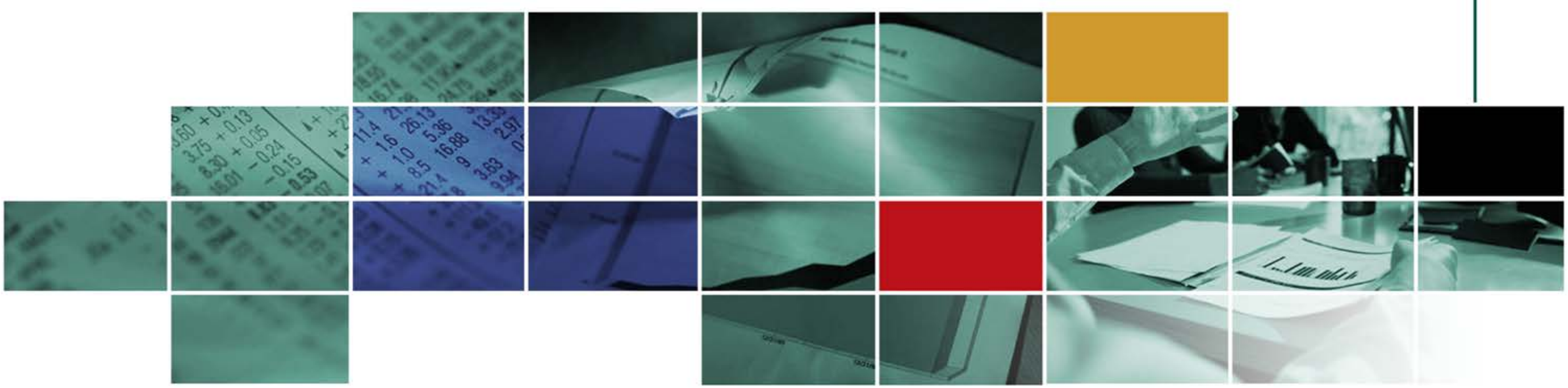
RVKuhns & ASSOCIATES, INC.

Investment Manager Evaluation

Some Thoughts on the Science and Art of Investment Manager Selection, Funding, and Termination

The Los Angeles Fire and Police Pension System

July 2011



Introduction

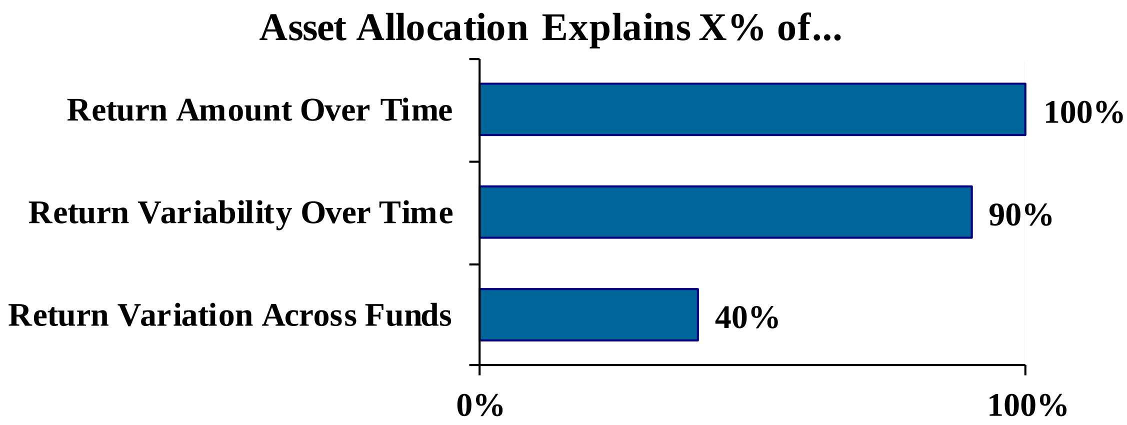
- **The purpose of this presentation is to review common manager evaluation practices, while also outlining RVK's preferred approach to manager evaluation.**
- Since we believe that evaluation decisions do not reside in isolation within the portfolio structure, we will begin by outlining some portfolio principles that we believe should define the evaluation framework.
- As is typical with decisions under substantial uncertainty, we do not claim our approach is unquestionably optimal, or that it will not evolve as we learn more about the complex environment in which evaluation decisions are made.

In Summary, we believe that…

- Asset allocation "drives" portfolio return, and thus institutional decision makers should devote more effort to setting an appropriate strategic asset allocation than to manager evaluation.
- Active risk should be focused in areas with commensurate returns and be diversified across multiple axes.
- Manager decisions should be considered within the broader allocation or sub-allocation framework.
- **Best practices should be instituted at the Board level to help avoid common group dynamic issues.**
- **The Manager evaluation process should focus more on qualitative factors supplemented with diligent quantitative review.**
- **Quantitative review should not focus primarily on performance, but rather a variety of metrics, which should include fees, appropriate peer comparisons, multiple cycles, as well as risk assessment.**

Asset Allocation “drives” the portfolio

- We believe that strategic **asset allocation** is the most powerful determinant of total fund performance in the long run.
- While good manager evaluation decisions will unquestionably add to performance, they cannot makeup for a poorly diversified, risk/return inefficient allocation.
- Multiple studies calculated the effects of asset allocation on portfolio returns. The findings are summarized below:



Source: Ibbotson, Roger G. and Paul D. Kaplan, 2000. “Does Asset Allocation Policy Explain 40%, 90%, or 100% of Performance?”. Financial Analysts Journal. January/February 2000, Vol.56, No.1, pp.26-33.

Role of Active and Passive Allocations

- We believe that **active and passive allocations both have a role** in most portfolios.

- **Passive allocations reduce costs**
  - A head start for both relative and absolute performance.
  - For example, the average passive Large Cap US Equity fund is ~50bps less expensive than most active products.

