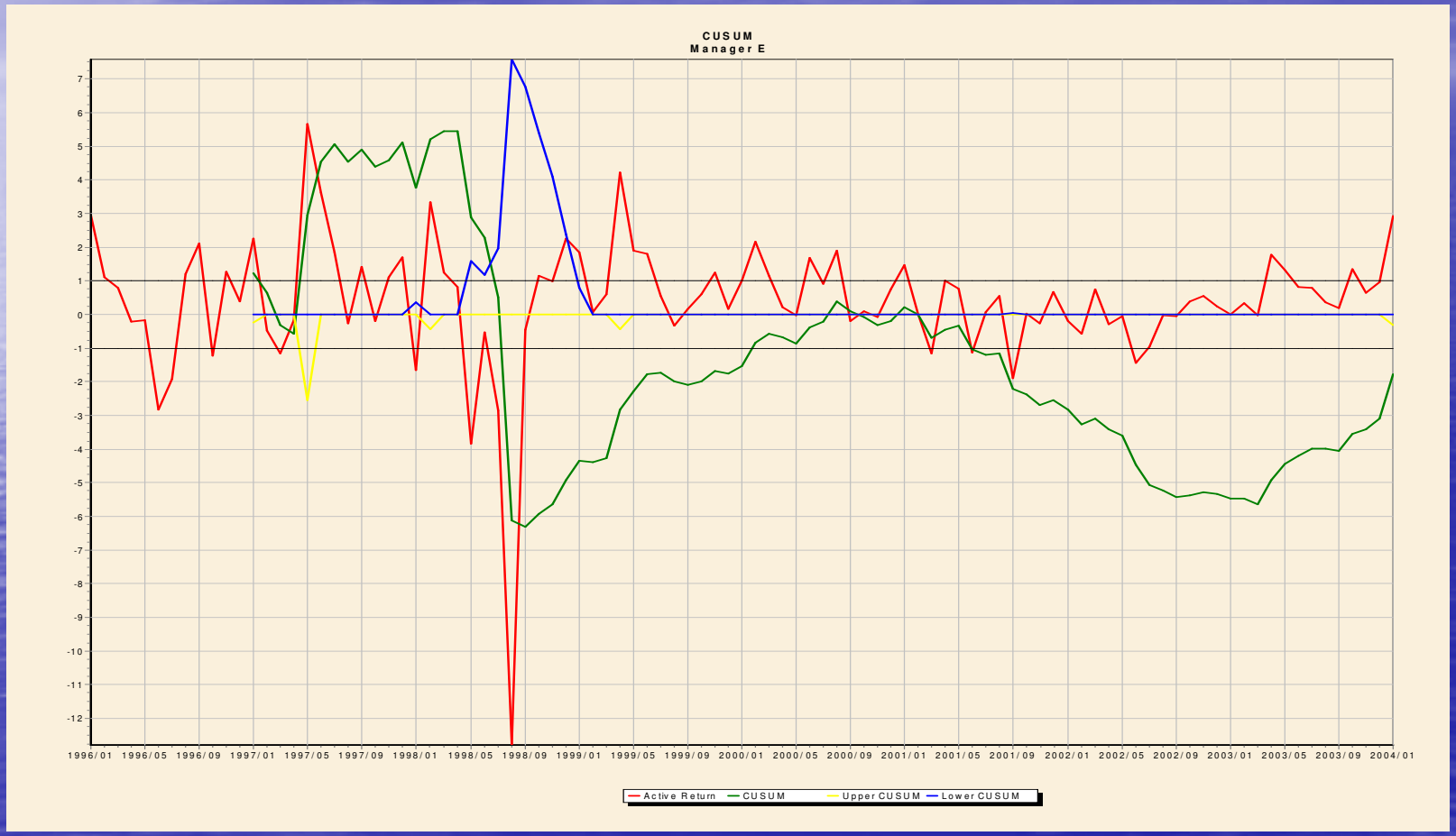
# CUSUM (Green) Plot Shows Regimes of Over and Under Performance

