INVESTMENT MANAGER ANALYSIS: THE DEEP DIVE

Presented to FIRMA By R. James Hrabak, CFA
May 1, 2013

About the Presenter

R. James "Jim" Hrabak is Chief Investment Officer for MB Financial Bank's Asset Management & Trust Group, where he is responsible for over $1.8 billion in assets under management. His team of three Portfolio Managers and five Securities Analysts specialize in asset allocation, portfolio construction, and security selection for individual and institutional clients.

Jim received a BBA., double majoring in Finance and Economics, from New Mexico State University, an MBA with a concentration in Financial Management from the University of New Mexico, and is also a Chartered Financial Analyst.

Jim is a member of the CFA Institute as well as the CFA Society of Chicago.

Presentation Agenda

- **Basic Assumptions for a Manager Analysis Program**
- **The Company You Keep**: The Importance of Evaluating by Investment Category
- **Investment Performance**: Being #1 is the Best, but Being Consistent is Better!
- **Standard Deviation**: Getting to the Same Destination in Two Different Rides
- **Portfolio Turnover**: Does an Itchy Trigger Finger Help You Hit Your Target More Frequently?
- **Expense Ratios**: You Don't Get What You Pay For!
- **Screens vs. Scorecards**: Do Hard Stops Lead to Missed Opportunities?
- **Future Concepts**: Additional Metrics and Visual Analysis
- **Final Thoughts**

Basic Assumptions for a Manager Analysis Program

- Investment philosophy should drive a firm's analysis program
- Analysis metrics should stay consistent over time
- Fund performance should be monitored frequently
- Fund categories should be re-screened (or scorecarded) on a set schedule

The Company You Keep:
The Importance of Evaluating by Investment Category

- Morningstar currently tracks 105 U.S. open-end fund categories and 849 total categories
- A well-diversified multi-manager program may have anywhere from 10-25+ separate categories
- Analysis metrics can vary significantly from category to category
- As a result, a single set of metrics (i.e. Volatility < 10% and Turnover < 50%) will be too restrictive, screening out potentially strong managers
- Instead, set analysis metrics that are relative to category averages (i.e. Top Quartile Volatility; Turnover < Category Average)

The Company You Keep:
The Importance of Evaluating by Investment Category

Selected Investment Metrics: Variations by Category			
Category	Standard Deviation	Portfolio Turnover	Expense Ratio
Large Value	2.71%	55	0.92%
Large Growth	7.22%	56	1.15%
Mid Value	8.87%	73	1.21%
Mid Growth	15.81%	73	1.26%
Small Value	17.05%	74	1.28%
Small Growth	17.36%	74	1.33%
Foreign Large Value	17.82%	76	1.35%
Foreign Large Growth	18.24%	78	1.38%
Emerging Markets	18.78%	79	1.38%
Intermediate Bond	19.25%	87	1.39%
High Yield Bond	19.75%	88	1.43%
Emerging Market Bond	19.80%	90	1.45%
Real Estate	20.16%	155	1.49%
Commodities	21.21%	235	1.65%

Source: Morningstar

Investment Performance: Being #1 is the Best, but Being Consistent is Even Better!

- Investing in the top performing fund for a given year is a gamble. Why is it difficult to repeat top performance?
  - Luck
  - Reversion to the mean
  - A small number of securities may explain a given year's performance
  - Especially for less liquid categories, significant cash inflows may cause trading capacity issues

- **Question**: Would you rather invest in the year's top-performing fund or an average of the 2nd Quartile funds of the same category?

Investment Performance:

2002-2011: Top Manager vs. 2nd Quartile Composite

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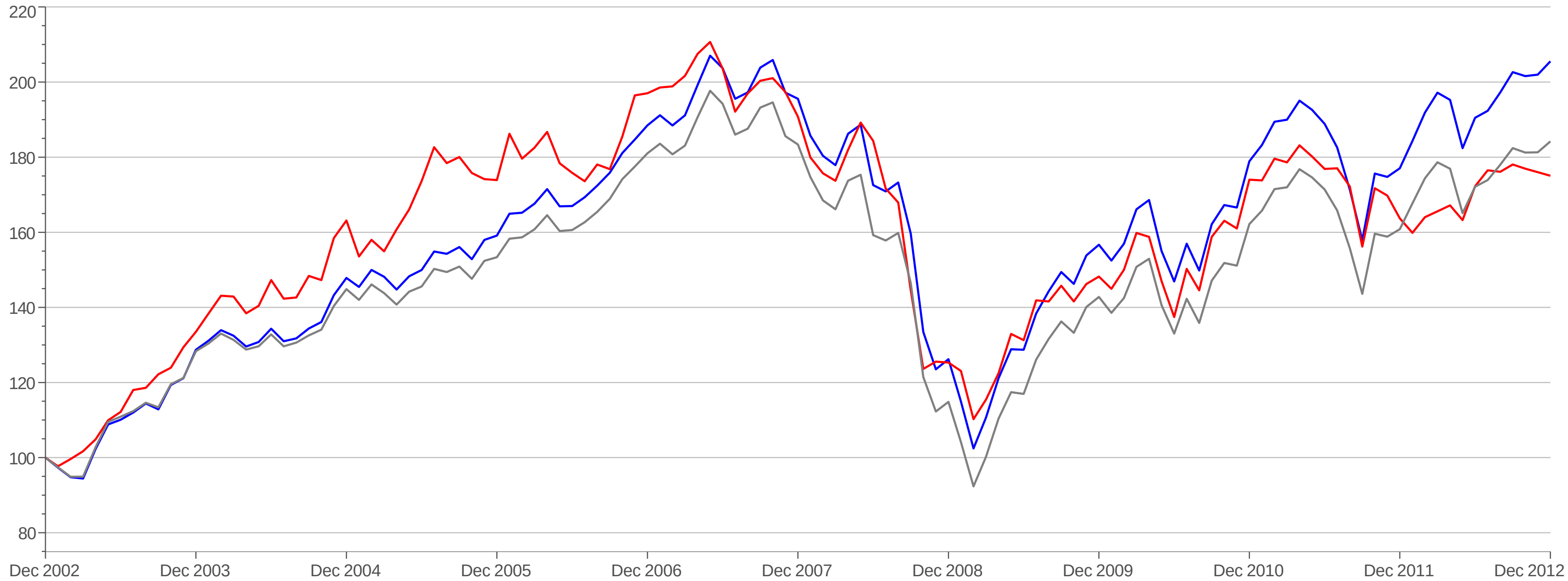
Manager Performance

January 2003 - December 2012 (Single Computation)



Custom Table

January 2003 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Large Cap Value 2nd Quartile	7.47%	105.52%	14.89%	0.39	1.17%	21.30%
Large Cap Value # 1 Manager	5.76%	75.04%	14.93%	0.27	-0.54%	-9.19%
Morningstar Large Value	6.30%	84.23%	15.13%	0.30	0.00%	0.00%

Investment Performance:
2002-2011: Top Manager vs. 2nd Quartile Composite

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Manager Performance

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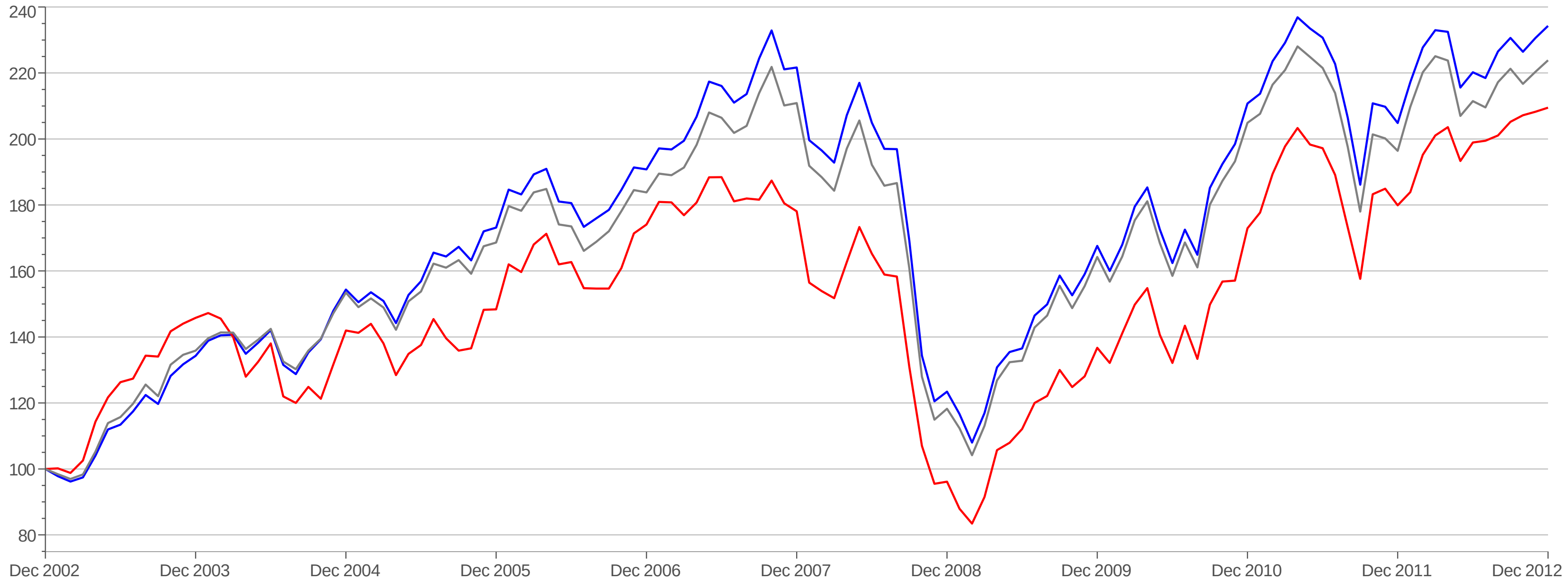

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January 2003 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Mid Cap Growth 2nd Quartile	8.88%	134.25%	17.79%	0.40	0.49%	10.39%
Mid Cap Growth # 1 Manager	7.68%	109.49%	20.21%	0.30	-0.72%	-14.36%
Morningstar Mid Cap Growth	8.39%	123.85%	17.78%	0.38	0.00%	0.00%

Investment Performance:
2002-2011: Top Manager vs. 2nd Quartile Composite

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Manager Performance

January 2003 - December 2012 (Single Computation)

Custom Table

January 2003 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Small Cap Growth 2nd Quartile	9.98%	158.82%	19.27%	0.43	1.57%	34.62%
Small Cap Growth # 1 Manager	6.26%	83.44%	21.81%	0.21	-2.15%	-40.75%
Morningstar Small Cap Growth	8.41%	124.20%	19.48%	0.34	0.00%	0.00%