- **Active allocations increase relative risk**
  - For example, the average active LC US Equity fund increases tracking error from ~10bps (for passive) to ~400bps, though active risk can be reduced through manager diversification.

- **Active allocations increase the potential for alpha**
  - For example, the median active Large Cap Core US Equity fund has provided ~50bps in excess return (after fees) per year over the last 22 years, which translates to $5 million per year on a $1 billion investment.

Board Dynamics

Behavioral Biases

- Individuals and groups involved in manager evaluation decision-making for institutional funds (advisors included) are subject to well known behavioral finance biases that, if left unchallenged, will often lead to poor decisions.
- Examples of common individual biases:
  - **Loss Avoidance:** People value losses and gains very differently – losses are very painful. The pain from a loss of $1 is greater than the satisfaction of a gain of $1.
  - **Recency:** People tend to weigh recent events more heavily than earlier events. Surveys indicate that committees tend to rank recent performance as the most important factor affecting their decision to turnover managers*.
  - **Endowment:** People have a tendency to highly value what they already have, purely because it is theirs.
  - **Confirmation:** People tend to more strongly weight evidence that confirms their current beliefs.
- Examples of common group biases:
  - **Action bias***: Groups tend to be biased to take action, over inaction.
  - **Polarization***: Groups tend to make more extreme (conservative or aggressive) decisions than individual members would make on their own.
  - **Authority bias****: Groups tend to support the ideas of people in power – i.e. the Chair.
  - **Thud Factor****: Groups tend to view more data as more verification.

*Source: LaBarge, Karin, 2010. "What matters most? An analysis of investment committee hire/fire decision". Vanguard research, August 2010. Accessed 15 October 2010 at https://institutional.vanguard.com/VGApp/iip/site/institutional/researchandcomm. **Source: Wood, Arnold S., 2006. "Behavioral Finance and Investment Committee Decision Making". CFA Institute Conference Proceedings Quarterly. Vol. 23, No. 4, pp. 29-37.

Best Practices To Avoid Group Biases

- We believe that the following best practices instituted at the Board level will help avoid common group dynamic issues:
  - **Objective and Purpose of the Portfolio*:** A statement clearly laying out the objective and purpose of the portfolio should exist and be followed.
  - **Defined Roles and Responsibilities*:** Avoid relying too heavily on one member, and avoid potential conflicts of interest.
  - **Common Sense and Discipline*:** Be skeptical and remain committed to the objective and strategy.
  - **Remind the Board of Their Purpose****: Focus time on items critical to the success of the Board, not on topics that are fun to discuss.
  - **Different Perspectives*****:
    - Allow people to be comfortable being critical.
    - Insist that decisions need to consider all relevant factors.
    - Be wary of letting one factor, and especially one vocal Board member's favorite factor, be the hinge on which all evaluation decisions turn.

*Source: Gordon, Catherine D., 2004. "Investment Committees: Vanguard's View of Best Practices". Vanguard research, June 2004. Accessed 7 October 2010 at https://institutional.vanguard.com/VGApp/iip/site/institutional/researchcommentary/article?File=InvestCommVGsView.

**Source: Wood, Arnold S., 2006. "Behavioral Finance and Investment Committee Decision Making". CFA Institute Conference Proceedings Quarterly. Vol. 23, No. 4, pp. 29-37.

*** Source: Bazerman, Max and Laura Nemeth, 2009. "Is there a gorilla in your portfolio?". Currents. July 2009, pp. 10-13

Manager Selection

Introduction

- When evaluating managers, in our experience, institutional decision makers tend to over emphasize the following factors:
  - Past performance (in particular, trailing returns)
  - Assets under management
  - Presentation abilities
- Close examination of the aforementioned factors reveals their shortcomings in predicting future returns.
- We believe that the evaluation should instead emphasize **qualitative** factors and **fees,** supplemented with diligent risk-adjusted quantitative analysis over multiple cycles.
- We would also recommend more emphasis on **Active Share**, which is a new analytical factor that assesses alpha potential.

Past Performance ≠ Future Performance

- Studies indicate that past performance does not necessarily translate into future results.
  - Please review the below list of sample studies, as well as the analysis and discussion on the following slides, for additional information related to performance persistence.

- Considering the results of these and other studies, it seems likely past performance often receives excessive weighting in manager evaluation decisions, and that such disproportionate reliance is unwarranted.
  - Many studies provide no significant support for the notion that recent performance alone is unquestionably a reliable predictor of future performance. Efforts to improve manager evaluation decision outcomes must therefore extend to factors beyond past performance.

Source: Carhart, Mark M., 1997. "On Persistence in Mutual Fund Performance". The Journal of Finance. March 1997, Vol. 52, No. 1, pp. 57-82.

Source: Busse, Jeffrey A., Amit Goyal & Sunil Wahal, 2006. "Performance Persistence in Institutional Investment Management". European Finance Association 2006 Zurich Meetings Paper.

Source: Goyal , Amit & Sunil Wahal, 2004 "The Selection and Termination of Investment Management Firms by Plan Sponsors". European Finance Association 2005 Moscow Meetings Paper.

Performance Persistence **Analysis**

- As illustrated by the below charts, RVK found no significant evidence of performance persistence by analyzing historical manager return data.

Rank Persistency of Top Quartile Managers (based on **5** year rolling total returns)						
Top Quartile mngrs ranking above MEDIAN through 12.30.2010	Core US Fixed Income	Large Cap US Growth	Large Cap US Core	Large Cap US Value	Small Cap US Core	EAFE Core
% above median based on 1991-1995 rank	47%	27%	29%	36%	n/a	n/a
% above median based on 1996-2000 rank	43%	20%	30%	24%	27%	33%
% above median based on 2001-2005 rank	41%	42%	39%	34%	**62%**	36%

50% is considered random, greater than 50 is desirable

Example: 47% of top quartile Core Fixed Income managers (rank based on 1991-1995 five year total return) ranked above median for 1996-2010 period.