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# Now That We Know the "When", Lets Deal with the "What"

- Many performance measures are not congruent to adding value for investors
  - deGroot and Plantinga (2001)
  - Consider a manager that adds exactly one basis point of return in every time period. The information ratio is infinite, but very little investor wealth is added
- We chose to measure excess return above a carefully chosen benchmark that should reflect both risk and investing style
  - This directly measures added value for investors
  - Our CUSUM analysis is already a variation on information ratios

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# Separating Luck from Skill

- To maximally exploit our information about manager performance we need to separate skillful managers from the merely lucky
- We need to adjust for the fact that if manager returns are widely dispersed within a peer group, its easier to have a high excess return. If the dispersion of returns is low, its harder
- We adopt a method a Bayesian framework of a "precision weighted" estimate that incorporates information about the dispersion of peer fund returns during the evaluation period for each fund
  - Similar to Shanken and Jones (2004) without the elaborate Monte-Carlo simulations

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# The Precision Weighted Excess Return Estimate: An Example

- Lets assume Manager X has an excess return (A) of 4% per year with a standard deviation (S) of 4%
- Over the same time period, the average peer manager had an annual excess return of .25% (Mean), and the dispersion (CSD) of the excess returns across the peer group is 1.5%

  $E = (A/S^2 + Mean/CSD^2) / (1/S^2 + 1/CSD^2)$

  $A = 4, S = 4, MEAN = .25, CSD = 1.5$

  $E\ (precision\ weighted) = (0.361) / (0.5069) = 0.712$

- We assume the manager has skill sufficient to add 71 basis points per year over the benchmark

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# Empirical Conclusions BDW (2006)

- Large scale tests on three data sets
  - Domestic mutual funds
  - International mutual funds
  - Hedge funds
- The hypothesis that past returns can be used to predict future returns is supported to a degree of virtual statistical certainty
  - Using raw excess returns, the expected excess returns are about 20% of the observed past returns
  - Using precision weighted excess returns, the expected values are over 40% of the past values
- Given the observed dispersion among manager returns, large and economically significant excess returns should be available to investors

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# Capacity Analysis

- As the plan sponsor is very large, we wanted to incorporate capacity limits into capital allocations
  - For background, see Vangelisti (2006)
- We adjust manager alpha estimates as a function of capital allocated
  - Market impact of trading will rise decreasing net alpha (k values from Northfield trading cost model)

$$\alpha = \Sigma_{i = 1 \text{ to } N} \alpha_i w_i (1 - k_i w_i)$$

- We frame the capacity upper bound in the form of a liquidation policy:
  - We want limit the amount of capital to the manager such that liquidation of P percent of the manager's portfolio could be accomplished in N days at cost of no more than C %, to begin within T days of the decision

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# Finishing the Job: Handing Out Money

- Capital allocations to external managers will be rebalanced periodically
- Analytical process is a mean-variance optimization with some bells and whistles
  - See diBartolomeo (2003) for basic framework
  - Market and active risks are defined separately so the active/passive decision is automatically done at the same time
  - Capacity limits
  - Amortized hire/fire costs are included
  - Ex-ante manager correlations from risk models on recent holdings
- A new definition of active risk (not tracking error) will be incorporated
  - See diBartolomeo (2010)

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# Conclusions

- We now believe it is entirely feasible for a plan sponsor to operate their manager evaluation, allocation and monitoring processes completely mechanically
- The most challenging part of the process has the qualitative aspects of the manager evaluation process
  - The AHP process has proven to be an excellent tool
- The sponsor will have a process in place that:
  - Is immune from being overly influenced by marketing
  - Creates conviction that truly skillful managers are being hired
  - Allows for a much broader range of managers and styles
  - Explicitly addresses capacity limits and manager transition costs
- We are confident this effort will have profound effects for asset management marketing in the future

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