Investment Performance:
2002-2011: Top Manager vs. 2nd Quartile Composite

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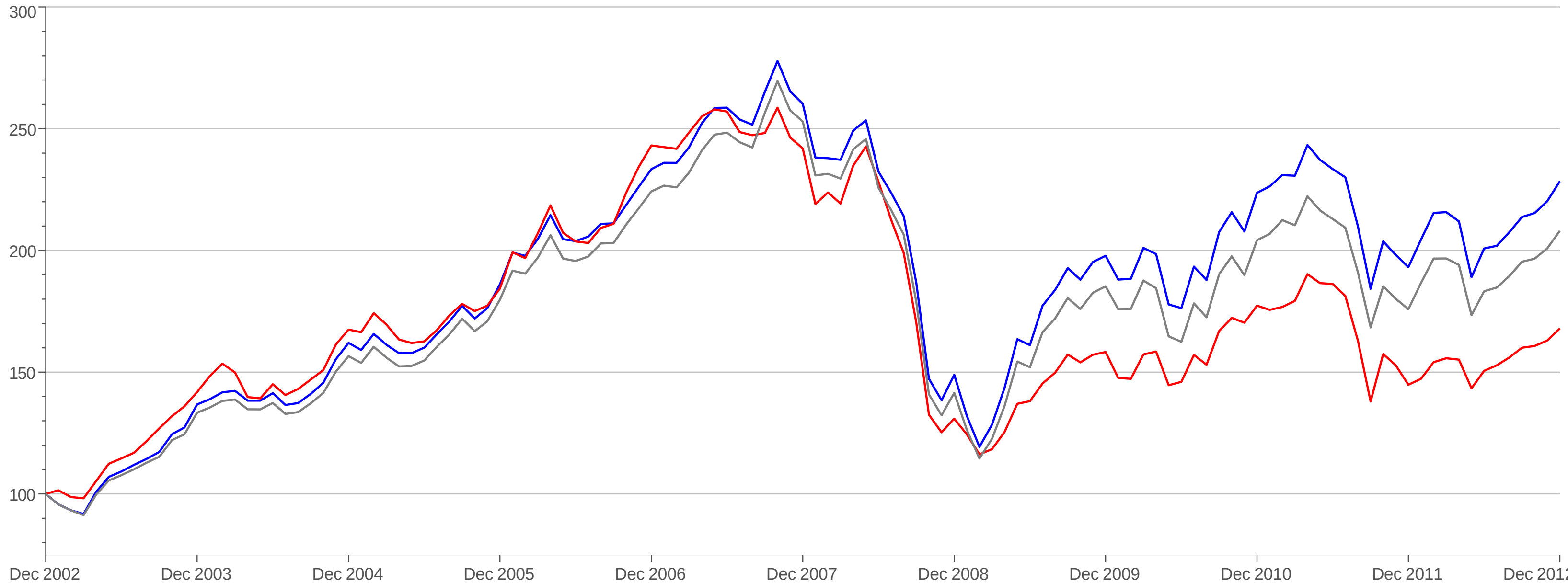
January 2003 - December 2012 (Single Computation)



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January 2003 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Foreign Large Blend 2nd Quartile	8.61%	128.44%	18.79%	0.37	1.01%	20.40%
Foreign Large Blend # 1 Manager	5.32%	67.97%	17.80%	0.20	-2.28%	-40.07%
Morningstar Foreign Large Blend	7.60%	108.04%	18.59%	0.32	0.00%	0.00%

Standard Deviation: Getting to the Same Destination in Two Different Rides.

- Standard deviation is the most commonly used risk metric in investing
- When combined with a fund’s mean (average performance), standard deviation tells us the range of returns we can expect
- Example: for a fund with a 10% average return and 15% standard deviation, we expect:
  - A range of returns from -5% to +25% in 70% of observations
  - A range of returns from -20% to +40% in 95% of observations
- **Question**: Which fund would your prefer to invest in, given a similar end result, a higher standard deviation fund or a lower standard deviation fund?

Standard Deviation:

Top Quartile Above and Below Median Standard Deviation

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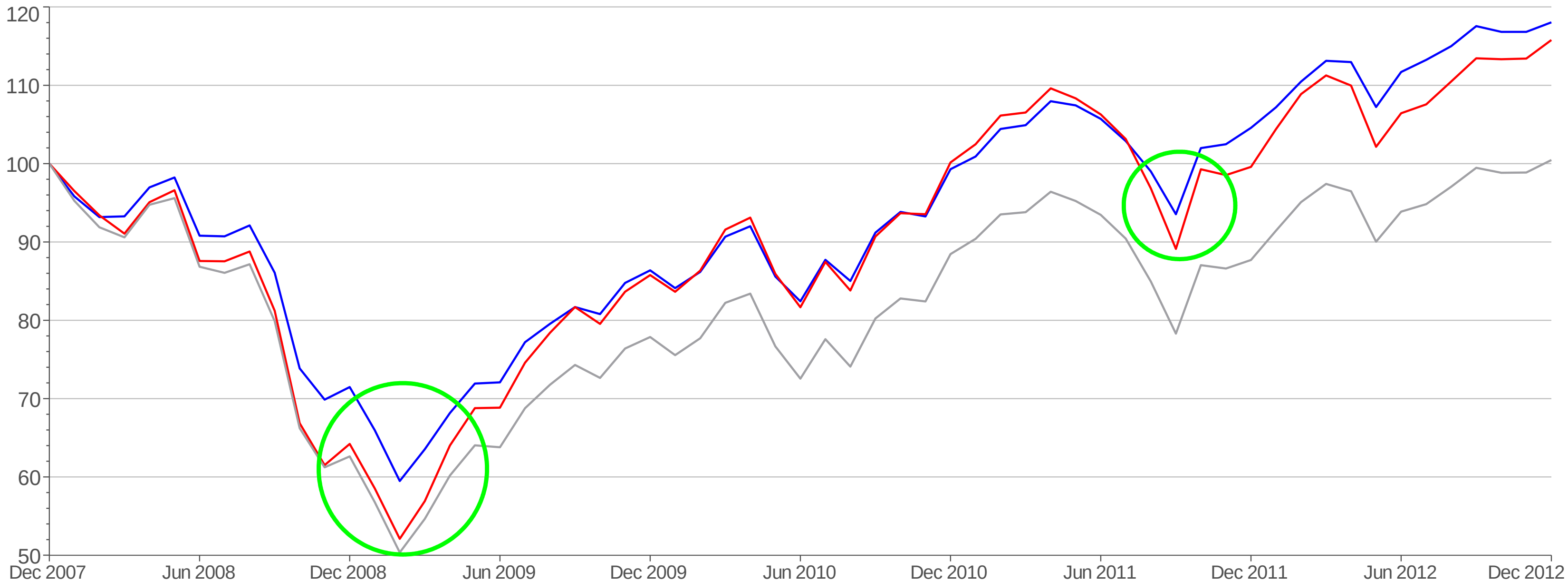
Manager Performance

January 2008 - December 2012 (Single Computation)



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January 2008 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Large Cap Value Top Quartile 2008-2012 Below Median STDV	3.37%	18.04%	15.96%	0.18	3.28%	17.59%
Large Cap Value Top Quartile 2008-2012 Above Median STDV	2.97%	15.78%	20.13%	0.13	2.88%	15.32%
Morningstar Large Cap Value	0.09%	0.46%	19.45%	-0.02	0.00%	0.00%

Standard Deviation:
Top Quartile Above and Below Median Standard Deviation

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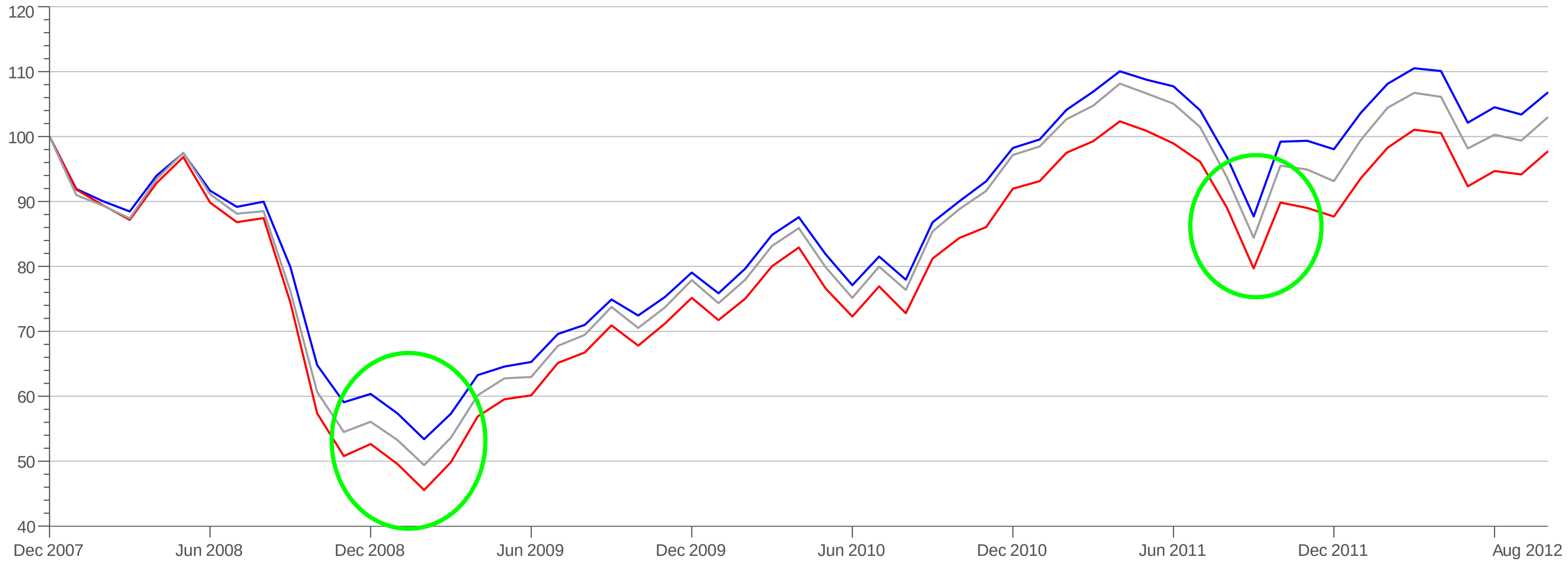
January 2008 - August 2012 (Single Computation)



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January 2008 - August 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Mid Cap Growth Top Quartile 2008-2012 Below Median STDV	1.42%	6.81%	20.85%	0.05	0.78%	3.80%
Mid Cap Growth Top Quartile 2008-2012 Above Median STDV	-0.49%	-2.25%	24.27%	-0.04	-1.12%	-5.26%
Morningstar Mid Cap Growth	0.64%	3.01%	22.88%	0.01	0.00%	0.00%

Standard Deviation:

Top Quartile Above and Below Median Standard Deviation

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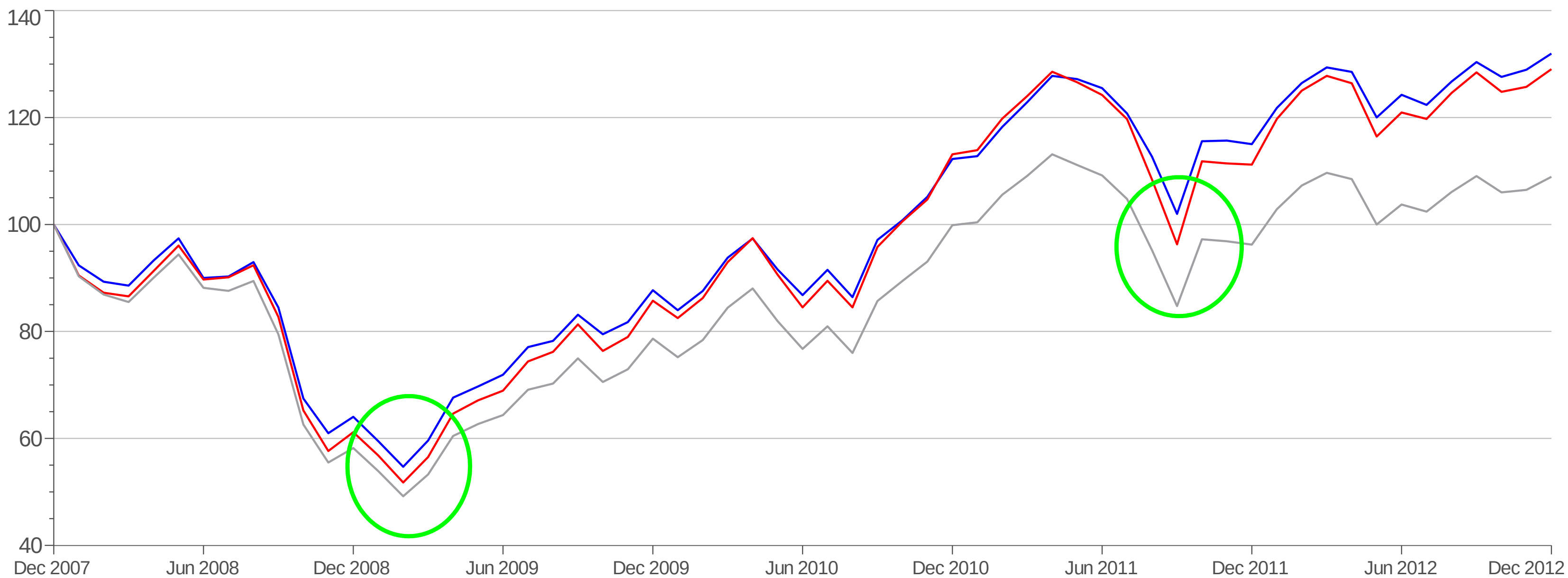