Rank Persistency of Top Quartile Managers (based on **3** year rolling total returns)						
Top Quartile mngrs ranking above MEDIAN through 12.30.2010	Core US Fixed Income	Large Cap US Growth	Large Cap US Core	Large Cap US Value	Small Cap US Core	EAFE Core
% above median based on 1990-1992 rank	31%	36%	**54%**	36%	n/a	n/a
% above median based on 1993-1995 rank	**59%**	32%	37%	43%	n/a	n/a
% above median based on 1996-1998 rank	43%	28%	27%	21%	27%	22%
% above median based on 1999-2001 rank	44%	41%	**52%**	44%	**67%**	42%
% above median based on 2002-2004 rank	45%	39%	35%	39%	42%	26%
% above median based on 2005-2007 rank	**57%**	24%	40%	**51%**	**57%**	44%

50% is considered random, greater than 50 is desirable

Data Source: eVestment Alliance. https://www.evestment.com.

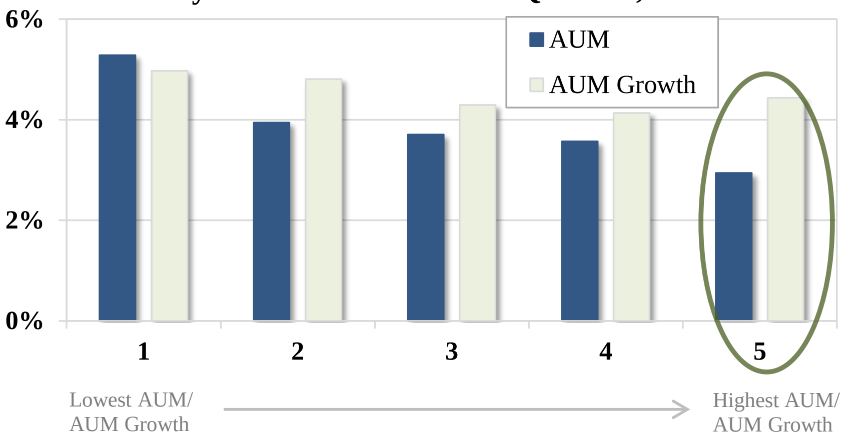
Minimum Qualifications limitations

- We believe that Minimum Qualifications (**MQs**) are a potentially dangerous screening tool that can lead to poor evaluation decisions.
- In other words, limiting the manager universe can also limit the potential for future returns.
- We find that it is especially relevant when aggressively applied in a way that over emphasizes past performance and fund size since:
  - **Historical returns** have a "fuzzy" relationship with future returns (see subsequent discussion on performance).
  - **Higher AUM** levels (and rapid AUM growth) could potentially hinder future returns (see subsequent discussion on AUM).

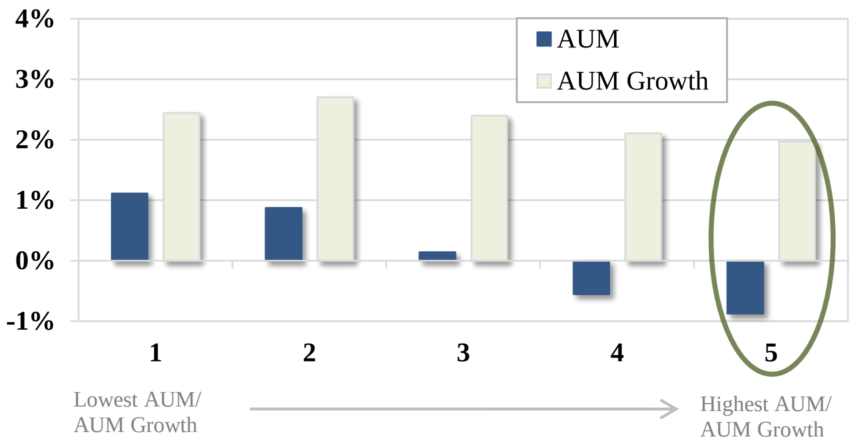
Bigger AUM ≠ Better Performance

- Limiting the manager universe, in the belief that {Bigger AUM = Higher Institutional Quality = Better Performance}, can backfire and limit returns.
- In the studies below, top quintiles managers by AUM and AUM growth in the Large Cap Value and Growth universes (circled in green) produced one of the lowest average forward returns (annualized).
- Studies for more asset classes are presented in the Appendix.

Large Cap Value: Mean 3 Yr Forward Return by AUM & AUM Growth Quintiles, *1999-2007*



Large Cap Growth: Mean 3 Yr Forward Return by AUM & AUM Growth Quintiles, *1999-2007*



Source: eVestment Alliance. https://www.evestment.com

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Less Emphasis on Presentation Skills

- We believe that investment managers should be hired for their expected **ability to deliver future outperformance** in the form of excess returns, rather than for their presentation abilities.

- It is possible that the substance of a lackluster presentation is actually superior to the content of the “impressive” presentation.

- RVK has interviewed some pretty dry Statisticians, and some pretty engaging Traders, but we strive to ensure that content wins.

More Emphasis on Qualitative Factors

- We believe that better manager evaluation decisions require that critical **qualitative** factors be weighted at least equally with the performance and other available quantitative data.

- Qualitative factors for review should include characteristics such as philosophy, process, people, stability, experience, depth, etc.*
- Acquiring comfort with the **people** and their **philosophy** can improve manager selection, as well as manager termination.
  - A qualitative focus can provide comfort during the trough of a performance cycle – knowing the same smart people and philosophy are steering the ship to future peaks later in the performance cycle.
- While more subjective and difficult to convey, we believe qualitative factors are a very informative manager selection criteria.
  - Alpha comes from **people** and their investment **ideas**, not the product and its historical movements.

*Source: Tipple, Brian, 2010. “Avoiding the Pitfalls: Best Practices in Manager Research and Due Diligence”. CFA Institute Conference Proceeding Quarterly. June 2010, Vol. 27, No.2, pp. 46-51.

Pay Attention to Fees

- We believe that **lower fees** generally are a powerful and reliable factor in raising the probability of both absolute performance and relative performance versus a benchmark.

- Lower fees are like getting a head start in a race – it will not guarantee that you win, but it sure helps your chances.
  - Studies suggest lower fees might explain some performance persistence.*

- Focusing on fees also simultaneously helps to focus on the magnitude and cost of active risk taken.
  - For example, the cost-benefit analysis might suggest that unless a manager is providing an especially active strategy then a Plan should not pay an especially high fee** (more beta should be less expensive).

*Source: Carhart, Mark M., 1997. “On Persistence in Mutual Fund Performance”. The Journal of Finance. March 1997, Vol. 52, No. 1, pp. 57-82.

**Source: Miller, Ross M., 2005. “Measuring the True Cost of Active Management by Mutual Funds”. Journal of Investment Management. First Quarter 2007, Vol. 5, No. 1, pp. 29-49.

New Diagnostic Tool: Active Share*

- We recommend introducing Active Share (AS) as a new diagnostic tool during the evaluation process.
  - Active Share compares the holdings of a manager with the holdings of its benchmark index; it indicates the size of the active positions as a fraction of the entire portfolio.
- The benefits of Active Share are:
  - Can assist in selecting better investment managers – based on a recent study Active Share appears to have explanatory power for future performance (please see Appendix).
  - Helps determine how active a manager is; can track active management of a fund over time.
  - Helps determine the type of active management of a fund.
  - More objective comparison across funds.
- Active Share is similar to Tracking Error in that it is designed to quantify active portfolio management.
  - However, tracking error can understate active management for stock pickers who can achieve sector weights similar to an index while making bets on particular companies within each sector; and overstate active management for macro managers making sector/factor bets.

*Source: Cremers, Martin & Petajisto, Antti, 2007. “How Active is your Fund Manager? A New Measure that Predicts Performance”. Yale ICF Working Papers.

Manager Transitions

Introduction

- Common reasons for manager terminations include:
  - Poor performance (relative and/or absolute)
  - Change to the investment management team
  - Plan re-allocation due to target asset allocation changes
- Since performance is probably the most common reason for firing a manager, we asked ourselves the following questions:
  - Is it reasonable to expect consistent outperformance from managers?
  - Can investors appropriately “time” transitions? Does firing an incumbent and hiring a replacement manager ultimately result in better performance?
- We also considered the burden of transition costs, as well as how Plans utilize Watch-list policies.

Setting Reasonable Expectations

- We believe that no investment manager or product should be expected to outperform their relevant benchmark(s) at all times, in all market environments, and that holding such an expectation will likely lead to bad manager evaluation decisions.
- Expectations of sustained, sequential outperformance are unrealistic and likely detrimental.
  - Any manager with a superior long-term track records is virtually certain to underperform, perhaps significantly, for multiple periods within that excellent record.
  - Thus even for the most effective long-term managers, a Plan will face numerous temptations along a path of long-term excellence to pass them over for other mandates, reduce their allocation, or terminate them.
- Expectations of outperformance by all the Plan's managers at all times are completely at odds with the desirability of risk mitigation through mandate and manager diversification.
  - If all managers are outperforming at the same time, odds are quite high the mandates created, and the managers selected to implement them, are not diversified and will tend to underperform as a group in a different market regime.

Consistency Analysis

Top Quartile Managers Also Experience Down Periods

- An analysis of top-quartile managers with 10+ year track records (ranks as of 12/31/2010) indicates that even top-quartile managers may experience a sustained period of below-median returns.
  - This period of underperformance may last several quarters, or even multiple years.
  - Following a period of underperformance, the managers in the study often experienced a significant performance recovery.

As of 12.31.2010 (1)	No. of products with 10 yr record		% of top Q mngrs that ranked below median…		Avg no. of *consecutive* Qs spent below median (2)	No. mngrs who recovered from "down period" by 09.30.2010 (3), (4)	Avg rank of the recovered mngrs following 1st "down" period (4)
	Total	Top Quartile	for 1 or more quarters	for 4 or more quarters			
US Large Cap Value	176	44	89%	77%	7.6	17	26.5
US Large Cap Growth	204	51	92%	69%	5.6	24	28.1
US Small Cap Value	124	31	94%	61%	4.3	11	27.3
US Small Cap Growth	116	29	93%	72%	6.3	16	31.6
Fixed Income - Core	164	41	90%	68%	5.6	24	24.4
Fixed Income - High Yield	72	18	94%	72%	4.2	8	29.0
Non-US Equity - EAFE Core	40	10	90%	90%	5.6	6	22.4
Non-US Equity - Emerging	72	18	94%	67%	5.0	6	26.7

(1) For this analysis we used quarterly fund ranks for three year rolling periods; ranks are based on total gross of fees returns.
(2) The average is calculated on below median periods lasting more then one quarter; ouf of total 10 years analyzed in this study.
(3) Managers who experienced one or more periods of below median ranks for four or more consecutive quarters and achieved above median returns as of 09.30.2010.
(4) "Down period" is classified as four or more consecutive quarters of below median ranks.

Data Source: eVestment Alliance. https://www.evestment.com.