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January 2008 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Small Cap Growth Top Quartile 2008-2012 Below Median STDV	5.70%	31.96%	21.73%	0.24	3.98%	23.03%
Small Cap Growth Top Quartile 2008-2012 Above Median STDV	5.23%	29.04%	24.32%	0.20	3.51%	20.12%
Morningstar Small Cap Growth	1.72%	8.92%	23.63%	0.05	0.00%	0.00%

Standard Deviation:
Top Quartile Above and Below Median Standard Deviation

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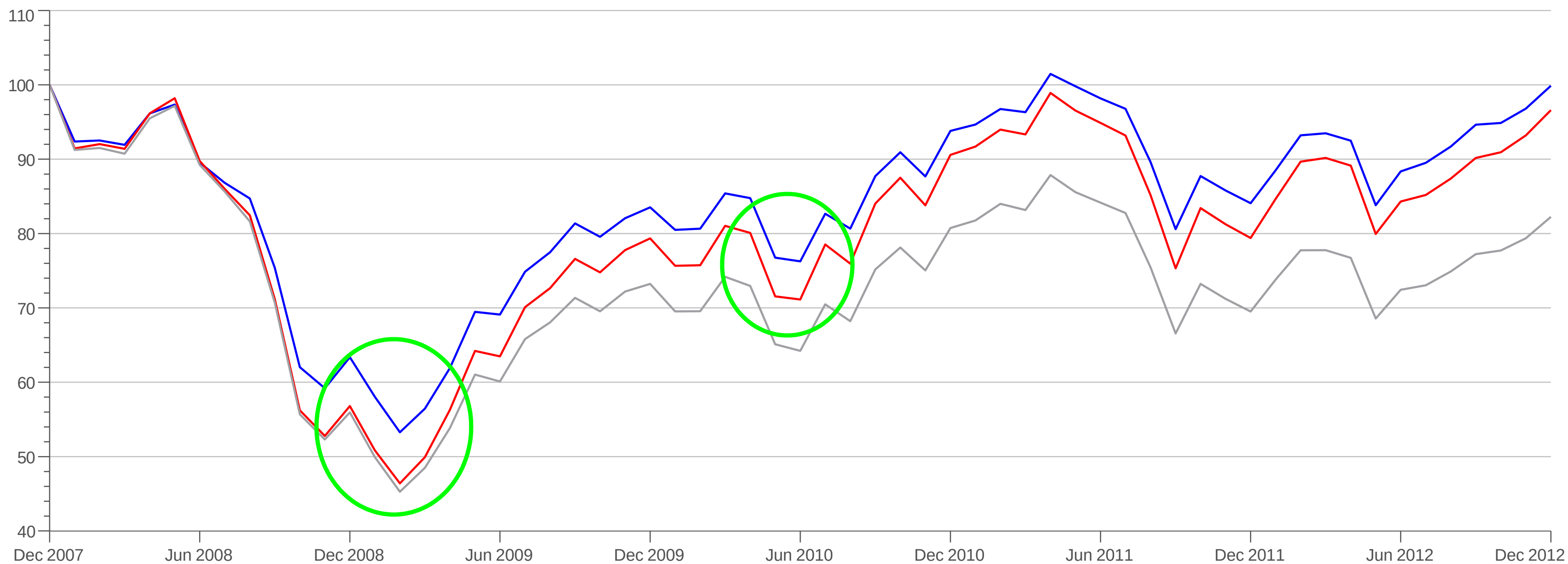

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January 2008 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Foreign Large Blend Top Quartile 2008-2012 Below Median STDV	-0.03%	-0.13%	20.50%	-0.02	3.81%	17.63%
Foreign Large Blend Top Quartile 2008-2012 Above Medium STDV	-0.69%	-3.40%	24.22%	-0.05	3.15%	14.36%
Morningstar Foreign Large Blend	-3.83%	-17.76%	23.67%	-0.18	0.00%	0.00%

Portfolio Turnover: Does an Itchy Trigger Finger Help You Hit Your Target More Frequently?

- Portfolio turnover measures how frequently a manager buys and sells securities in the fund. The number, stated as a percent, will provide an indication of how long the average asset is held in the portfolio:
  - Turnover of 100% indicates the average asset is held for one year
  - 200% indicates the average asset is held for six months
  - 25% indicates the average asset is held for four years

- Portfolio turnover is an important indicator in manager analysis from an expense perspective. The more frequent the manager trades (higher turnover) the more investment commissions must be paid (bond funds are an exception)
- **Question**: Do managers that trade more frequently than their peers generate higher returns?

Portfolio Turnover: Highest Decile vs. Lowest Decile

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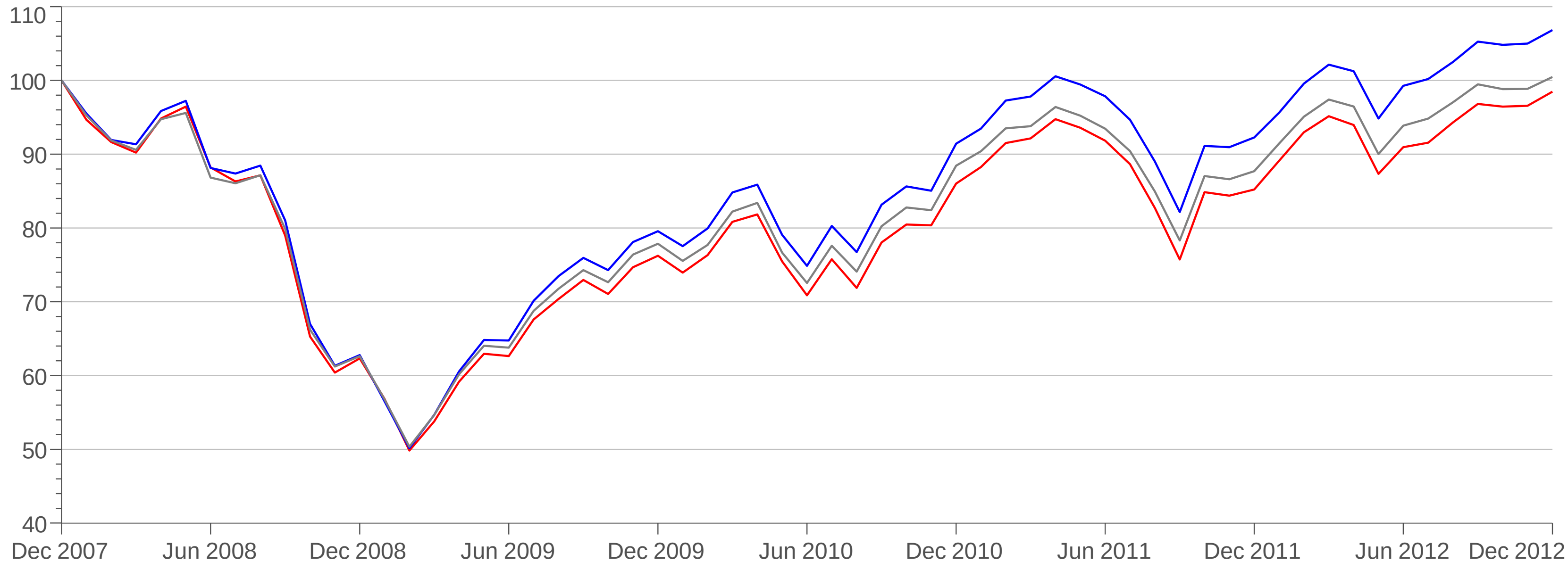
Manager Performance

January 2008 - December 2012 (Single Computation)



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January 2008 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Large Cap Value Lowest 10% Turnover Ratio	1.33%	6.83%	19.83%	0.04	1.24%	6.37%
Large Cap Value Highest 10% Turnover Ratio	-0.30%	-1.52%	20.02%	-0.04	-0.40%	-1.97%
Morningstar Large Cap Value	0.09%	0.46%	19.45%	-0.02	0.00%	0.00%

Portfolio Turnover:
Highest Decile vs. Lowest Decile

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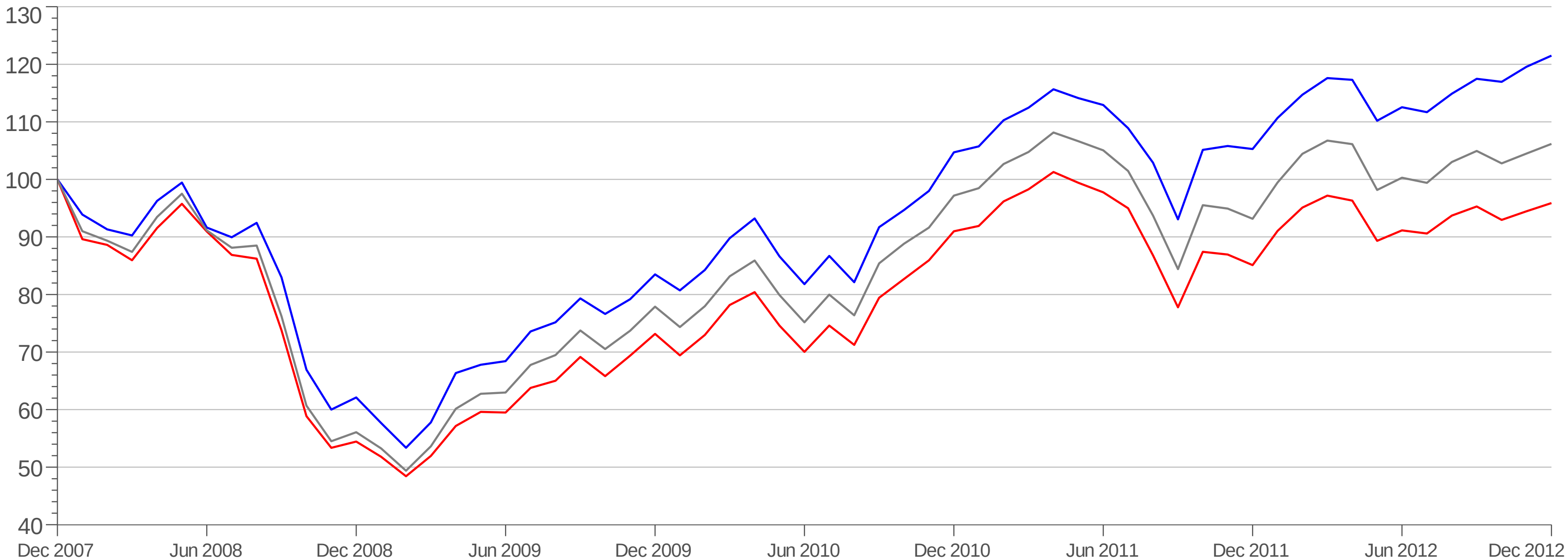

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January 2008 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Mid Cap Growth Lowest 10% Turnover Ratio	3.97%	21.49%	21.09%	0.17	2.77%	15.33%
Mid Cap Growth Highest 10% Turnover Ratio	-0.84%	-4.11%	21.92%	-0.06	-2.04%	-10.27%
Morningstar Mid Cap Growth	1.20%	6.16%	22.15%	0.03	0.00%	0.00%