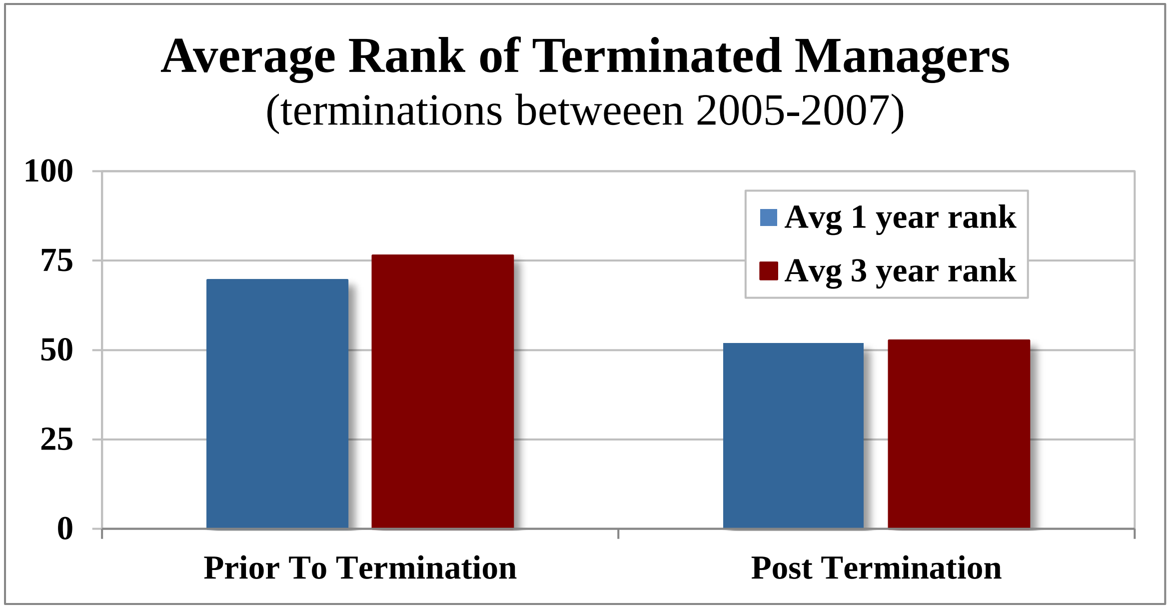
Timing Transitions is Difficult

- We believe that **gainfully timing** the termination as well as the hiring of a new manager is quite difficult.
- Empirical studies indicate that **investor** returns are generally *worse* than **fund** returns as investors tend to pull money out, and put money in, at the wrong time.
  - The market constants of “fear and greed” often lead to buying high and selling low.
  - Most investments go through various cycles, lasting from a few months to several years, and these cycles imply reversions which are difficult to correctly time.
- These studies also show that “chasing returns” by replacing an underperforming incumbent with a recent top performing manager does not necessarily lead to better performance than the status quo. To the contrary, fired managers often outperform newly hired managers after the hiring/firing event.
- Please review the next three slides, which investigate “chasing returns”.

"Chasing Returns": Study

Poor Recent Performance ≠ Poor Future Performance

- RVK conducted a study of actual client manager termination decisions
  - On average the rank of the terminated managers significantly improved post termination event.
  - Poor *past* performance does not necessarily mean poor *future* performance.
  - It is important to understand the reasons for short-term underperformance.



Source: R.V. Kuhns & Associates, Inc. , 2010. Client data for 36 performance based terminations of managers from 2005 to 2007.

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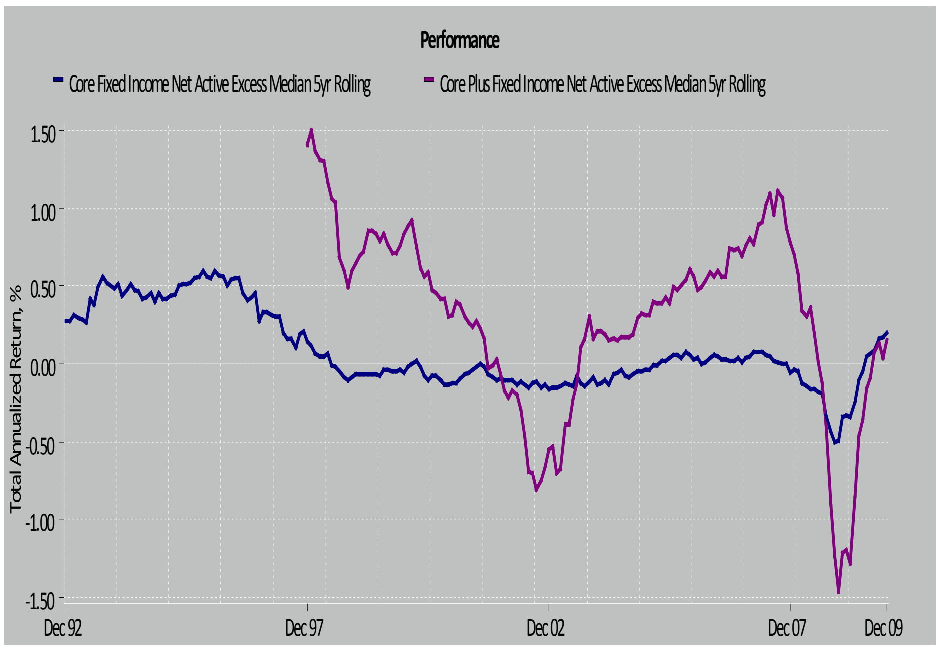
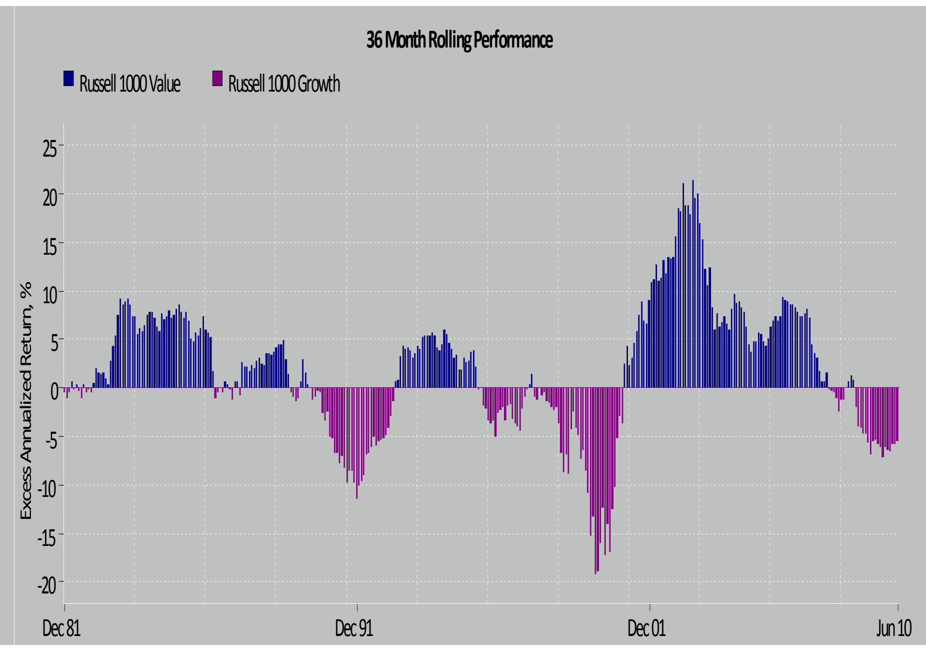
Investment Cycles