Portfolio Turnover:
Highest Decile vs. Lowest Decile

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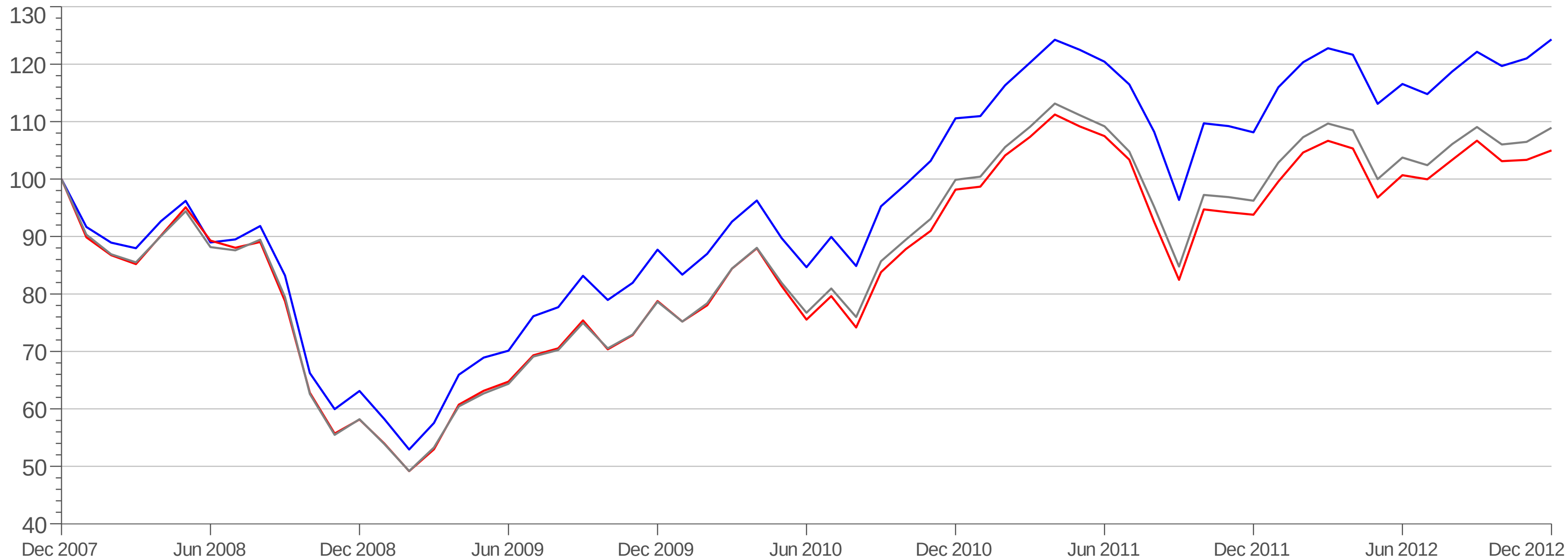

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January 2008 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Small Cap Growth Lowest 10% Turnover Ratio	4.45%	24.31%	22.70%	0.18	2.72%	15.38%
Small Cap Growth Highest 10% Turnover Ratio	0.98%	4.98%	24.04%	0.02	-0.75%	-3.94%
Morningstar Small Cap Growth	1.72%	8.92%	23.63%	0.05	0.00%	0.00%

Portfolio Turnover:
Highest Decile vs. Lowest Decile

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Manager Performance

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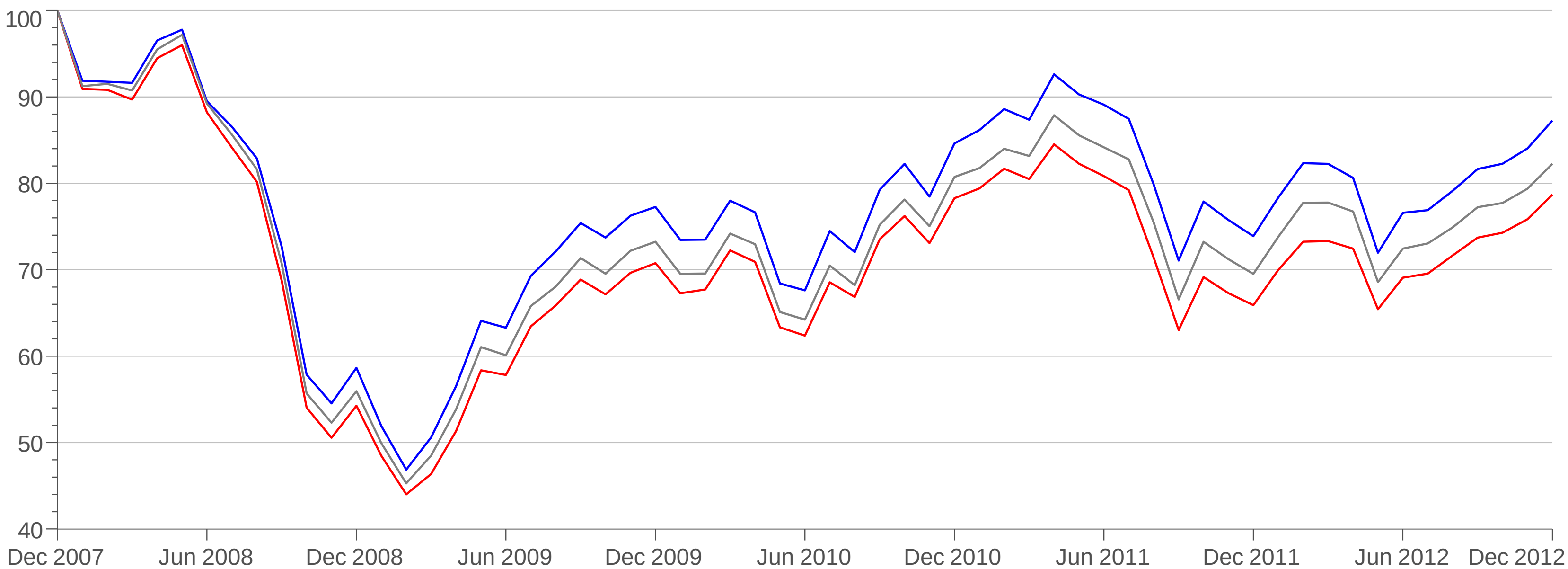

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January 2008 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Foreign Large Blend Lowest 10% Turnover Ratio	-2.69%	-12.74%	23.55%	-0.13	1.15%	5.02%
Foreign Large Blend Highest 10% Turnover Ratio	-4.68%	-21.31%	23.66%	-0.22	-0.85%	-3.56%
Morningstar Foreign Large Blend	-3.83%	-17.76%	23.67%	-0.18	0.00%	0.00%

Expense Ratios:
You Don't Get What You Pay for!

- At the most basic level, a fund's expense ratio is the fee investors pay for that manager's expertise
- Investment performance for open-end mutual funds is always reported net of expense ratios

- **Question**: Do managers that charge high expense ratios reward their clients with superior investment performance?

Expense Ratios:
Highest Decile vs. Lowest Decile

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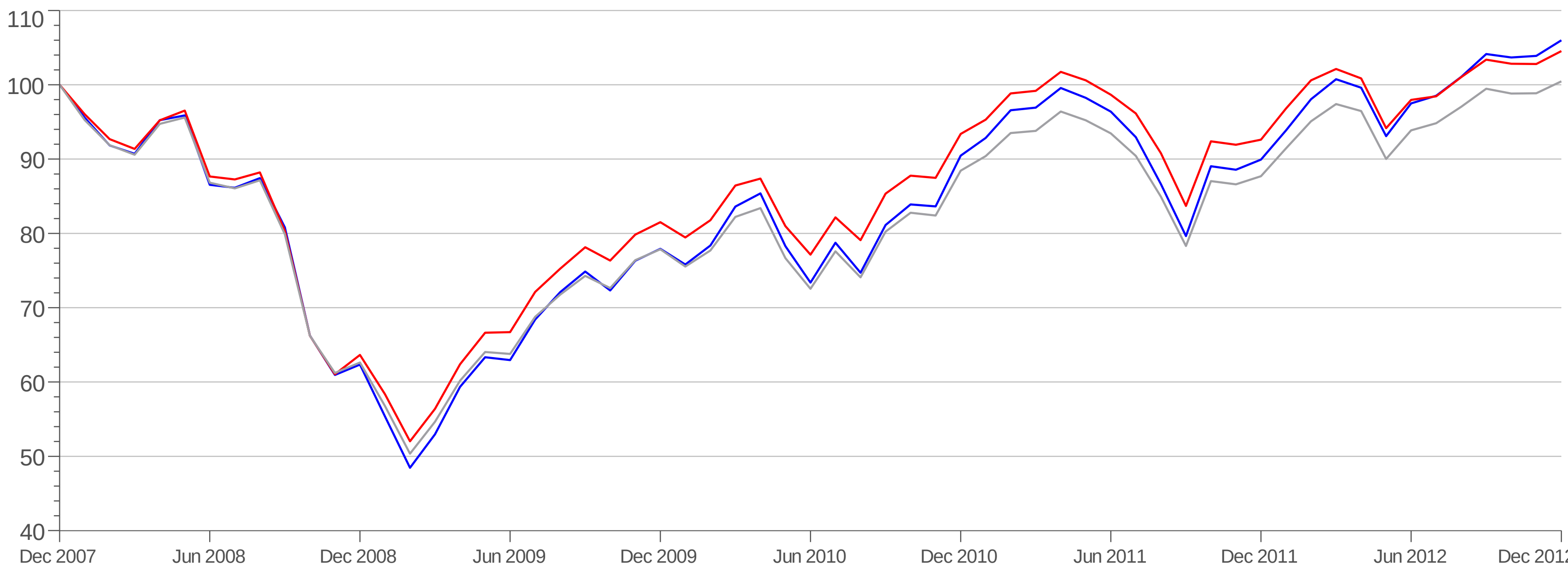
Manager Performance

January 2008 - December 2012 (Single Computation)



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January 2008 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Large Cap Value Lowest 10% Expense Ratio	1.17%	6.00%	21.04%	0.03	1.08%	5.54%
Large Cap Value Highest 10% Expense Ratio	0.89%	4.54%	19.11%	0.02	0.80%	4.09%
Morningstar Large Cap Value	0.09%	0.46%	19.45%	-0.02	0.00%	0.00%

Expense Ratios:
Highest Decile vs. Lowest Decile

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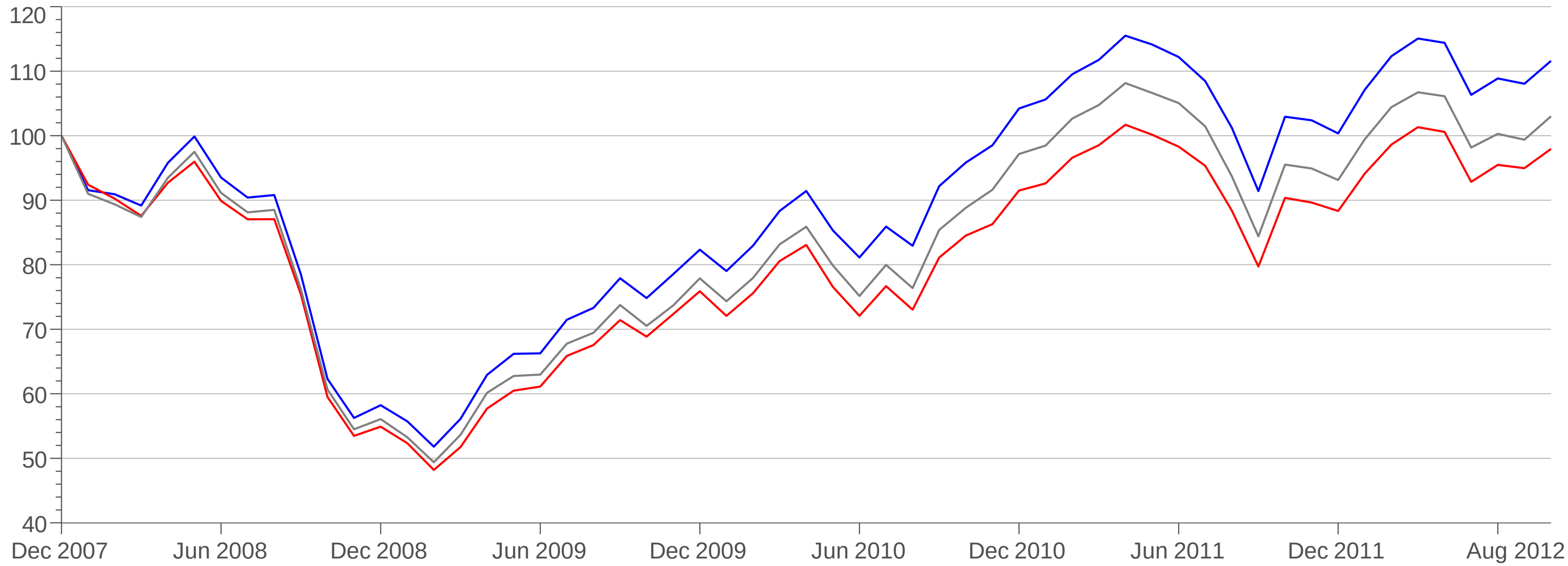
Manager Performance

January 2008 - August 2012 (Single Computation)



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January 2008 - August 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Mid Cap Growth Lowest 10% Expense Ratio	2.38%	11.60%	22.26%	0.09	1.74%	8.59%
Mid Cap Growth Highest 10% Expense Ratio	-0.44%	-2.04%	22.55%	-0.04	-1.08%	-5.05%
Morningstar Mid Cap Growth	0.64%	3.01%	22.88%	0.01	0.00%	0.00%

Expense Ratios:
Highest Decile vs. Lowest Decile

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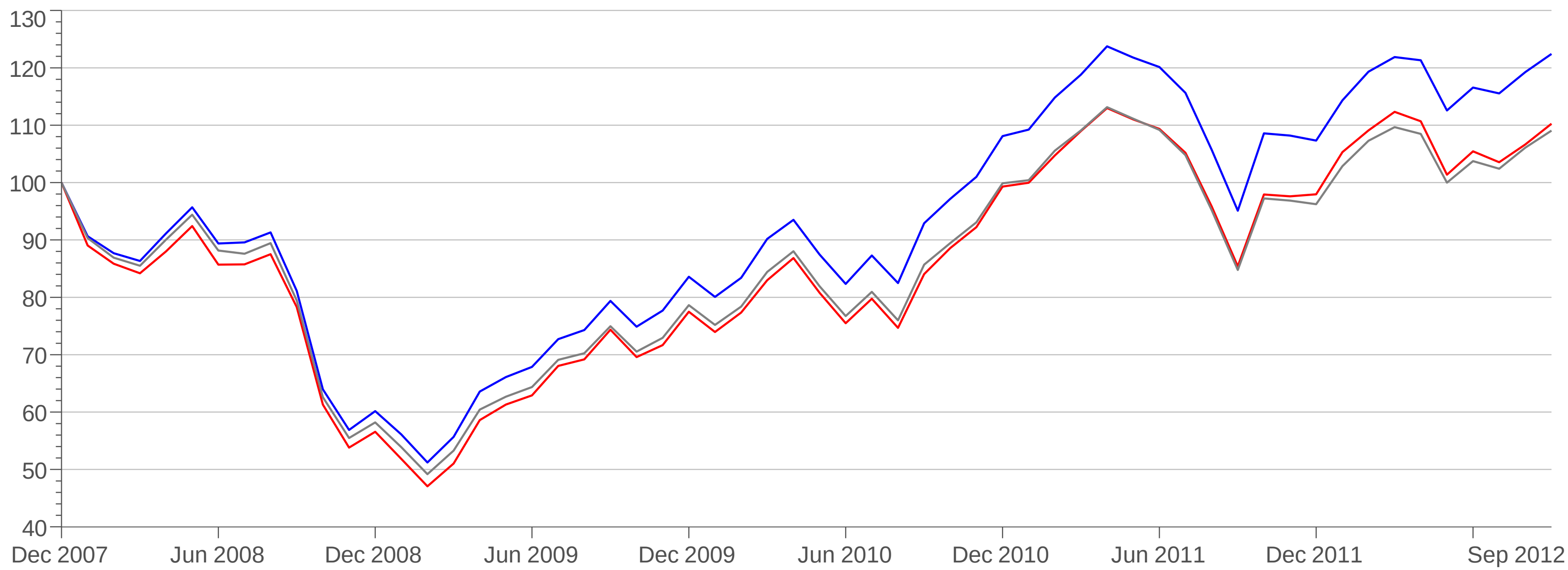
Manager Performance

January 2008 - September 2012 (Single Computation)



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January 2008 - September 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Small Cap Growth Lowest 10% Expense Ratio	4.35%	22.41%	23.78%	0.16	2.51%	13.34%
Small Cap Growth Highest 10% Expense Ratio	2.08%	10.25%	25.03%	0.06	0.23%	1.18%
Morningstar Small Cap Growth	1.84%	9.07%	24.19%	0.06	0.00%	0.00%

Expense Ratios:
Highest Decile vs. Lowest Decile

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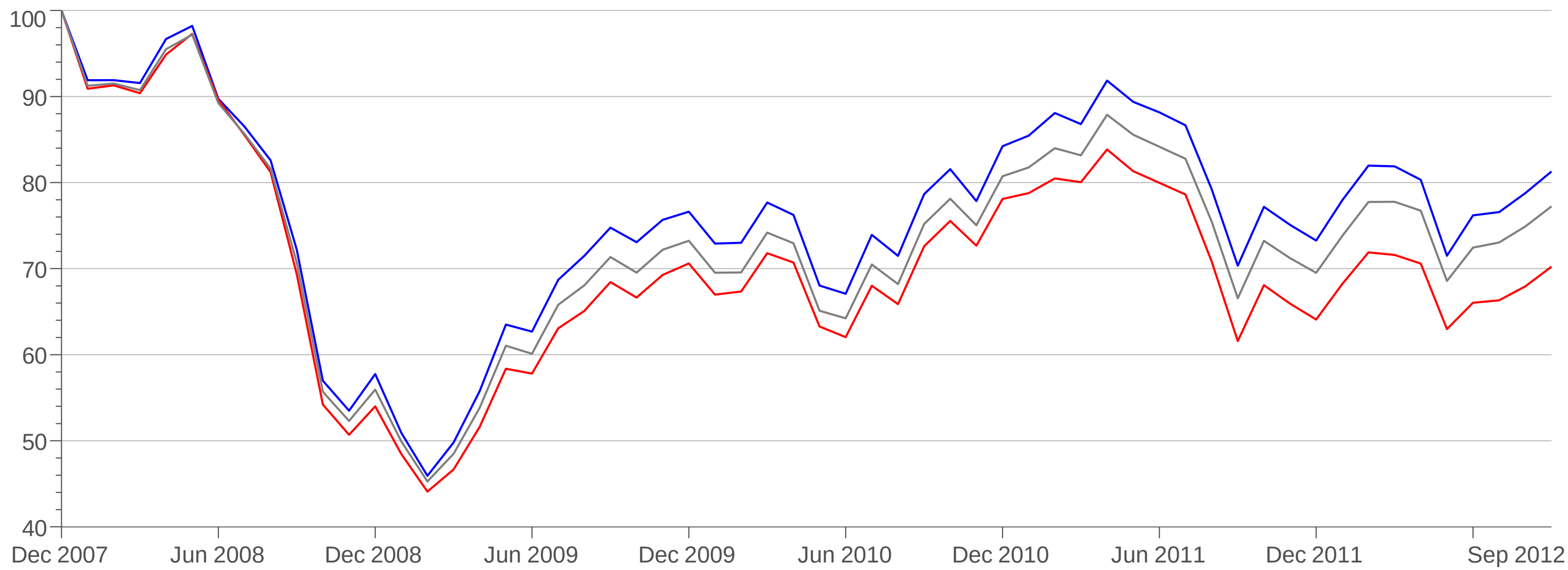
Manager Performance
January 2008 - September 2012 (Single Computation)



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January 2008 - September 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Foreign Large Blend Lowest 10% Expense Ratio	-4.27%	-18.71%	24.61%	-0.19	1.03%	4.06%
Foreign Large Blend Highest 10% Expense Ratio	-7.17%	-29.77%	24.45%	-0.31	-1.88%	-7.00%
Morningstar Foreign Large Blend	-5.29%	-22.77%	24.20%	-0.24	0.00%	0.00%

Screens vs. Scorecards:
Do Hard Stops Lead to Missed Opportunities?

- Investment manager screening has been the traditional method for narrowing a large pool of potential funds down to a manageable number for deeper analysis
- Traditional screening, however, has some shortcomings:
  - All elements of a screen carry equal weight
  - Potentially attractive funds can be eliminated from the pool by missing on a single metric
- To illustrate the point, we screened the Mid Cap Growth category as of 12/31/07. Two funds in particular screened out :
  - Artisan Mid Cap Instl just missed the 3 Year SD screen by 0.18%
  - Westport I fund missed the 1Yr Return screen by 0.99%
- So how did they do over the next five years?

Screens vs. Scorecards:
Do Hard Stops Lead to Missed Opportunities?

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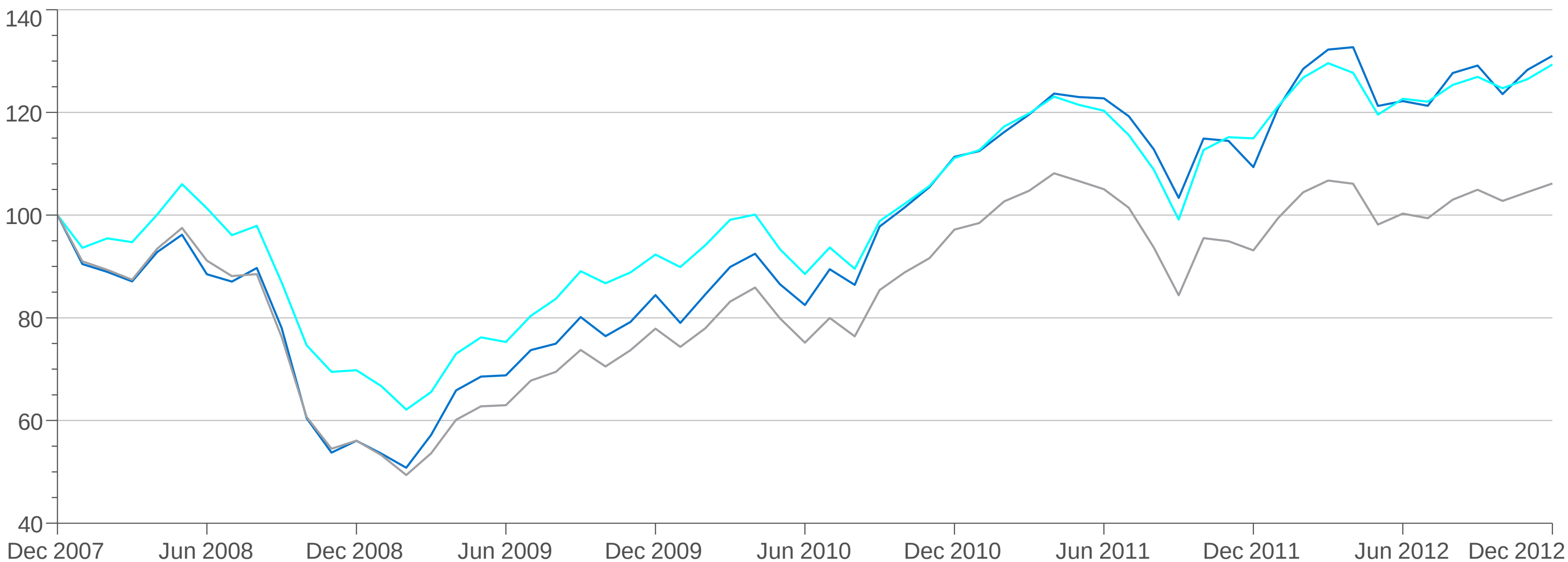
Manager Performance
January 2008 - December 2012 (Single Computation)



Custom Table
January 2008 - December 2012: Summary Statistics

	Return	Cumulative Return	Standard Deviation	Sharpe Ratio	Excess Return vs. Market	Cumulative Excess Return vs. Market
Artisan Mid Cap Instl	5.55%	31.03%	23.69%	0.22	4.35%	24.88%
Westport I	5.28%	29.34%	18.67%	0.26	4.08%	23.18%
Morningstar Mid-Cap Growth	1.20%	6.16%	22.15%	0.03	0.00%	0.00%

Screens vs. Scorecards:
Do Hard Stops Lead to Missed Opportunities?