- Business cycles are discussed frequently
- …but there are many other cycles that are important for investors to be aware of such as Asset, Manager, Economic, Market, etc.
- It can be helpful to remind ourselves that most investments go through cycles, and cycles imply reversion (the below charts illustrate some basic examples)





Data Source: eVestment Alliance. https://www.evestment.com.

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When Evaluating Incumbents…

- The wisdom of an evaluation decision is best judged not merely by the manager’s relative performance data but also by:
  (1) how well the manager’s results fulfilled the **mandate** chosen by the Board,
  (2) how well the manager performed versus **direct peers** – those with strategies and products that target a similar mandate.
- Transitioning funds from one manager to another always carries with it a potential performance penalty (**transaction costs**) for the total fund and the asset class composite.
- Manager Watch Lists can be useful, but they can also lead to poor termination outcomes if the Watch List criteria alone become the criteria for the termination decision.
  - The objective of a Watch List Policy should be to help identify managers that deserve closer scrutiny and ongoing monitoring.
  - **Watch Lists should not be viewed as Action Lists.**
  - Managers should not be terminated simply for being on the Watch List for n periods of time, as even good managers will experience periods of underperformance.
  - It is dangerous to focus attention only on trailing returns (and trailing ranks) which are the most common Watch List quantitative factors.

When Evaluating Incumbents…

Consider Transition Costs

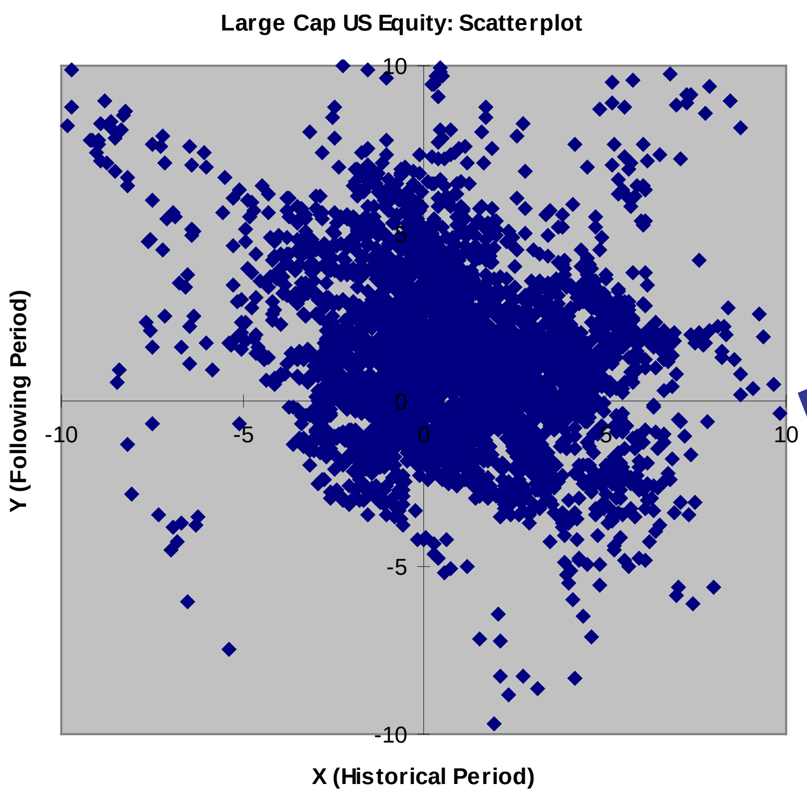
- 2010 Average Implementation Shortfall Measures by Asset Class
  - US Equities Large Cap: 19 basis points
  - US Equities SMid Cap: 36 basis points
  - Non-US Equities: 32 basis points
  - Emerging Markets: 67 basis points
  - US Fixed Income: 43 basis points
  - Non-US Fixed Income: 63 basis points

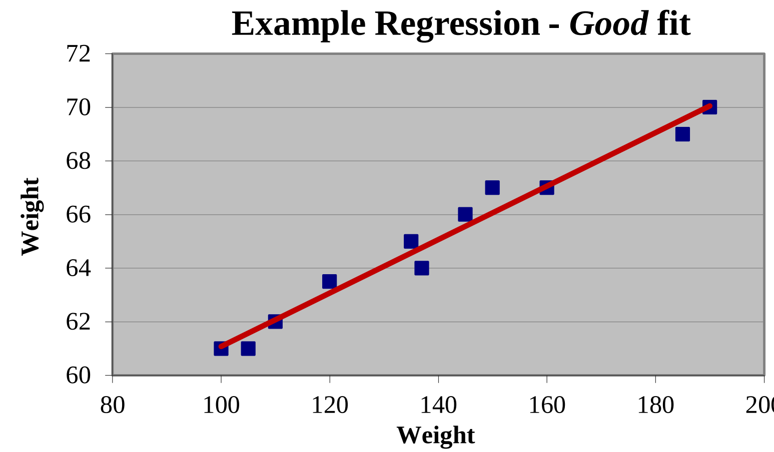
Data Source: State Street Global Markets, October 15, 2010.