- Analytical software has evolved to the point that manager scorecards are possible. Scorecards can alleviate some of the shortcomings of traditional screening:
  - The individual elements of the scorecard can be awarded different point values, thus giving greater weight to certain metrics
  - Points are awarded for positive outcomes. It's better to receive 0 points on a certain metric than to be kicked out of the candidate pool entirely!

- The next slide shows a comparison of a sample scorecard vs. a sample set of screening criteria
- Notice that certain metrics on the scorecard carry higher point values

Screens vs. Scorecards:
Do Hard Stops Lead to Missed Opportunities?

SCORECARD METRICS AND SCORES			
INITIAL FILTERS	OPERATOR	VALUE	
Share Class	Institutional AND No Load	YES	
Mutual Fund Assets	>	$100 Million	
SCORING STATISTIC	SCORING	IF YES	IF NO
Total Return 1 YR	If > Category average	1	0
Total Return 3 YR	If > Category average	2	0
Total Return 5 YR	If > Category average	2	0
Total Return 10 YR	If > Category average	1	0
Standard Deviation 3YR	If < Category average	1	0
Sharpe Ratio 3YR	If > Category average	2	0
Alpha 3 YR	If > Category average	1	0
Batting Average 5YR	If > Category average	1	0
Turnover Ratio	If < Category average	1	0
Manager Tenure	If > Category average	1	0
Prospectus Net Expense Ratio	If < Category average	1	0

SCREEN CRITERIA			
COMMAND	FIELD NAME	OPERATOR	VALUE
	Category	=	Large Value
AND	Total Ret % Rank Cat 1 Yr	< =	50th percentile
AND	Total Ret % Rank Cat 3 Yr	< =	50th percentile
AND	Total Ret % Rank Cat 5 Yr	< =	50th percentile
AND	Max Front Load	=	N/A
AND	Deferred Load	=	N/A
AND	Std Dev 3 Yr	< =	Category Average
AND	Prospectus Net Expense Ratio	< =	Category Average
AND	Turnover Ratio (%)	< =	Category Average
AND	Manager Tenure	> =	5 years

- Scorecards do carry some shortcomings of their own:
  - There is a great deal of upfront investment of time for setup
  - Scorecards require a significant amount of runtime and computing power to run, especially in categories with hundreds of funds

Future Concepts: Additional Metrics and Visual Analysis

- Up to now, we have covered some of the more basic metrics for manager analysis

- Below are additional risk management-related metrics to consider:
  - **Batting Average**: % of months a fund outperforms benchmark. Used as a measure of manager consistency.
  - **Downside Capture**: compares a fund's performance vs. benchmark in down periods. Used as a measure of downside protection.
  - **Information Ratio**: The ratio of outperformance vs. benchmark over the volatility of the outperformance. Another measure of manager consistency.

Future Concepts: Additional Metrics and Visual Analysis

- The next section will incorporate these additional metrics into a visual manager search example
- Visual analysis gives the analyst more discretion than a simple screen, thus avoiding the problem we addressed in the scorecard section
- Visual analysis will generally requires less computing/software resources than scorecards
  - However, they do require more human intervention
- In the following slides, we will screen the Small Cap Growth segment using five year annualized data and complimentary metrics on the X and Y axes

Future Concepts: Visual Analysis

Example: Small Cap Growth, Institutional Share Class (137 Funds)

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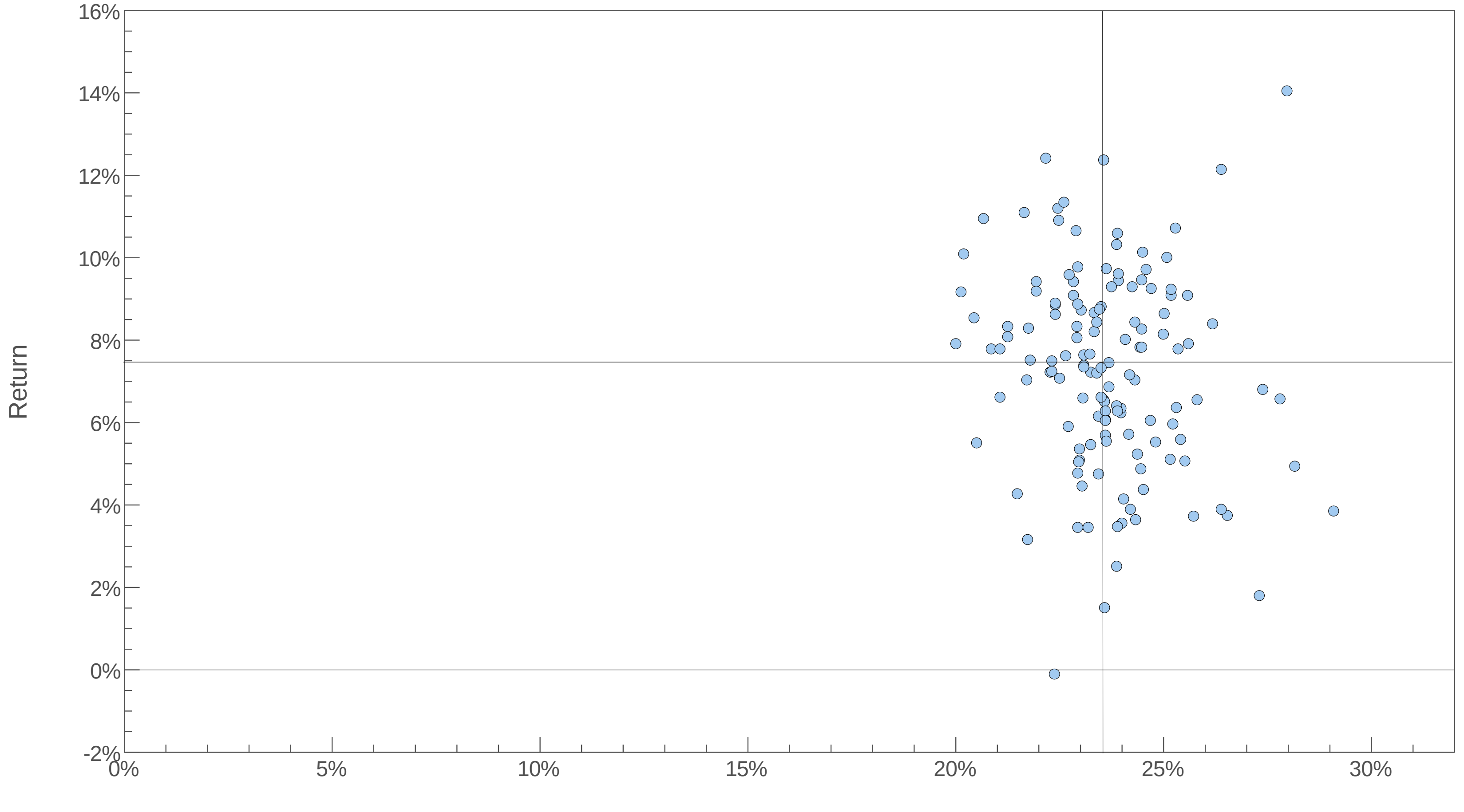
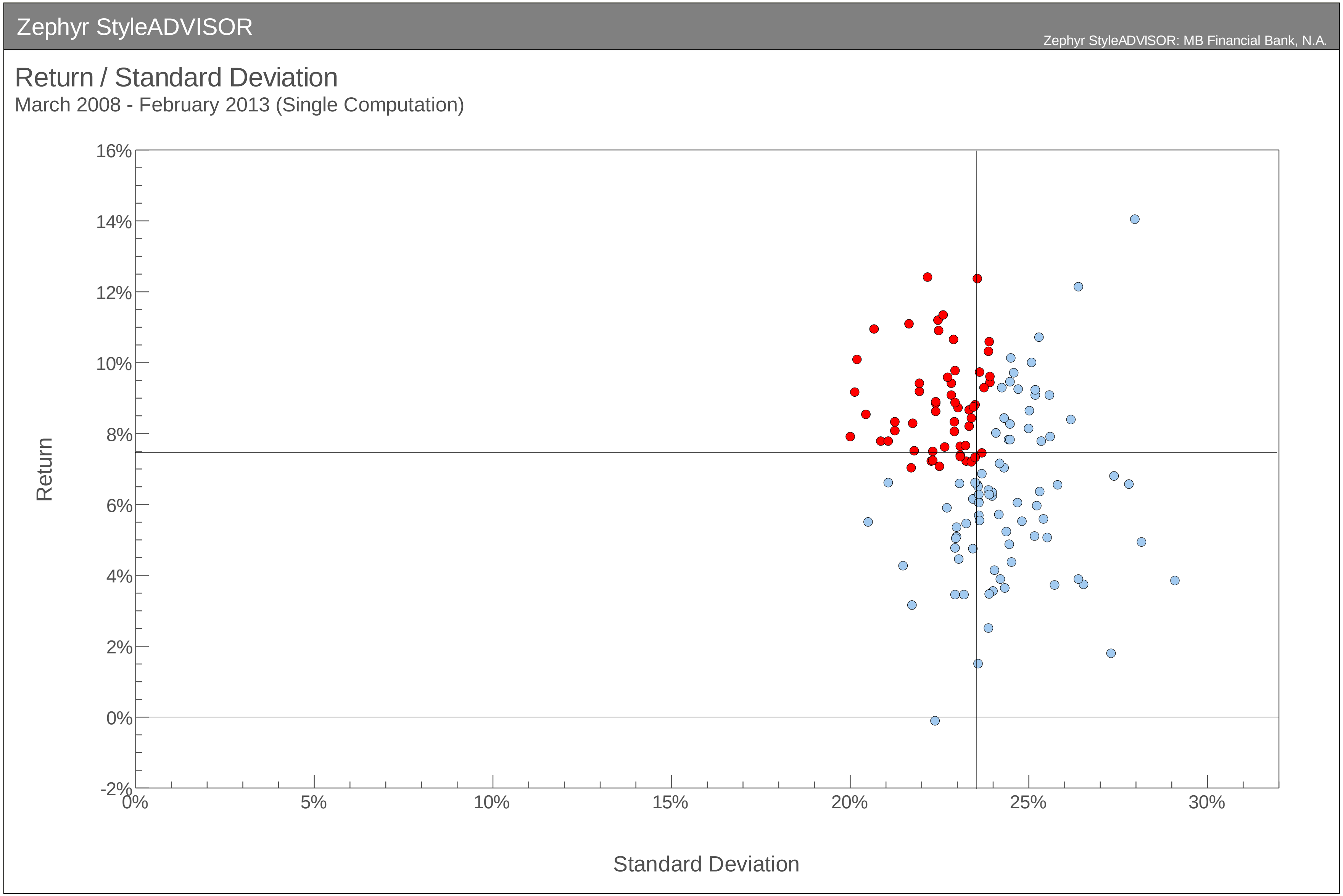
Return / Standard Deviation

March 2008 - February 2013 (Single Computation)



Future Concepts: Visual Analysis

Select median (or slightly below) funds in each category.



Future Concepts: Visual Analysis

56 Funds Remain in the Candidate Pool

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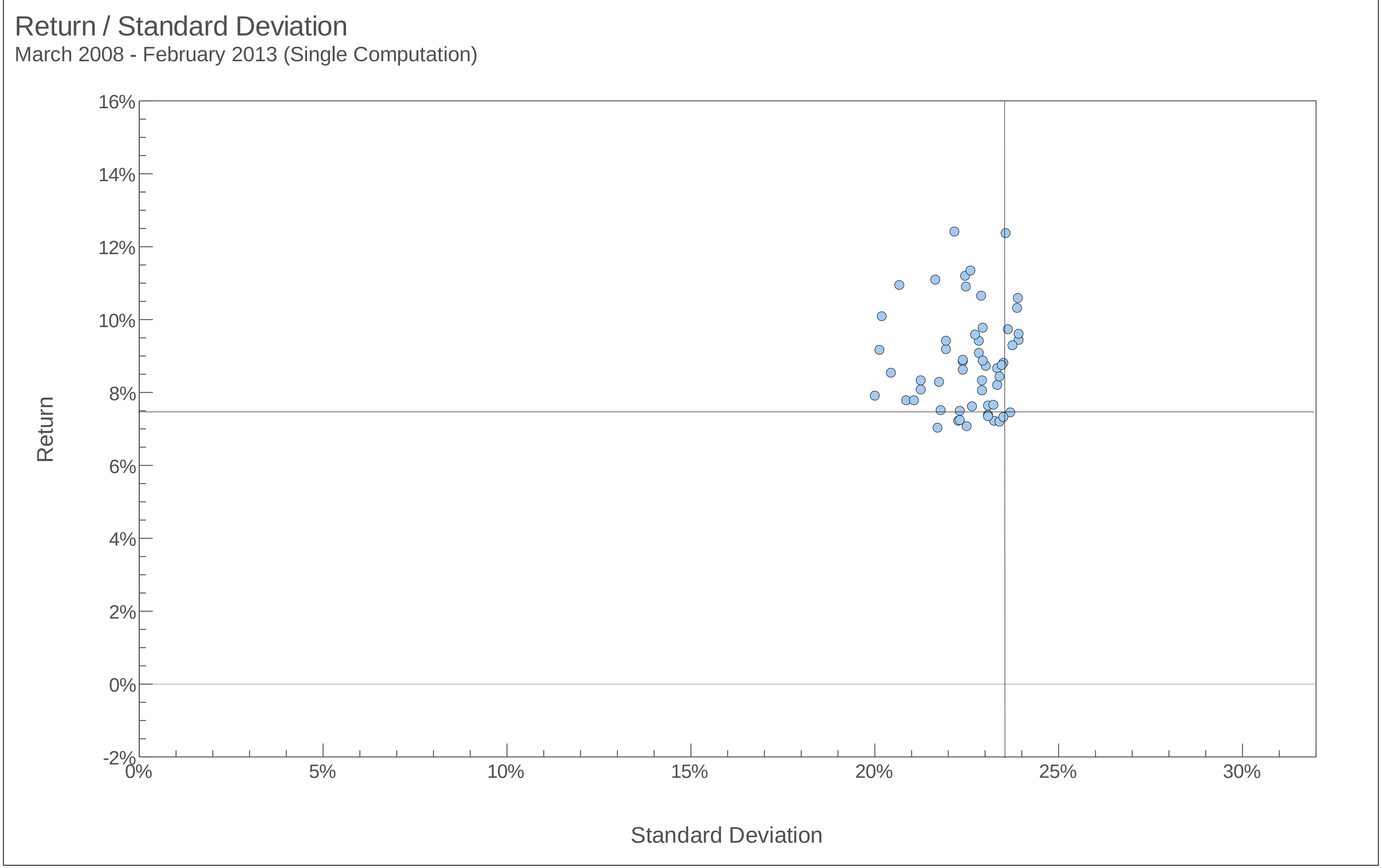
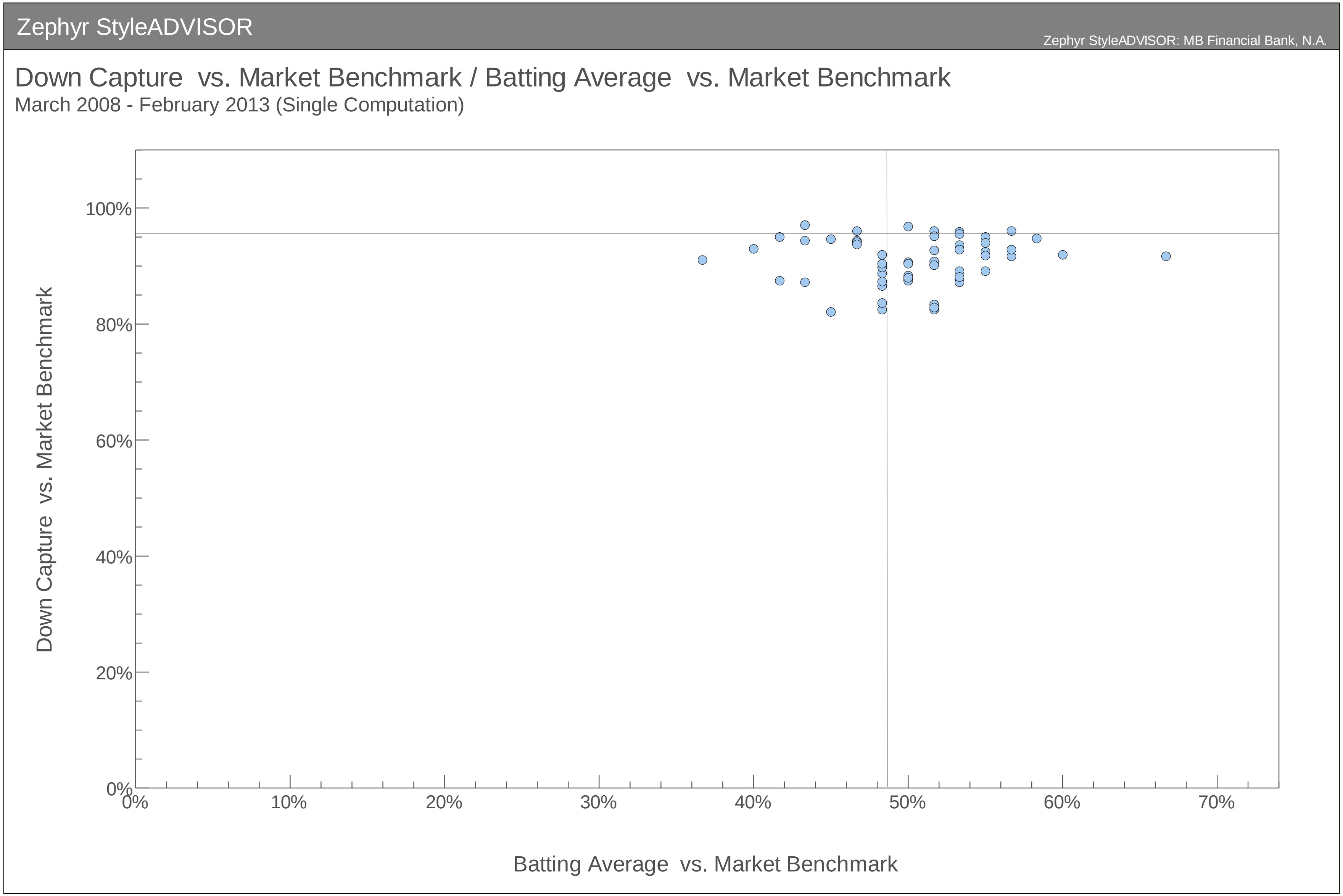
Zephyr StyleADVISOR: MB Financial Bank, N.A.