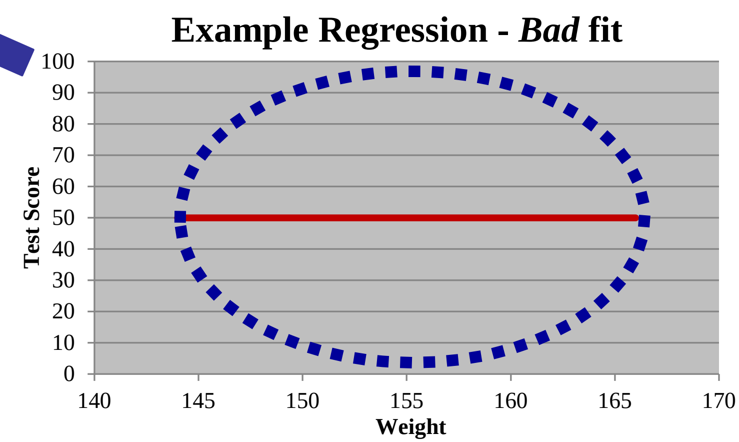
Appendix

Performance Persistence Analysis #2

- As illustrated by the below chart, and more that not shown, RVK found no significant evidence of performance persistence by analyzing rolling historical manager return data.







Data Source: eVestment Alliance. https://www.evestment.com.

Active Share: Study

- According to the study performed by the inventors of Active Share, the most active funds have significantly outperformed the less active funds, regardless of the tracking errors. In fact, low active share makes it more difficult (mathematically) to produce alpha since the manager has fewer deviations from the benchmark.

Net Equal-Weighted Excess Returns for All Equity Mutual Funds in 1990-2003*

	Tracking Error Quintile							
Active Share quintile	Low	2	3	4	High	**All**	# of Funds	AUM
High	1.20	0.60	1.45	2.04	1.63	**1.39**	816	$ 432
4	1.00	0.83	0.44	-0.31	0.02	**0.39**	469	$ 507
3	0.44	-0.54	-0.85	-0.93	-1.31	**-0.64**	253	$ 426
2	-1.17	-0.39	-1.18	-1.44	-2.73	**-1.38**	55	$ 128
Low	-1.20	-1.13	-0.91	-1.62	-2.21	**-1.41**	85	$ 236
All	0.05	-1.12	-0.21	-0.45	-0.92		1,678	$1,728
High - Low	**2.40**	**1.73**	**2.36**	**3.66**	**3.84**	**2.80**		

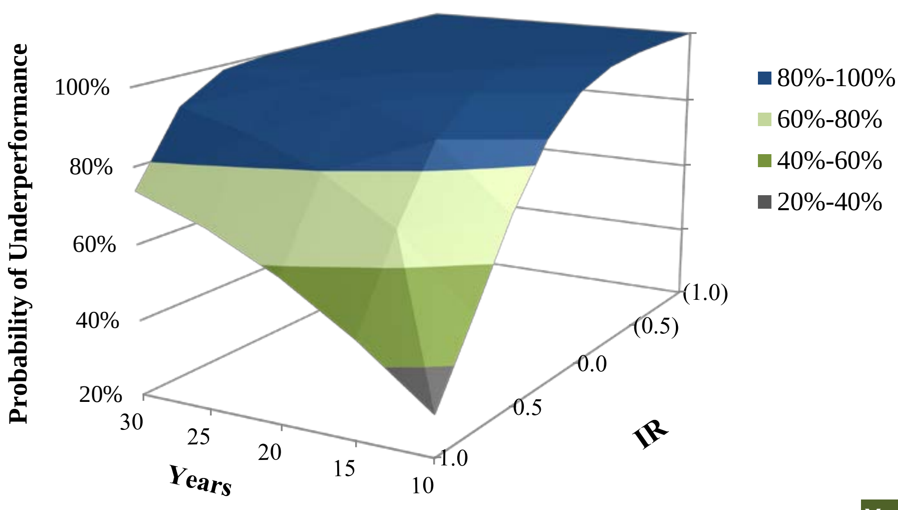
*Source: Cremers, Martin & Petajisto, Antti, 2007. "How Active is your Fund Manager? A New Measure that Predicts Performance". Yale ICF Working Papers.

Consistency Analysis #2

Reasonable Probability of Underperformance

- The below chart and table outline the probability of **underperformance** given varying levels of Information Ratios, as well as across various time periods.

Probability of at least One Rolling 4-Year Period of Underperformance



Note: based on 10,000 Monte Carlo simulations for 30 years and 41 Information Ratios combination. Excess Correlation assumption is 0.20. The analysis is not based on actual manager data.

- The lower the assumed IR, the greater the probability of experiencing a rolling 4 year period of underperformance (in blue).
- The longer the evaluation period, the greater the probability of experiencing a rolling period of underperformance.
- Correlation of excess return is assumed to be 0.20, but as the correlation increases so does the probability of underperformance.

	IR								
Years	(1.0)	(0.8)	(0.5)	(0.3)	0.0	0.3	0.5	0.8	1.0
10	100%	100%	100%	98%	94%	85%	70%	50%	31%
15	100%	100%	100%	100%	99%	95%	87%	68%	45%
20	100%	100%	100%	100%	100%	99%	94%	80%	58%
25	100%	100%	100%	100%	100%	100%	97%	87%	67%
30	100%	100%	100%	100%	100%	100%	99%	92%	74%

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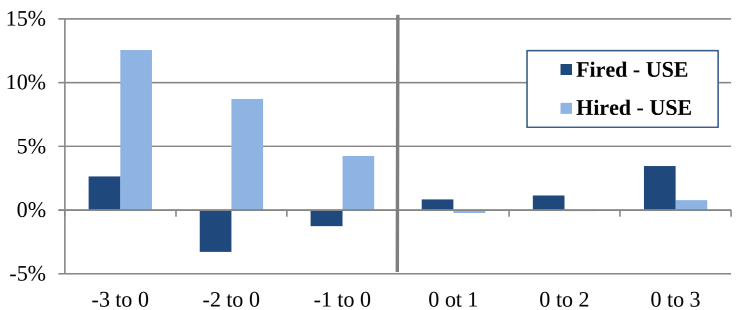
"Chasing Returns": Study #2

Replacement Managers ≠ Better Returns

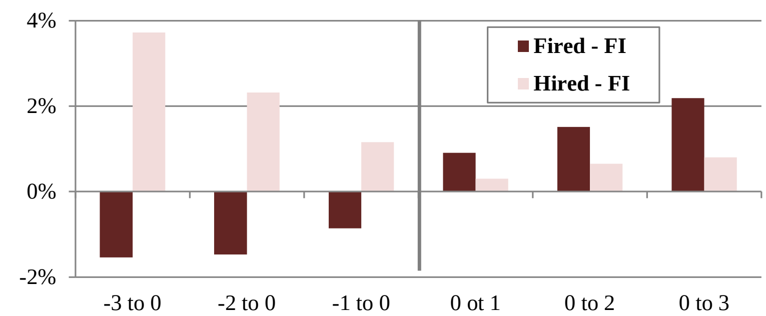
- An academic paper* presented a similar study for plan sponsors, concluding the following:
  - If plan sponsors had stayed with fired investment managers, on average their excess returns would be no different than those actually delivered by newly hired managers.
  - Plan sponsors hire investment managers after superior performance but on average, post-hiring excess returns are zero.
  - The "round-trip" firing and hiring decisions of plan sponsors resulted, on average, in no excess returns relative to taking no action.

Domestic Equity Universe:
Excess Returns Before Firing Incumbent,
and After Hiring New Manager



Time Period in Years (hiring/firing event at t=0)

Fixed Income Universe:
Excess Returns Before Firing Incumbent,
and After Hiring New Manager



Time Period in Years (hiring/firing event at t=0)

The study examined the selection and termination of investment management firms by 3,400 plan sponsors between 1994 and 2003. Plan sponsors included all types of corporate and public plans as well as endowments and foundations. The reasons for firing were multiple: poor performance, organizational changes, manager mergers, plan re-allocation, and other.

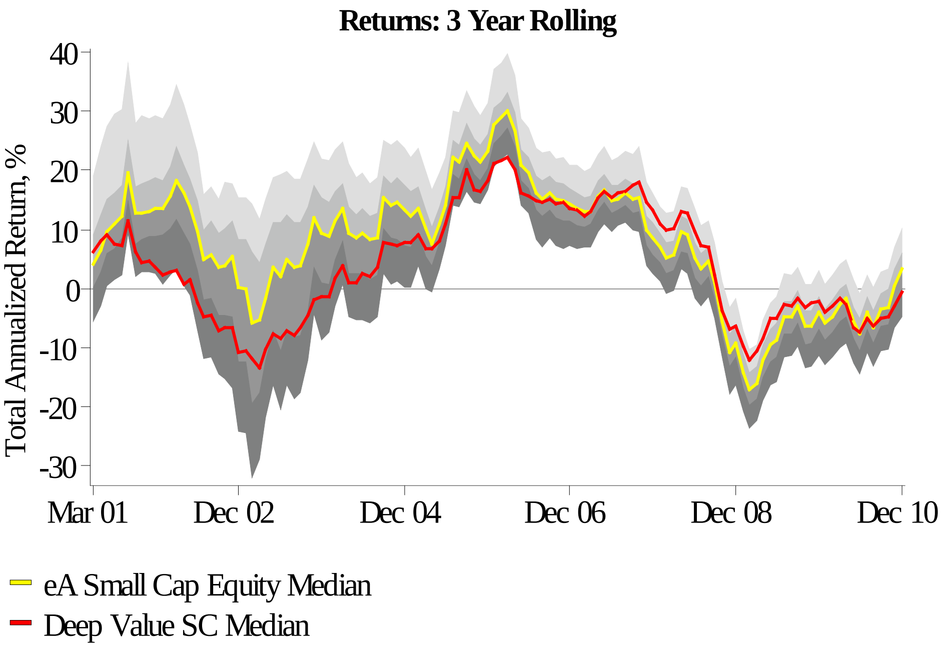
*Source: Goyal , Amit & Sunil Wahal, 2004 "The Selection and Termination of Investment Management Firms by Plan Sponsors". European Finance Association 2005 Moscow Meetings Paper.

When Evaluating Incumbents…

Focus on Mandate and Direct Peers

- *Example*: a Deep Value manager is hired for a Domestic Small Cap Equity mandate.

  - This manager could have significantly underperformed the broad Small Cap Equity median (in yellow) between 2001 and 2005 when deep value philosophy (in red) did not fare well compared to the more broad peer group.
  - When reviewing this manager it would be important to evaluate:
    - If the manager continued to hold to the mandate for which it was hired (deep value).
    - If the manager performed in line with the Deep Value SC median (in red).



RVKuhns & ASSOCIATES, INC.