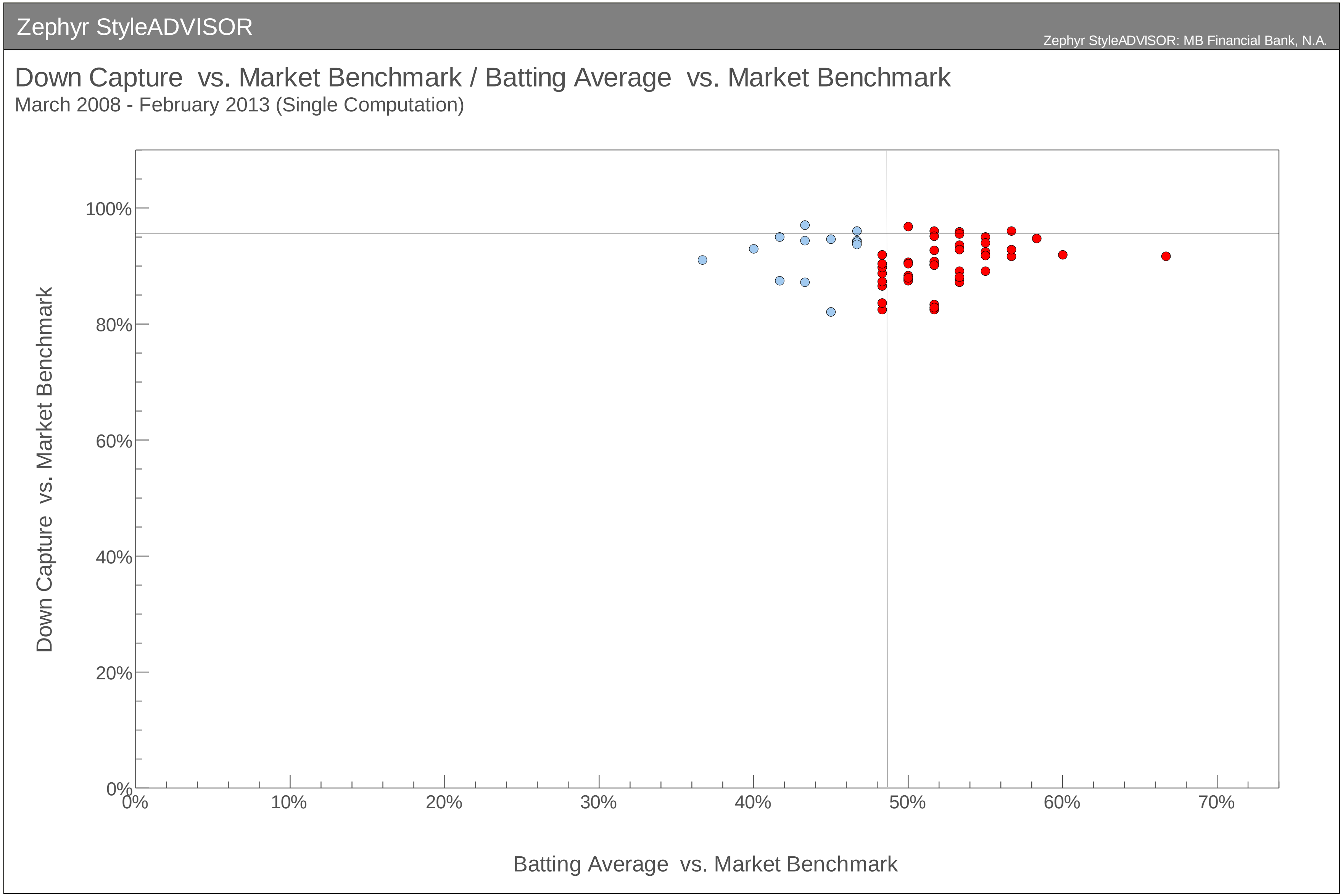
Future Concepts: Visual Analysis

Second Pass: Downside Capture and Batting Average



Future Concepts: Visual Analysis

Select Funds in or near Lower-Right Quadrant



Future Concepts: Visual Analysis

43 Funds Remain

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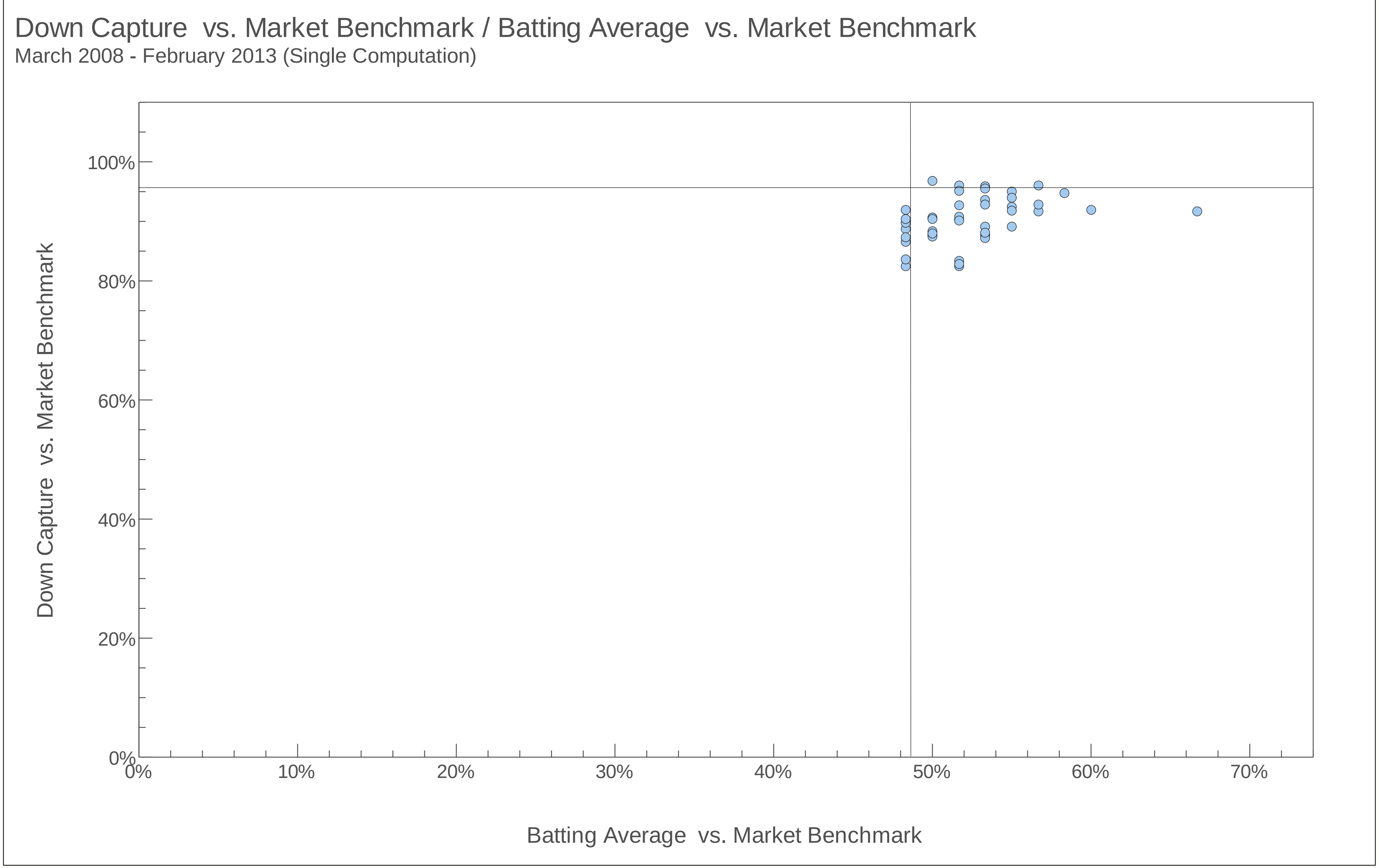
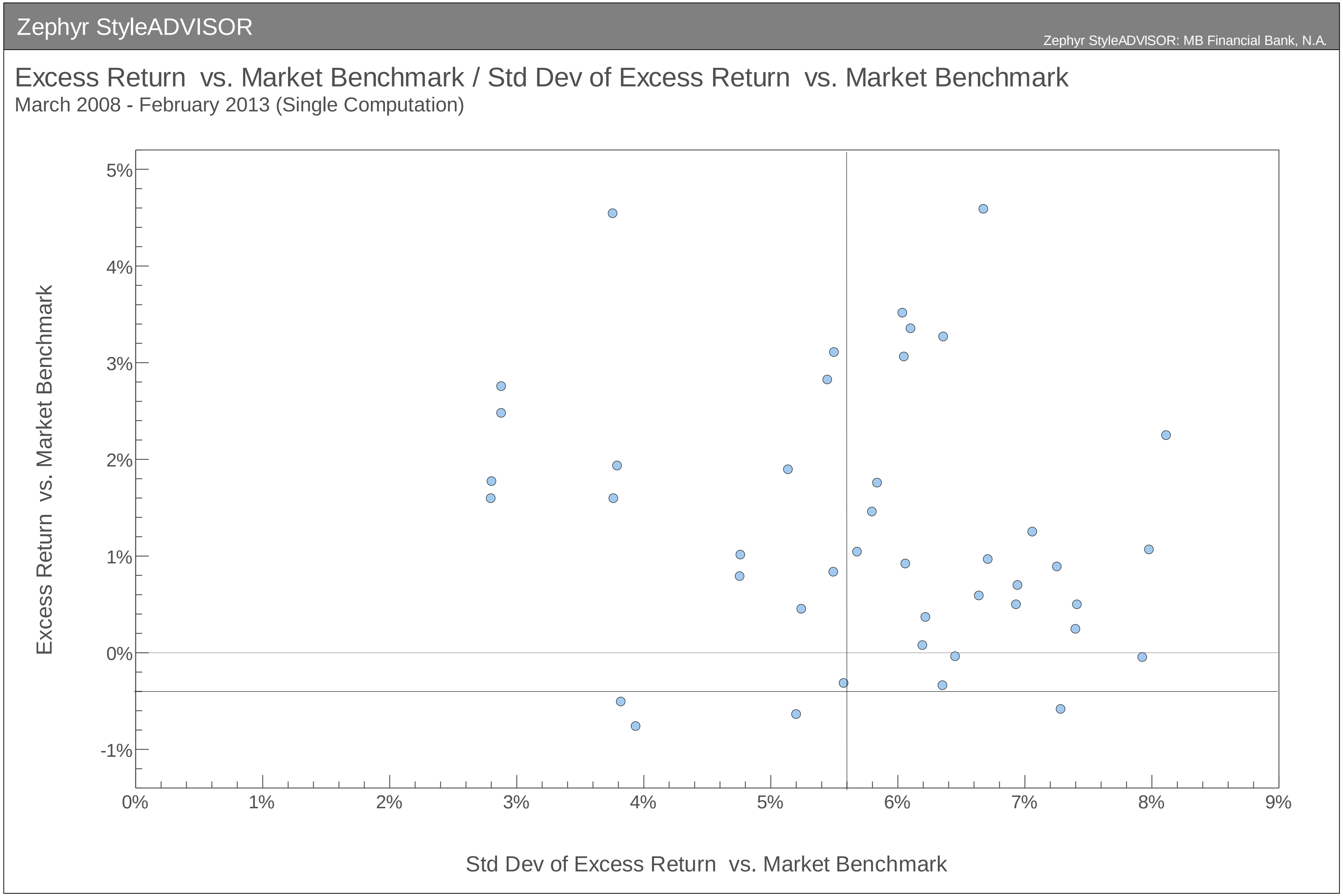


Future Concepts: Visual Analysis

Final Step: Information Ratio



Future Concepts: Visual Analysis

Being a Bit More Selective and Removing Multiple Share Classes

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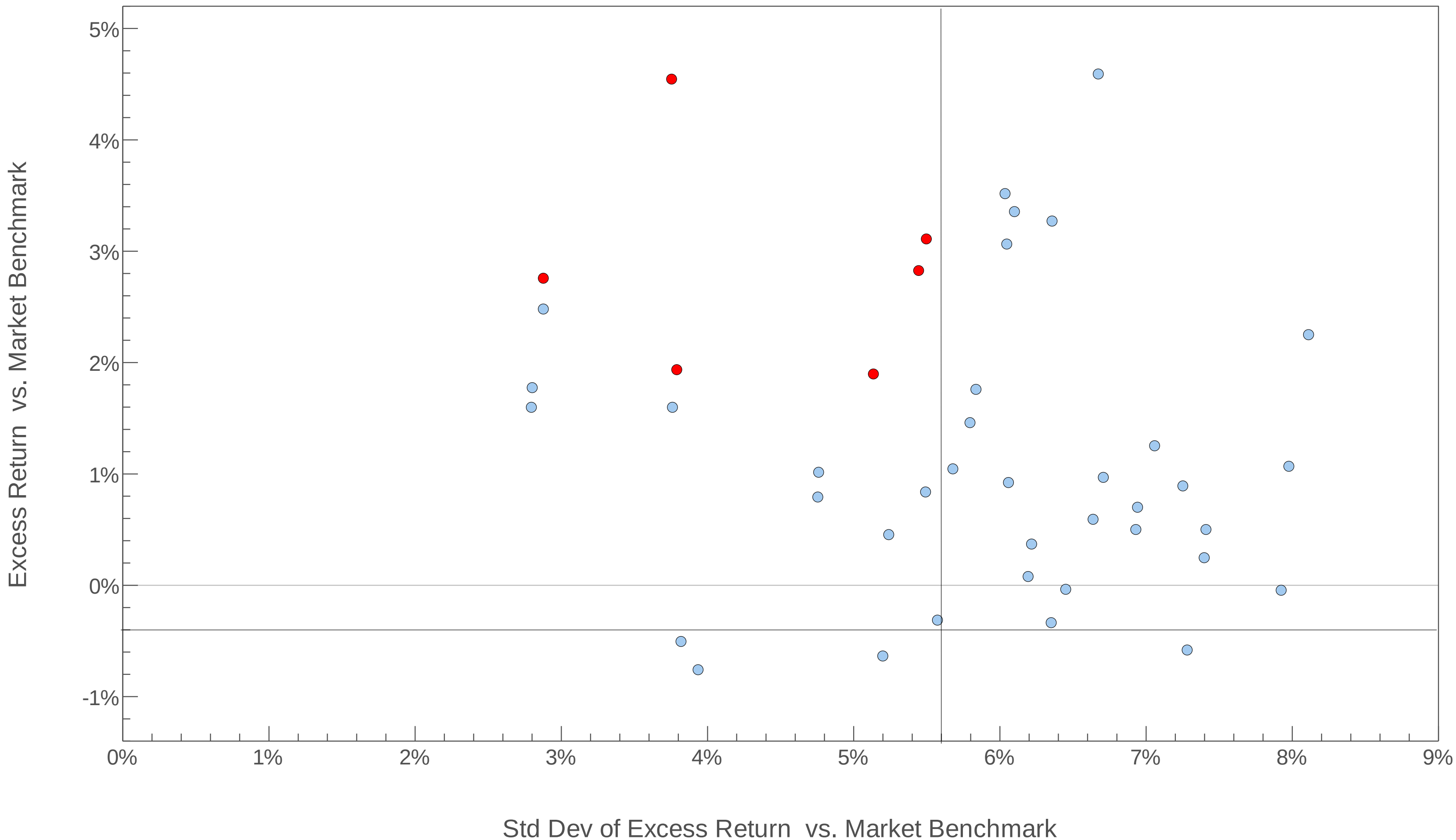
Excess Return vs. Market Benchmark / Std Dev of Excess Return vs. Market Benchmark

March 2008 - February 2013 (Single Computation)



Future Concepts: Visual Analysis

And You've Taken Your Candidate Pool Down to Six Funds

Final Thoughts

- In this presentation, we covered the quantitative aspects of investment manager search and analysis
- A consistent, structured process for manager selection and monitoring is highly recommended
- Analysis metrics will vary widely between different investment categories, so peer-relative analysis is recommended
- The impact of the metrics reviewed were often most pronounced in lower-information, higher-volatility segments

Final Thoughts

- Investment screens are a very useful tool, but can also lead to missed opportunities due to inflexibility
- Scorecards are a more flexible method for manager analysis, but they also require significant time and IT resources
- Visual analysis is an emerging method that may prove to be a reasonable compromise between traditional screens and scorecards
- Qualitative analysis, such as manager philosophy, style consistency, portfolio composition, and performance attribution is the next step in the manager analysis process...

Final Thoughts

- **Managing with an eye toward risk management will likely lead to better investment results**

INVESTMENT MANAGER ANALYSIS: THE DEEP DIVE

Presented to FIRMA By R. James Hrabak, CFA
May 1, 2013